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California-Nevada Section
American Water Works Association

GUIDELINES FOR THE DEVELOPMENT OF YOUR BEST MANAGEMENT PRACTICES (BMP) MANUAL

FOR DRINKING WATER SYSTEM

RELEASES

Developed by the CA-NV AWWA
Environmental Compliance Committee

2005

DISCLAIMER

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This BMP Manual was developed by representatives from California and Nevada water utilities, and is intended to be used as a guidance document by water utilities located in California and Nevada. It is not a substitute for, or a legal interpretation of Federal, State or local regulations. Users of this BMP Manual are cautioned to refer directly to applicable rules and regulations and to contact governing agencies to obtain additional guidance and clarification. Water utilities retain discretion to adopt their own water quality protection approaches on a case-by-case basis that differ from those presented in this BMP Manual based on an analysis of site-specific circumstances. In addition, users of this BMP Manual must test any devices, chemicals, or procedures contained herein for their ability to meet applicable regulatory/permit requirements, as results may vary depending on the water release and site-specific conditions. Accordingly, users of this BMP Manual do so at their own risk and are solely and exclusively responsible for any consequences resulting from such use.

This disclaimer is applicable whether information from the BMP Manual is obtained in hard copy form or downloaded from the Internet.

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The California-Nevada Section of the American Water Works Association developed this Best Management Practices Manual for Drinking Water System Releases (BMP Manual). The CA-NV Section, AWWA is dedicated to leading and educating the drinking water profession. CA-NV AWWA has been a leader in the profession of developing practical water industry guidelines, standards, procedures, training, and newsletters for more than 80 years. The CA-NV AWWA also promotes educational opportunities including conferences, workshops, educational symposia and expositions, and the Water College. It is the largest AWWA regional section, with almost 8,000 members.

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PREFACE

This Best Management Practices Manual for Drinking Water System Releases (BMP Manual) is intended to be a living document that will be periodically revised and updated to reflect applicable changes in: regulatory and permitting requirements; BMP technology; and industry practices related to drinking water system releases. As a living document, we encourage you to send any comments, suggestions, changes, or corrections regarding the BMP Manual to help ensure that this document continues to provide the most current and accurate information for water utilities in California and Nevada. Please send your comments to:

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Section 1
Introduction

1.1 Background Information

Water utilities, as drinking water suppliers, are naturally concerned with the quality of water. Drinking water system releases including raw water, surface water, groundwater, and potable water associated with drinking water storage, supply and distribution systems. These releases may contain certain constituents that can potentially pose a threat to freshwater and/or saltwater aquatic life. For example, chlorine is widely used as a disinfectant in drinking water to protect humans from pathogens. However, chlorine at or above certain concentrations in the receiving water has been known to be toxic to aquatic life. In a similar way, sediment and debris (also considered pollutants) can be picked up in the flow path of the potable drinking water release to varying degrees, and can impact aquatic life in receiving waters. Sediment and debris can clog storm drains and cause impairments in a waterbody. Despite these potential impacts from drinking water system releases, these types of releases generally pose a minimal, often insignificant, threat to water quality and aquatic life. For this reason, utilities are allowed non-stormwater releases to municipal separate storm sewer systems (MS4) under waivers or exemptions. To ensure the required standards are met, drinking water utilities implement Best Management Practices (BMPs) to minimize, or reduce, to the maximum extent practicable (MEP), the introduction of pollutants.

1.2 Purpose and Scope of The Best Management Practices Manual

The purpose of this BMP Manual is to make available general guidance for water utilities in implementing BMPs that will reduce or eliminate, to the MEP, the release of potential pollutants in discharges from drinking water production, treatment, and distribution systems. The emphasis of this BMP Manual is to promote the implementation of BMPs that reduce and/or eliminate, to the MEP, the introduction of pollutants from potable drinking water releases to receiving waters. Each water utility should develop their own BMP Manual specific for their operations.

This BMP Manual provides practical guidance to better manage water releases for water agencies, water suppliers (distributors and purveyors), water districts, municipalities, and private water companies. Drinking water system releases may include (but are not limited to):

- Water line draining for the addition of new service connections;
- Valve replacements;
- Internal inspections;
- Hydrostatic testing of pipelines, tanks, and vessels; fire hydrant flushing; or line flushing for water quality reasons;
- Regulator releases;
- Storage tank overflows;
- Other operations and maintenance releases.

Drinking water system releases are typically directed to flood channels, storm drains, creeks, streams, rivers, or other receiving waters. In some cases, these receiving waters may be considered "Waters of the State" and/or "Waters of the U.S.". Pursuant to state laws (California Porter-Cologne Water Quality Control Act, Chapter 2, Section 13050 and Nevada Revised Statutes and Waste Discharge Requirements), these types of releases are categorized as wastes because the water is being released for the purpose of disposal.

Since these releases could flow into Waters of the State and/or Waters of the U.S., there are Federal, State, regional, and local requirements that may have to be met and, these releases shall not cause or contribute to receiving water impairment.

This BMP Manual provides general information and examples of procedures used by the drinking water industry to better manage potable water releases and remain in compliance with regulatory requirements. **The intent of this BMP Manual is not to dictate the actual selection of BMPs, but rather to provide general information on the various BMPs available.** Due to the diversity of California and Nevada regulations it is recommended that each water utility use this BMP Manual as a tool to develop and implement their own set of BMPs that work best for their site-specific release locations and associated pollutants of concern. To ensure compliance, relevant information on applicable state, regional and local regulatory and permitting requirements should be obtained from your utility's environmental staff or, if necessary, from regulatory agencies having jurisdiction.

This BMP Manual is intended to provide guidance that is limited in scope to BMPs for the following drinking water source types: potable water dedicated for municipal supply, including treated and non-treated potable water; raw water; and groundwater (e.g. aqueduct water, reservoir water, and potable well water).

This BMP Manual does not apply to reclaimed/recycled water releases. Additionally, this BMP Manual is not intended to replace or supersede any local, regional, State, or Federal laws, regulations, permits, or ordinances that may regulate drinking water system releases.

1.3 How to Use The BMP Manual

This BMP Manual can be used as follows:

a) As a source of general information on drinking water releases to surface waters;
b) To look up specific types of drinking water system releases (See Section 3, Table 1);
c) To identify potential pollutants of concern;
d) To review the general BMPs information for the release type;
e) To use the sample procedures in Appendix A, along with your own regulatory requirements; and
f) To create standard operating procedures that can be customized for your organization.

Section 2 of the BMP Manual provides an overview of the regulatory requirements, information on agency notification, and safety priorities.

Section 3 of the BMP Manual, Table 1, provides a List of Drinking Water System Releases and Potential Pollutants of Concern. This table is divided into the following four release categories listing the potential pollutants of concern and applicable BMPs associated with each release category:

- Potable Water
- Raw water
- Groundwater
- Potential Low Volume Releases

Section 4 of the BMP Manual provides information for implementing BMPs. It should be noted that these guidelines for implementing BMPs do not provide design details or maintenance requirements because these are typically site-specific. Additional BMP controls, or a series of BMP control mechanisms (e.g., treatment train), may also need to be implemented based on your water utility's specific requirements and site-specific conditions.

Although this BMP Manual is intended to provide as much information as possible, there is a wealth of information and support tools available in the literature and on the Internet. To help locate this information, Appendix B provides a listing of some of these additional information sources, Web Links, and support tools. Another good method of obtaining information and identifying practical BMPs is networking with other water agencies. Water agencies can be contacted individually or through industry groups such as AWWA's Environmental Compliance Committee.

It is strongly recommended that this BMP Manual be used in conjunction with employee training programs to ensure that releases are kept to a minimum and BMPs are properly implemented. Regular and frequent training and education are essential for a successful pollution prevention program.

1.4 Future Revisions & Updates To The Best Management Practices Manual

This BMP Manual is intended to be a living document that will be periodically revised and updated to reflect applicable changes in: regulatory and permitting requirements; BMP technology; and industry practices related to drinking water system releases. As a living document, water utilities are encouraged to review the BMP Manual and send any comments, suggestions, changes, or corrections to help ensure that this document continues to provide the most current and accurate information for water utilities in California and Nevada (*information on submitting comments is provided in the preface of this BMP Manual*).

Section 2
General Information

2.1 Overview of Regulatory Requirements

In 1972, the Federal Clean Water Act (CWA) was passed, substantially amending the 1948 Water Pollution Control Act, and authorizing the United States Environmental Protection Agency (EPA) to regulate discharges to surface waters and prevent pollution. To comply with this law, the U.S. EPA requires that a facility must have a National Pollutant Discharge Elimination System (NPDES) permit for discharging pollutants to Waters of the U.S. In 1990, under the authority of the CWA, EPA adopted regulations for regulating storm water and non-stormwater discharges to surface water and storm drain conveyances by incorporating such discharges into the NPDES system.

In California and Nevada, the EPA has delegated the authority to issue NPDES permits for discharges and to prescribe requirements necessary to carry out the provisions of the CWA to the states (pursuant to 40 Code of Federal Regulations (CFR) Sections 122 and 123). In California, the State Water Resources Control Board (SWRCB), along with nine Regional Water Quality Control Boards (RWQCB), have the responsibility for implementing the Clean Water Act, including setting water-quality standards and issuing discharge permits. In Nevada, the Nevada Division of Environmental Protection (NDEP) has the responsibility for implementing the Clean Water Act, including setting water-quality standards necessary to protect the quality of the waters of the State of Nevada, enforce water pollution control laws and regulations, and issue NPDES permits for discharges to surface waters.

EPA considers drinking water system releases to pose a minimal threat to the environment. Therefore, such releases are generally allowed as non-storm water releases pursuant to 40 CFR, Part 122.28. Each state has the authority to further regulate drinking water system releases. For example, in California and Nevada, there are stringent regulatory discharge limits for chlorinated waters. To implement these types of requirements, drinking water system releases in California and Nevada are regulated in a variety of ways, including, but not limited to:

- Coverage under a Municipal Separate Storm Sewer System NPDES Permit (MS4 Permit);
- Coverage under a General NPDES Permit for De Minimus or Low Threat Discharges;
- Coverage under a General NPDES Permit for Potable Water Discharges;
- Coverage under a General NPDES Permit for Discharges of Hydrostatic Test Water;
- An Individual NPDES permit; or
- A categorical exemption from NPDES permit requirements (may include additional conditions and limitations).

Whether the drinking water system release is categorically exempt or is captured under a General NPDES Permit or MS4 Permit, these types of releases are typically only allowed if BMPs are implemented during the release and the release does not violate water quality standards. Water utilities are required to implement BMPs to remove any potential pollutants of concern and minimize potential environmental impacts. The objective of the BMPs is to minimize, to the maximum extent practicable (MEP), adverse environmental impacts on receiving waters or to prevent degradation of aquatic habitat and protect water quality.

Since each city, county, region, or state may impose requirements that vary significantly, **it is critical that each water utility identify the specific criteria and requirements that are applicable for its respective jurisdiction in which it operates in order to ensure compliance.**

Specifically, in California, there are significant regional differences in the regulations governing releases from drinking water systems to Waters of the United States. Initially, in the 1990's, a General NPDES Permit was sought from the SWRCB to specifically regulate these types of releases. However, due to a potential conflict of interest that existed at that time on the part of the Board members within the SWRCB, a statewide General NPDES Permit was never developed. Subsequently, each RWQCB assumed responsibility for establishing requirements for allowing drinking water system releases within their jurisdiction. Examples of some of the various RWQCB permits and requirements for drinking water system releases are included in Appendix B. These numerous examples illustrate the difficulty many water utilities face when trying to manage drinking water system releases in multiple jurisdictions that require compliance with different permitting requirements and conditions.

Whether the drinking water system release is categorically exempt or is captured under a General NPDES Permit or MS4 Permit, these types of releases are allowed only if BMPs are implemented during the release and only if the release does not violate water quality standards. Water utilities and their contractors are required to implement BMPs to remove any potential pollutants of concern and minimize potential environmental impacts. The objective of the BMPs is to minimize, to the MEP, adverse environmental impacts on receiving waters and to prevent degradation of aquatic habitat and protect water quality. In addition, contractors working for utilities performing dewatering activities must also comply with BMP requirements and obtain the appropriate NPDES permits, if necessary.

2.2 Agency Notifications

Dependant upon local conditions, prior to releasing any large volumes of water, it may be necessary for the water utility to contact all local agencies having jurisdiction in advance of the release. **This is a planned release**. Such contacts should be made to ensure that all parties are aware of the release and can agree upon any measures that should be implemented to protect worker safety, public safety, and the environment. In addition, when an unplanned release occurs, appropriate agency notifications should be made as soon possible after the event. Advance notification and coordination may be necessary for the following types of agencies (depending on the location, volume, flow rate, and duration of the release):

- Regional Flood Control District
- City or County Department of Public Works
- County Department of Health Services
- Regional Vector Control Agency (if a release could result in ponded water that has the potential to cause or lead to vector nuisances).
- Non-Governmental Organizations (NGO)
- Other agencies (NGO) that manage, regulate, or conduct activities in the release location

2.3 Safety Priorities

One of the primary concerns when dealing with planned and unplanned drinking water system releases is safety, including both worker and public safety. All necessary planning and precautions should be undertaken to ensure that field personnel and the general public are not endangered by any activities. Each task that involves water releases and the implementation of BMPs should be prioritized in order of the following safety concerns:

a) Worker and Public Safety. Worker safety issues may include: providing appropriate personal protective equipment (PPE), setting up adequate traffic control, identifying any site contamination concerns, mitigating or eliminating uneven or slippery work areas, preventing flooding, and providing sufficient lighting for poor night visibility. For larger projects, development of a health and safety plan may be necessary. Public safety concerns may include: stopping or diverting main breaks that are impeding traffic, or operating valves as necessary to prevent contamination of mains and to minimize the number of customers that would need to have their water shut off.

b) Environmental Protection and Protection of Private Property. Environmental protection is also a priority issue for water utilities. Environmental protection concerns may include the need to immediately shut down water if flow from a pipeline rupture may be entering a sensitive habitat area (e.g., wetland). Additionally, preventing damage to private property is another priority and may include actions to stop or divert flows that are causing flooding and threatening homes or businesses.

Section 3
Types of Drinking Water System Releases

3.1 Planned Releases

Drinking water system releases are typically classified as planned releases and unplanned releases. Planned releases typically result from routine operation and maintenance activities such as disinfection of mains, testing of hydrants, storage tank maintenance, cleaning and lining a section of pipe, and routine flushing of distribution systems for maintenance. The volume, flow, duration and potential pollutants of concern vary with each type of activity and the source of the release. Planned releases may involve potable water, raw water, groundwater, or low volume releases. In general, planned releases are easier to control and the BMPs are much easier to plan and implement.

3.2 Unplanned Releases

Unplanned releases are the result of accidents or incidents that cannot be scheduled or planned for in advance. Unplanned releases may include water main breaks, leaks, overflows, fire hydrant shearing, and emergency flushing activities.

In some cases, an emergency response situation may exist as a result of, or in addition to, the unplanned release. For example, a water main break (caused by an earthquake) could flood a highway and cause traffic accidents. This presents an emergency situation where public safety is the immediate and primary concern. In this situation, the implementation of BMPs should not interfere with immediate emergency response operations or impact public health and safety. Additionally, emergency response coordination, worker safety, traffic control, and protection of the environment and private property must also be considered when assessing safe implementation of BMPs during an emergency event.

AWWA recognizes that BMPs are most effective when implemented before a release occurs. In emergency situations, it is critical that BMPs be implemented immediately and to make sure that such actions and mitigation measures do not compromise public or worker safety. After the initial emergency response or emergency repairs have been completed, additional consideration should be given to augmenting the BMPs. For more information on procedures for unplanned releases, refer to Section 4.1.5.

3.3 Drinking Water System Releases and Potential Pollutants of Concern

Each type of drinking water system release has potential pollutants of concern that must be considered when planning release activities and determining what BMPs need to be implemented. There are some common potential pollutants that are typically present in certain categories of releases. For example, releases from potable pipeline flushing typically contain chlorine requiring dechlorination BMPs. Depending on various factors, such as the type of release, source of the release, or location of the release, there can be other potential pollutants of concern that must be considered requiring treatment to ensure that the release does not impact water quality in receiving waters. Each water utility should have a thorough understanding of the potential pollutants present in their drinking water supply system. Accordingly, each water utility must individually evaluate all factors related to their specific operations to determine which BMPs are most appropriate for use.

Table 1 provides a general list of the various types of drinking water system releases that may occur, potential pollutants of concern associated with each release, and the applicable BMPs that may be implemented for each type of release. This table is intended to be applicable to most water utility operations, but may not include minor or facility-specific releases for all planned and unplanned releases. The table is divided into the following categories of releases:

- Potable water
- Raw Water
- Groundwater
- Low Volume Releases

Table 1 can be used as a reference tool to look up specific types of releases and determine the potential pollutants of concern and the appropriate BMP controls or combinations of BMP control measures that should be implemented. Further details on BMP controls are included in Section 4.

TABLE 1
LIST OF DRINKING WATER SYSTEM RELEASES & POTENTIAL POLLUTANTS OF CONCERN

TYPE OF RELEASE	RELEASE ACTIVITY	POTENTIAL POLLUTANTS OF CONCERN	APPLICABLE BMPs (refer to Section 4 for details)
POTABLE WATER	Potable System Leak	Chlorine Sediment	• Administrative • Dechlorination • Erosion and Sediment Control
	Pipeline Flushing (line/main dewatering/flushing	Chlorine Sediment Biofilm Metals	• Administrative • Dechlorination • Erosion and Sediment Control
	Pipeline Disinfection	Chlorine Sediment Biofilm	• Administrative • Dechlorination • Erosion and Sediment Control
	Water Quality Sampling	Chlorine Sediment Other organic or inorganics	• Administrative • Dechlorination • Erosion and Sediment Control
	Storage Tank Dewatering	Chlorine Sediment Metals	• Administrative • Dechlorination • Erosion and Sediment Control
	Reservoir Dewatering	Chlorine Sediment Metals Biofilm Other organics or inorganics	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Reservoir and Reservoir Cover Cleaning	Chlorine Sediment Metals Biofilm Other organics or inorganics	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Fire Hydrant Flushing & Testing	Chlorine Sediment (including rust particles)	• Administrative • Dechlorination • Erosion and Sediment Control

TYPE OF RELEASE	RELEASE ACTIVITY	POTENTIAL POLLUTANTS OF CONCERN	APPLICABLE BMPs (refer to Section 4 for details)
	Aqueduct Dewatering	Chlorine Sediment	• Administrative • Dechlorination • Erosion and Sediment Control
	Hydrostatic Testing	Chlorine Sediment	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Substructure Dewatering (vault/sump dewatering)	Chlorine Sediment Oil & Grease Biofilm	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Non-Contact Cooling Water Releases Anti - Scalants	Chlorine Oil & Grease	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Pump Station Releases/Maintenance	Chlorine Sediment Oil & Grease	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Unplanned Releases (broken water main, etc.)	Chlorine Sediment Biofilm	• Administrative • Dechlorination • Erosion and Sediment Control
	Virgin Granular Activated Carbon (GAC) Backwash	Chlorine Particulates	• Administrative • Dechlorination • Erosion and Sediment Control
	Used GAC Backwash	Chlorine Particulate Other organics, or inorganics	• Administrative • Dechlorination • Erosion and Sediment Control

TYPE OF RELEASE	RELEASE ACTIVITY	POTENTIAL POLLUTANTS OF CONCERN	APPLICABLE BMPs (refer to Section 4 for details)
RAW WATER	Reservoir Dewatering (draining)	Sediment Metals Biofilm	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Reservoir Cleaning	Sediment Metals Biofilm	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Unplanned Raw Water Release	Sediment Biofilm	• Administrative • Erosion and Sediment Control
	Hydrostatic Testing	Sediment Oil & Grease	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Substructure Dewatering (vault/sump dewatering)	Sediment Oil & Grease Biofilm	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Non-Contact Cooling Water Releases	Sediment Metals Oil & Grease	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Aqueduct Dewatering	Sediment Biofilm Other organics or inorganics	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Construction Dewatering	Sediment Other organics or inorganics	• Administrative • Erosion and Sediment Control
GROUNDWATER	Well Development / Drilling	Sediment Other organics or inorganics	• Administrative • Erosion and Sediment Control • On-Site Treatment
	Well Maintenance	Chlorine Sediment Other organics or inorganics	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment

TYPE OF RELEASE	RELEASE ACTIVITY	POTENTIAL POLLUTANTS OF CONCERN	APPLICABLE BMPs (refer to Section 4 for details)
	Well Purging / Flushing	Chlorine Sediment Other organics or inorganics	• Administrative • Dechlorination • Erosion and Sediment Control • On-Site Treatment
	Construction Dewatering/ Tunnel Dewatering (groundwater seepage)	Sediment Other organics or inorganics	• Administrative • Erosion and Sediment Control • On-Site Treatment
POTENTIAL LOW VOLUME POTABLE WATER RELEASES	These releases may be low volume, but the following BMP's may be applicable.		
	Meter Calibration	Chlorine Sediment	• Administrative • Dechlorination
	Pressure Relief Valve Releases	Chlorine Sediment	• Administrative • Dechlorination • Erosion and Sediment Control
	Pressure Regulator Station Release/Maintenance	Chlorine Sediment	• Administrative • Dechlorination • Erosion and Sediment Control
	Chlorination Station Release/Maintenance	Chlorine Sediment	• Administrative • Dechlorination • Erosion and Sediment Control

Section 4
Best Management Practices (BMPs) For Drinking Water System Releases

4.1 Administrative BMPs

The following sections describe the different types of administrative BMPs that may be implemented as additional measures in the overall effort to reduce the potential water quality impacts of pollutants during drinking water system releases. Administrative BMPs are non-structural BMPs, such as managerial practices, operations and maintenance procedures, or other measures designed to reduce or prevent potential pollutants from being discharged during drinking water system releases. Administrative BMPs may also be characterized as source controls. Such administrative BMPs can be applied before, during, and/or after water release activities. These administrative BMPs are presented for educational and guidance purposes only. Each water utility should use them to develop its own specific administrative BMPs.

4.1.1 Conservation and Reuse of Water

Conservation, which includes the reuse of water resulting from planned water releases, is the first administrative BMP that should be considered when facilities are planning drinking water system releases. Although feasible options may be limited, they should be considered as the first priority. Possible options for reuse of the water releases include discharge to a sanitary sewer system (for possible reuse as reclaimed/recycled water), or use of the water for soil compaction, dust control, percolation, or irrigation.

Specifically in California, the Porter-Cologne Water Quality Control Act (Water Code - Chapter 7, Article 7, Section 13550) includes provisions to prevent waste and unreasonable use of Waters of the State. Under this provision, the SWRCB and the RWQCBs must encourage, wherever practicable, water conservation and/or re-use of wastewater. General NPDES Permits and individual NPDES Permits issued by the RWQCBs typically contain language requiring that the discharger must first investigate the feasibility of conservation and/or re-use of the water. Only after such options have been considered, can the water utility apply for coverage under a NPDES Permit.

4.1.2 Training

Training and education are essential tools to effectively implement BMPs for planned and unplanned releases. Water utilities should ensure that employees are thoroughly knowledgeable of all the requirements of drinking water system releases and know how to properly implement appropriate BMPs. Overall competence in BMP selection, application, techniques, and procedures are essential to ensuring compliance with regulatory requirements. Additional training on field sample collection and analyses should be provided to appropriate field personnel. Employees also need to be trained on the health and safety issues related to drinking water system releases and appropriate BMP implementation.

4.1.3 Planning, Scheduling, and Operating Procedures

Planning, scheduling, and establishing operating procedures are all helpful management tools that can reduce potential pollutants from drinking water system releases. The first step in implementing these tools involves carefully planning and scheduling when, where, and how drinking water system releases will need to occur. Planning and scheduling efforts should also take into account such factors as: location of the release and condition of the area, volume, flow rate, frequency, site access, public safety, worker safety, environmental protection concerns, proximity to private property, traffic flow, weather conditions, and staffing and equipment needs. By properly planning and scheduling operation and maintenance activities, water releases can be effectively controlled and managed to minimize erosion and reduce the potential for pollutants entering the receiving waterbody.

Operating procedures are also considered an essential BMP for water utilities to ensure that all water releases are managed safely and effectively. Operating procedures may include standard industry procedures that are available for use by water utilities. Water utilities may develop their own site-specific operating procedures that are customized for their own operations. Whatever types of operating procedures are used, the procedures should include instructions for effectively controlling drinking water system releases and implementing appropriate BMPs. It is also critical to provide employees with training on operating procedures. Periodic audits should also be conducted to ensure that BMPs are being properly implemented.

4.1.4 Material Storage and Waste Management

The methods by which materials and wastes are stored and handled in the field can also impact the potential for water pollution. Water utilities should ensure that all materials and wastes are properly managed and stored to prevent spills, leaks, or exposure to stormwater runoff. Preventative measures should be established that include providing procedures and training for safe use and storage of materials and waste during field operations. When planning field activities, the following should be considered to minimize potential pollution:

- Types and quantities of materials that will be stored on-site
- Location where materials are received, stored, transferred, handled, and disposed
- Receiving and loading operations
- Spill or leak prevention and response
- Containment equipment and/or containment structures

4.1.5 Procedures for Unplanned Releases

Establishing procedures to address unplanned release events is a proactive measure that can help in responding quickly and efficiently to unplanned release events (e.g. water main breaks). Personnel that have been trained and are familiar with these procedures can act quickly and more effectively when responding to such emergency situations. The following types of procedures can be established to provide instructions on responding to unplanned release events:

a) Immediate notification to appropriate water utility personnel and affected emergency response agencies, local city government, etc.
b) Initial assessment of emergency situation
c) Priority safety considerations
d) Environment and private property protection
e) Isolation/evacuation of the area
f) Actions necessary to prevent further release
g) Repair assessment
h) BMP implementation
i) Repair and maintenance activities
j) Disinfection/flushing of repaired line
k) Returning line to service
l) Clean-up operations.

4.1.6 Documentation

Developing documentation procedures is another administrative BMP that can help water utilities. Documentation of field activities is valuable and can be used as a tool to assist personnel with the appropriate implementation of BMPs. Procedures for documenting planned and unplanned releases may include: inspections and visual observations; sampling and monitoring information; BMP implementation; and follow up activities. Photographs can also be a useful method to document activities in the field. In addition, specific forms can be created to help field personnel record pertinent information in the field.

4.2 Guidelines For Erosion & Sediment Control Best Management Practices

Purpose	These guidelines describe BMPs that will minimize erosion and the transport of sediment to storm drains or receiving waters during drinking water system releases. Such releases may potentially contain small amounts of sediment. More commonly, they have the potential to erode, suspend and transport sediments as they pass over barren soil or along street gutters. High flow releases may also cause erosion, particularly on unpaved surfaces.
Quick Checklist	1. Evaluate release volume and character. Compare with release point and conveyance to determine appropriate BMP use. 2. Ensure worker safety, public safety, and private property protections. 3. Where feasible, remove loose debris, such as trash and dirt, from flow path. 4. Place erosion and sediment control devices in flow path 5. Implement diffusers or flow control devices for high pressure flows 6. Monitor flow and control devices 7. Cleanup and dispose of sediment and control materials appropriately
Field Adaptation	These guidelines must be adapted to field conditions and available resources. It cannot be expected that BMPs will be successful in the complete control of erosion or removal of sediment. Success of these guidelines depends on site-specific factors, appropriate placement of materials, number of drain inlets affected, and release flow rate. When properly designed, implemented and/or maintained, erosion and sediment control, to the MEP, should be achieved. Erosion and sediment control: 1. Slows the flow of water, preventing erosion and/or allowing some portion of the sediment to settle out and/or; 2. Protects bare earth surfaces to preclude the detachment of soil particles from the flow of water; 3. Bypasses sediment using piping to move flow around potential pollutants; 4. Prevents the flow of water from reaching or picking up sediment by using berms or dikes. First, assess the flow rate of the release, the point of release and the path of the release. A release point and alluvial (earth) drainage conveyance is the worst-case scenario while a concrete paved storm water channel is the best-case scenario. Whenever possible, it may be appropriate to route water releases to paved surfaces to prevent soil erosion. Erosion and sediment control can be achieved by placing wattles or gravel bags perpendicular to the flow to form small dams between the release source and the point at which the flow enters a storm drain or receiving water. The purpose of check dams is to slow the discharge velocity to prevent erosion, and allow sediment that is in the water to settle out. In high flow situations, special care must be taken

	to prevent flooding, ensuring public safety and protection of private property. For high flow conditions, riprap, or other materials can be used for energy dissipation. Another BMP that can be used for channel stabilization is geo-textile materials to line earthen channels to prevent erosion. In some cases, temporary drain inlet sediment filters can be used in conjunction with dams as long as they do not promote flooding.
Materials	The following materials can be used, either alone or in conjunction, as control devices: • Weighted Straw Wattles • Sediment Retention Wattles • Filter Bags • Mesh Gravel Bags • Snake Bag Rock Wattles • Flat Blade Shovel • Temporary Drain Inlet (DI) Sediment Filter bags or mats • Diffuser • Portable Tank (may be appropriate for large volume flows.) • Rip- rap • Geo-textile Materials There are various materials readily available on the market. The above is only a sample listing and is not intended to be all-inclusive. See references in Appendix B for additional information on erosion and sediment control equipment.
Limitations	Erosion & Sediment Control BMPs: • May not remove all sediments or fine particulate matter. If more complete removal is necessary, treatment BMPs may be necessary. • May not be appropriate if ponding could cause potential flooding. • Effectiveness depends on many factors including site characteristics volume of flow, and BMP design. • May not be appropriate in all circumstances and can only be employed where reasonable and/or feasible.

4.3 Guidelines for Dechlorination Best Management Practices

Purpose	These guidelines describe BMPs for dechlorination or dechloramination of drinking water system releases to the storm drains or receiving waters.
Quick Checklist	1. Evaluate work area and determine appropriate BMP implementation. 2. Ensure worker safety, public safety, and protection of private property. 3. Implement other BMPs for erosion and sediment control, as necessary. 4. Evaluate chlorine residual level and determine if passive non-chemical methods of dechlorination are feasible. If not, set up dechlorination control devices. 5. Measure initial chlorine level. 6. Monitor control devices and free chlorine level as required. Use additional control measures, if necessary, to reduce chlorine levels. 7. Cleanup and dispose of control materials appropriately.
Materials	The following materials and equipment can be used, either alone or in conjunction, for dechlorination: Examples of Dechlorination Agents available: • Sodium Sulfite tablets • Sodium Thiosulfate • Sodium Bisulfite • Ascorbic Acid (Vitamin C) • Alternate Dechlorination Solutions Types of Dechlorination Equipment available: • Dechlor mat (3' x 4') • Dechlor strip (6" x 36") • Diffuser (a variety of sizes may be necessary depending on application.) • Chlorine Colorimeter & Reagent * *Always use personal protective equipment when handling chemicals.*
Measuring Chlorine Residual	Sampling and field measurement methods vary significantly among water utilities. It is recommended that each water utility develop monitoring strategies that meet their own needs. Key elements of a successful monitoring program include determining sampling objectives, sampling locations, sampling frequencies, and field methods. Criteria for selecting a field method include ease of use, detection limits, precision, accuracy, and cost. Field methods commonly used for residual chlorine include: • Orthotolodine Indicator Kits • Water Quality Test Strips • Swimming Pool Test Kits • Field Colorimetric Test Kits • DPD Titration Method • Amperometric Titration Method For additional details concerning each of these methods, see the *Guidance Manual for Disposal of Chlorinated Water (AWWARF 2001)*.

Chemical Handling	Dechlorination agents are stable chemicals with low toxicities. However, these types of chemicals can react with other chemicals and cause a potentially hazardous situation. Inhalation of chemicals can cause irritation of the respiratory tract. Exposure to chemicals is negligible when the chemical is in tablet or liquid form. Personal protective equipment is necessary when handling solid or liquid chlorine. Dechlorination equipment and materials (new or used) should be stored in vehicles in secondary containment to prevent the chemical from being deposited directly onto vehicles, tools or other surfaces. Plastic containers that can completely contain the diffuser and dechlorination agent constitute adequate secondary containment. Refer to specific chemical Material Safety Data Sheet (MSDS) for safe use and handling instructions and appropriate personal protection equipment required.
WARNING!	Some water utilities that use sodium sulfite for dechlorination also use calcium hypochlorite (HTH) or sodium hypochlorite to disinfect water distribution system mains or appurtenances. These two chemicals can react when mixed in the presence of water. The reaction can produce heat and both hydrogen and chlorine gas, creating both a potentially toxic and explosive/flammable atmosphere. These chemicals and associated mixing and dispensing equipment must be kept segregated from each other at all times. Refer to MSDS information.
Limitations	Dechlorination BMPs: • Amount of dechlorination agent may need to be adjusted to achieve desired result • Effectiveness depends on many factors including; site characteristics, volume of flow and BMP design • May not be appropriate in all circumstances and can only be employed where reasonable.

4.4 Guidelines for On-Site Treatment Best Management Practices

Purpose	These guidelines describe types of on-site treatment options available for drinking water system releases that cannot be directly released to the storm drain system or surface waters due to specific constituents contained in the water. These BMPs apply to raw water, potable water, and groundwater releases.
Quick Checklist	1. Identify and analyze contaminants/constituents in the water. 2. Determine what on-site storage and treatment options are available. 3. Evaluate all options and select best approach based on cost, time constraints, regulatory agency requirements, etc. 4. Whichever option is selected, ensure that proper permits are in place and all treatment activities comply with federal, state and local laws, regulations, and ordinances.
On-Site Treatment Options	In certain circumstances, drinking water system releases cannot be released directly into the storm drain system or surface waters because they contain constituents or contaminants that must first be removed or treated. Various types of on-site storage and treatment can be preformed either by the water utility (if appropriate) or by a contractor that utilizes portable storage tanks and treatment units on-site. In some cases, storage and/or treatment units and equipment may require specific regulatory agency permits. Examples of on-site treatment options available include: • BOD reduction • pH adjustment • Oil separation/removal • Metals precipitation and removal • VOC removal • Semi VOC removal • Sedimentation/Filtration using portable tanks
Limitations	Successful on-site storage and treatment of water releases to remove contaminants depends on numerous conditions and may not always be a viable option. Factors related to on-site treatment include: • Storage capacity on-site • Complexity of treatment process • Availability of appropriate treatment equipment • Cost of treatment • Time requirement to obtain permits, storage and treatment equipment or start up and complete the treatment process • Location restrictions (lack of space or proximity to residential areas) • Management of residual treatment solids. If on-site treatment is not an option, off-site disposal is another alternative. Possible off-site disposal options include: disposal at a sanitary sewer connection with an appropriate permit; or disposal at an off-site industrial waste or treatment facility. These options may not be available or allowed depending on the natural of the contaminants, volume of drinking water system release, sewer capacity limits, or availability of permitted off-site treatment facilities. Prior approval must be first obtained before any discharge to the sanitary sewer or disposal at an off-site industrial waste or treatment facility (sample or analytical data must be provided) is allowed. Compliance with all applicable transportation regulations is also required.

Section 5

5.1 Glossary (Definition of Terms)

Administrative BMPs: Operational practices that reduce potential pollutants at the source, including maintenance procedures, managerial practices, operational practices and scheduling of activities that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

Adverse Impact: Means a detrimental effect upon water quality caused by a discharge or loading of a pollutant or pollutants.

Basin Plan: Means the Water Quality Control Plan adopted by each Regional Water Quality Control Board to protect and preserve the watersheds within their jurisdiction.

Best Management Practices (BMPs): Any program, technology, process, operating criteria, methods, schedules, measures, or device that controls, prevents, removes, or reduces pollution. Also includes any practices designed and selected to reduce or eliminate the discharge of pollutants to surface waters. BMPs include structural and nonstructural controls, and operation and maintenance procedures, which can be applied before, during, and/or after pollution producing activities.

Biofilm: General term referring to thin, usually resistant, layer of microorganisms (algae and various aquatic photosynthetic organisms) that form on and coat various surfaces such as water pipes.

Dechlorination: A treatment method that removes or replaces chlorine atoms in water. Dechlorination can be accomplished by physical and/or chemical treatment and also can occur naturally due to other parameters (i.e., time, temperature, etc). The term dechlorination applies to all potable water, whether disinfected with free chlorine or with chloramines.

Discharge of a Pollutant: Means any addition of any “pollutant” or combination of pollutants to “waters of the United States”. The term discharge includes additions of pollutants into storm drains, surface waters, etc, from surface runoff, channels, pipes, sewers, or other conveyances that do not lead to a treatment works.

Drinking Water System Releases: Means sources of flows from drinking water storage, supply and distribution systems including, but not limited to, flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing, flushing and dewatering of pipes, reservoirs, vaults, and well maintenance activities.

Erosion: The wearing away of land surface by wind or water. Erosion may occur naturally from weather or runoff but can be the result of man-made activities.

5.1 Glossary (Definition of Terms) (Cont.)

Field Measurements: Refers to water quality testing performed in the field with portable field-testing kits or meters.

General NPDES Permit: NPDES Regulations, 40 CFR 122.28, provides for the issuance of general permits to regulate discharges of waste which result from similar operations, are the same type of waste, require the same effluent limitations, require similar monitoring, and are more appropriately regulated under a general permit rather than individual permits.

Granular Activated Carbon (GAC): A highly adsorbent form of carbon used to remove dissolved organic matter from wastewater.

Hazardous Waste: A waste or combination of wastes that, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity or toxicity) or appears on special EPA or state lists. Regulated under the federal Resource Conservation and Recovery Act and the California Health and Safety Code.

Hydrostatic Test Water: Hydrostatic test water discharges are those discharges resulting from testing of pipelines, tanks, and vessels that are dedicated to drinking water purveyance and storage.

Individual NPDES Permit: A National Pollutant Discharge Elimination System (NPDES) Permit issued by the Regional Water Quality Control Board for a facility specific discharge of wastewater to receiving waters.

Low Volume Releases: These types of releases are usually flows smaller than 50 gpm and typically last for less than 2 hours.

Maximum Extent Practicable (MEP): Means the standard for implementation of storm water management programs to reduce pollutants in storm water. CWA § 402(p)(3)(B)(iii) requires that municipal permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants. See also State Board Order WQ 2000-11.

5.1 Glossary (Definition of Terms) (Cont.)

Municipal Separate Storm Sewer System (MS4): A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying storm water; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW) as defined at Title 40 of the Code of Federal Regulations (CFR) 122.2.

Nevada Division of Environmental Protection (NDEP): The Nevada regulatory agency responsible for implementing the Clean Water Act, including setting water-quality standards necessary to protect the quality of the waters of the State of Nevada, enforce water pollution control laws and regulations, and issue NPDES permits for discharges to surface waters.

National Pollutant Discharge Elimination System (NPDES): Means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA §307, 402, 318, and 405.

Passive Non-Chemical Dechlorination: Using the relatively stable, moderately reactive nature of chlorine to neutralize it upon reaction with air, sunlight, and contact with organic and inorganic impurities in soil, paved surfaces, water and wastewater.

Pollutant: Generally, any substance introduced into the environment that adversely affects the usefulness of a resource. Pollutants may include sediment, debris, litter, toxic substances, solid wastes, etc. (The exact definition for "pollutants" is defined in CWA §502(6) 33.U.S.C.§1362(6)), and incorporated by reference into California Water Code §13373).

Porter-Cologne Water Quality Control Act: (California Water Code – Chapter 7, Article 7, Section 13550)

Potable Water: Refers to all water dedicated for municipal supply, including treated and non-treated potable water and raw water (e.g. aqueduct water, reservoir water, and potable well water).

Potable Water Discharge: Includes a release from drinking water storage, supply, and distribution systems, including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing, and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities. Releases may also result from repair, maintenance, and disinfection of pipelines, tanks, vessels, and reservoirs.

5.1 Glossary (Definition of Terms) (Cont.)

Raw Water: Specifically refers to non-treated water that a water utility has dedicated for providing potable drinking water.

Receiving Waters: Means all surface water bodies identified in a Regional Water Quality Control Board Basin Plan. This includes inland surface waters, enclosed bays, harbors, lagoons, estuaries, and the ocean.

Reclaimed/Recycled Water: Means water that, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource.

Regional Water Quality Control Board (RWQCB): In California, there are nine RWQCBs that develop and enforce water quality objectives and implementation plans to protect the beneficial uses of the State's waters, while recognizing local differences in climate, topography, geology and hydrology. The RWQCBs develop Basin Plans for their specific hydrologic areas, govern requirements/issue waste discharge permits, take enforcement action against violators, and monitor water quality.

Runoff: Water originating from rainfall, melted snow, and other sources (e.g., sprinkler irrigation) that flows over the land surface to drainage facilities, surface waters, rivers, streams, springs, seeps, ponds, lakes, and wetlands.

Sediment: Solid particulate matter, both mineral and organic, that becomes entrained or in suspension and is transported, or moved from its site of origin by air, water, or other means. Sediment includes soil particles, clays, sands, and other natural or man-made materials that may be picked up when water is discharged over a surface.

State Water Resources Control Board (SWRCB): California State regulatory agency that formulates and adopts state policy for water quality control in accordance with the provisions of the Porter-Cologne Water Quality Control Act. The SWRCB is designated as the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act and any other federal act and is authorized to administer the NPDES Program in California.

Storm Drain: Above- and below-ground storm conveyance systems and structures for transporting stormwater to streams or outfalls for flood control purposes.

Storm Water: Runoff that consists solely of discharges that originates from a precipitation event (rain or snowmelt). Storm water is that portion of precipitation that flows across a surface to the storm drain system or receiving waters.

5.1 Glossary (Definition of Terms) (Cont.)

Total Chlorine Residual: A measurement of the amount of remaining chlorine concentration (the sum of free and combined chlorine) in fresh water that has not yet degraded or dissipated after the water has been treated with chlorine.

Toxicity: Adverse responses of organisms to chemicals or physical agents ranging from mortality to physiological responses such as impaired reproduction or growth anomalies.

Treatment BMPs: Means any engineered system or train of treatment methods designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption or any other physical, biological, or chemical process.

5.2 Glossary (Definition of Terms, cont.)

Unplanned Release: A release that occurs at the result of an accident or incident that cannot be scheduled or anticipated in advance, including main breaks, leaks and overflows.

Water Quality Standards & Water Quality Objectives: Means water quality criteria contained in the Basin Plan, the California Ocean Plan, the National Toxics Rule, the California Toxics Rule, and other state or federally approved surface water quality plans. Such plans are used by the Regional Board to regulate all discharges, including storm water discharges and non-storm water discharges.

Water Utility: Means potable drinking water supplier, distributor, purveyor, municipality, district, agency, or private water company.

Waters of the State: Means any surface water or groundwater, including saline waters, within boundaries of the state.

5.1 Glossary (Definition of Terms) (Cont.)

Waters of the United States (US): means:

a. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
b. All interstate waters, including interstate "wetlands";
c. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
    1. Which are or could be used by interstate or foreign travelers for recreational or other purposes;
    2. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    3. Which are used or could be used for industrial purposes by industries in interstate commerce;
d. All impoundments of waters otherwise defined as waters of the United States under this definition;
e. Tributaries of waters identified in paragraphs (a) through (d) of this definition;
f. The territorial sea; and
g. "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraph (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.22(m), which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to man-made bodies of water, which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with USEPA.

5.2 Acronyms

AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
BAT	Best Available Technology (economically available)
BCT	Best Conventional Technology (pollution control)
BMPs	Best Management Practices
BOD	Biological Oxygen Demand
CAL-EPA	California Environmental Protection Agency
CAL-OSHA	California Division of Occupational Safety and Health Administration
CASQA	California Stormwater Quality Association
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTR	California Toxics Rule
CWA	Clean Water Act (Federal Water Pollution Control Act of 1972 as amended in 1987)
DHS	California Department of Health Services
DTSC	California Department of Toxic Substances Control
GAC	Granular Activated Carbon
Hazmat	Hazardous Material
HTH	Calcium Hypochlorite
MBAS	Methylene Blue Active Substances
MEP	Maximum Extent Practicable

5.2 Acronyms (Cont.)

MS4	Municipal Separate Storm Sewer System
MSDS	Material Safety Data Sheet
NDEP	Nevada Division of Environmental Protection (NDEP)
NGO	Non-Governmental Agency
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollution Discharge Elimination System
O&G	Oil and Grease
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
P^2	Pollution Prevention
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
POTW	Publicly Owned Treatment Works
PPE	Personal Protective Equipment
PPP	Pollution Prevention Plan
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TCE	Trichloroethylene
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon

5.2 Acronyms (Cont.)

TPH	Total Petroleum Hydrocarbons
TSDF	Treatment, Storage & Disposal Facility
TSS	Total Suspended Solids
TTU	Transportable Treatment Unit
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
WDR	Waste Discharge Requirements

APPENDICES

Appendix A
Sample Procedures

Dechlorination: Example 1 - Measuring Chlorine Residual	
Appropriate Applications	This method of analyses can only be used for relatively clean, clear water during drinking water system releases.
Limitations	This procedure cannot be used to detect the presence or absence of chlorine in opaque muddy water, such as that discharged from trench dewatering operations. There is no simple and accurate field method for detection of chlorine residual in opaque muddy water; therefore, in cases where the discharge is opaque, field staff will need to rely solely on the dechlorinating agent dosing guidance given in this procedure (i.e., there is plenty of visible tablet remaining and there is contact between the flow and the tablets) to ensure effective dechlorination. If tablets aren't visable, the measure chlorine content.
Method of Measurement	Total chlorine is measured by adding reagent to a sample of a given discharge. If a pink or red color develops when reagent is added to the sample, chlorine is present. This is known as colorimetric analysis. Absence of color indicates there is no detectable chlorine present.
Measuring Equipment	Any clear, clean sample container may be used for collecting and analyzing the sample. Use the dispenser provided add reagent to sample. The dispensers are designed to dispense enough reagent for 10 mg/L of sample; however, for this application, it is not necessary to be accurate in the amount of sample collected. An appropriate amount of sample is approximately 1/8 of a pint jar.

Task	Procedure
1. Collect sample	• Collect the sample as far downstream of the point of dechlorination as possible before the flow enters a storm drain or receiving water. • Rinse the sample container in the discharge flow and then collect a sample.
2. Add reagent	• Turn the DPD Powder Pop Dispenser upside down once and then right side up (with blue plastic button at top). • Uncap the bottom of the dispenser. • Hold the dispenser over the sample container and press the blue button once fully to dispense reagent.
3. Mix reagent	• Gently swirl the sample container for 20 seconds • Allow to stand for 3 minutes to allow the color to fully develop.

4. Assess color/Dispose of sample	• Visually assess the sample after 3 minutes or as soon as a detectable pink or red color is present. • A pink or red color will form in the sample container with reagent if chlorine is present. *Note: You will know chlorine is present as soon as color develops so if it takes less than 3 minutes for color to develop you need not wait the entire 3 minutes before assessing the color. However, you cannot conclude that the sample is clear (i.e., there is no detectable chlorine residual) until you wait the entire 3 minutes. Holding the sample container up against a blank piece of white paper and/or comparing the sample with reagent to a sample without reagent is often helpful in determining whether color is present. Accuracy is not affected by undissolved reagent powder. If the ratio of sample to reagent is too large (i.e., there is too much sample), chlorine may be present but the pink color may be too faint to see. In this case, adding more reagent will help confirm whether a pink color and therefore, chlorine, is present. An appropriate amount of sample for the amount of reagent dispensed in one application is approximately 1/8 of a pint jar.* • The sample (with or without reagent) may be disposed of in the flow stream.
5. Rinse and store sample container(s) and store reagent	• If a pink color develops, adjust mat placement, add tablets, or add additional mats and re-analyze as necessary. Otherwise, rinse sample container(s) with clean water (if available), wipe or shake off excess water and store appropriately. • Store the DPD Powder-Pop Dispenser in a dry area. The reagent will tend to cake if it becomes moist and the dispenser rendered unusable. • Storage inside a dry plastic bag is recommended.

Dechlorination:
Example 2 - Main Breaks Using Tablet Reagents

Appropriate Applications	If the discharge potentially contains other contaminants or very high flow volumes, other BMPs may need to be used in conjunction. ▪ Pipeline Flushing/Dewatering mains for maintenance or construction activities or to alleviate water quality issues. ▪ Pipeline Disinfection. ▪ Flow testing fire hydrants ▪ Hydrostatic Testing/New pipeline flushing and testing ▪ Well Maintenance ▪ Water Quality Testing ▪ Construction Dewatering

Task	Procedure
1. Fill pockets of dechlor mat or strip with dechlor tablets	• Put one tablet in each pocket of the dechlor mat (3' x 4') or strip (6" x 36"). If the pocket contains a partially-used tablet, add another tablet only if there is room.
2. Place dechlor mat or strip mat in flow path	• Place the dechlor mat or strip across (perpendicular to) the flow path downstream of sediment control devices (e.g., pea gravel bags). • If the flow path is more than the dechlor mat or dechlor strip, or there is more than one flow path (flow is spreading out in more than one direction), use additional mats to ensure all water from the source is crossing a mat. • If the flow is deep (more than 1" above the top of the dechlor mat) and/or the flowrate is very high (>300 GPM), a second mat should be placed downstream of the first mat to ensure adequate dechlorination.
3. Monitor mat or strip	• Check the dechlor mat periodically to ensure some tablet remains in each pocket and that all flow is crossing at least one mat.
4. Clean up	• When the discharge is complete, move the dechlor mat(s) or strip(s) to the storm drain(s) the discharge was entering, and place it on the upstream side of the grate. • Clean the flow path to remove any tablet residual, ensuring that the flow enters the storm drain(s) upon which the dechlor mat(s) or strip(s) is installed. • If the flow path separates and some flow travels to a different storm drain, a dechlor mat or strip should be installed at that location as well. • Retreive the dechlor mat or strip and store it in its secondary container on the field vehicle.

Dechlorination:
Example 3 - Hydrants Using Tablet Reagents

Appropriate Applications	If the discharge potentially contains other contaminants or very high flow volumes, other BMPs may need to be used in conjunction. ▪ Pipeline Flushing/Dewatering mains for maintenance or construction activities or to alleviate water quality issues. ▪ Pipeline Disinfection. ▪ Flow testing fire hydrants ▪ Hydrostatic Testing/New pipeline flushing and testing ▪ Well Maintenance ▪ Water Quality Testing ▪ Construction Dewatering

Task	Procedure
1. Fill diffuser chamber or mesh pockets with tablets	• If using a flow diffuser outfitted with a cylindrical tablet chamber, fill the chamber with tablets. • If the chamber is partially filled with partially used tablets, add as many new tablets as will fit while still allowing the cap to be screwed back on. • If using a flow diffuser with a dechlor mat attached to the face of the diffuser, put one tablet in each pocket and close the snap on each pocket. • If a pocket contains a partially-used tablet, only add another tablet if there is room.
2. Install diffuser on hydrant, fire hose or blowoff	• Screw the diffuser to the hydrant, fire hose or blowoff as you normally would.
3. Check downstream chlorine residual	• Determine if there is any chlorine present in the downstream discharge using the procedures described in the following page(s).
4. Monitor tablets	• Check the supply of tablets in the tablet chamber or mesh pockets periodically to ensure that there is tablet remaining throughout the discharge.

Dechlorination:
Example 4 - Hydrants using Liquid Reagents

Appropriate Applications	If the discharge potentially contains other contaminants or very high flow volumes, other BMPs may need to be used in conjunction. ▪ Pipeline Flushing/Dewatering mains for maintenance or construction activities or to alleviate water quality issues. ▪ Pipeline Disinfection. ▪ Flow testing fire hydrants ▪ Hydrostatic Testing/New pipeline flushing and testing ▪ Well Maintenance ▪ Water Quality Testing ▪ Construction Dewatering

Task	Procedure
1. Prepare Sodium Thiosulfate Solution	• A 10% sodium thiosulfate solution can be prepared by mixing 6.0 lb of dry sodium thiosulfate in 5.0 gallons of water. When preparing the solution, be sure to use proper PPE.
2. Secure the area	• The solution needs to be added to the water stream at the start of flushing and until flow has stopped. • Put on safety vest and hardhat. Place flooded signs and cones around work area.
3. Check Chlorine Residual	• After adding sodium thiosulfate solution at the appropriate application rate, test the water for chlorine residual 10 feet downstream to allow sufficient contact time. If residual is detected, adjust application rate.
4. Place solution in the discharge flow.	• Install a dragon to the truck and attach to fire hydrant. • Attach chlorine line to bucket and then add to dragon.
5. Clean up	• Patrol the area for any debris or equipment that requires removal
6. Record and Report	• Record the chlorine residual on the discharge form and forward information to in-house contact for reporting purposes.

Dechlorination:
Example 5 - Disposal of Tablet and Reagent Waste

Shelf Life of Tablets	Tablets have a relatively long shelf life unless exposed to high temperatures (>85°F). At higher temperatures, tablets may crumble. During the summer months, crews may need to place enough tablets for daily use in coolers for storage on trucks at the beginning of each work day. Supply buckets stored in the yard must be kept in a cool location.
Disposal of Powdered Tablet Waste	As long as tablets are in large enough pieces to be retained within the mesh dechlor mat, diffuser chamber or diffuser mesh pockets, they can be used for dechlorination per the recommended procedures. Small amounts of powdery or granular tablet waste from tablet supply buckets or secondary containers should be mixed with water and discharged to the sanitary sewer via a utility sink.
Disposal of Contaminated Tablets	Please see MSDS for guidance on proper disposal methods or consult with your Environmental Compliance Coordinator.
Disposal of Unused DPD Reagent	Empty DPD reagent dispensers may be disposed of in the regular trash. DPD reagent dispensers that can no longer be used but still contain reagent (i.e., the reagent powdered has become solidified) should be stored in hazardous waste storage areas for pick up by hazardous waste disposal contractors.

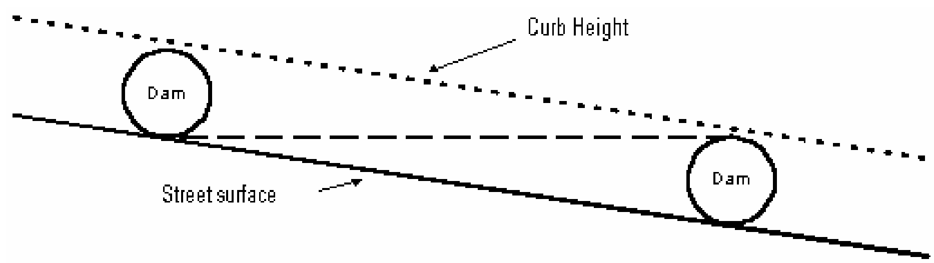
Erosion and Sediment Control: Example 1 - Pipelines & Hydrants	
Appropriate Applications	▪ Pipeline Flushing/Dewatering mains for maintenance or construction activities or to alleviate water quality issues. ▪ Pipeline Disinfection. ▪ Flow testing fire hydrants ▪ Hydrostatic Testing/New pipeline flushing and testing ▪ Well Maintenance ▪ Water Quality Testing
Limitations	If the discharge has very high flow volumes, other BMPs may need to be used in conjunction. This procedure requires some prior planning and may not be appropriate for unplanned discharges.

Task	Procedure
1. Evaluate release volume and character. v Compare with release point and conveyance to determine appropriate BMP use.	Ensure the health and safety of the public and workers. Set up traffic control and protect private property if necessary. Evaluate release area, water volume and flow path. Select appropriate BMP based on whether discharge flows over paved or unpaved areas. For discharges to paved streets, ensure that control devices fit properly for receiving system. (i.e. curb inlet, drop inlet, culvert, creek, etc.) Locate denuded or exposed areas that may be especially susceptible to erosion. Redirect flow when possible and use additional wattles as necessary to protect bare soil.
2. Remove debris from discharge flow path	Remove debris from planned discharge flow path. Use broom to sweep up gutters and remove loose material. Check nearest storm drain to make sure it is not clogged. If it's clogged, contact flood control, city maintenance or appropriate agency. If possible coordinate with street sweeping for scheduling of maintenance flushing activities.
3. Place sediment control devices in flow path	Place bags to form dams across (perpendicular to) the flow path and curb with the end of the dam (furthest from curb) curving slightly upstream. Dam height, length, the number of bags used and the interval between dams will vary depending upon site conditions and the resources available. It is recognized that there will be some circumstances where steep topography and/or high flow rates will preclude effective sediment removal using any of the current technologies. **The following criteria should be used to determine bag placement:** • **Dam Height -** The height of each dam should be slightly less than the height of the curb or other retaining structure that is acting to channel the flow. If it is equal to or higher than the curb, flow will be diverted onto the sidewalk and cause flooding. • **Dam Length -** The longer the dam, the greater the ponding area and the better the retention of sediment. However, dam length is limited by the number of bags available, traffic flow considerations and potential for flooding of

property. Bags and ponded water should not extend outside of coned areas into traffic lanes or onto private property.

- **Number of Dams & Distance Between Dams** – In general, the greater the number of dam locations between the discharge source and entry into storm drains or receiving waters, the greater the retention of sediment. A minimum of two dams should be used in all cases. The interval between dams must shorten as the ground surface gradient (slope) increases to maintain equivalent sediment removal rates. The rule of thumb for dam spacing is to place dams at intervals such that the elevation of the top of the downstream dam is equal to the elevation of the bottom of the dam immediately upstream (see drawing below).

  Dams should also be installed around drain inlets (DIs) affected by the water flow and a filter used over the DI to help contain sediment flowing into the DI. All impacted DIs should have BMPs implemented within reason. A dam and filter should be built around and over the first DI impacted by the flow.



4. Monitor flow and sediment control devices

Check the dams periodically to ensure they are staying in place and performing their function.

If required, record volumes of flow and obtain necessary measurements and observations for reporting purposes.

5. Clean up and disposal

- When the discharge is complete, allow any water that is ponded behind the dams to drain. Be sure storm drain inlet is protected. Shovel as much sediment as possible into a backhoe bucket or container. Move one of the dams to a location immediately upstream of the storm drain or to the point where the flow enters receiving waters to provide sediment control for the cleanup discharge.
- If possible, clean the flow path and upstream dams to remove residual sediment from the street. Retrieve all dam material and store in appropriate location.
- The sediment may be 1) spread out on an appropriate unpaved ground locally, if an appropriate location exists, 2) transported to a utility facility and deposited on an appropriate unpaved surface, if an appropriate location exists, 3) added to open trench spoils bins, or disposed of in a dumpster. Non-sediment debris, such as trash, must be disposed of in a dumpster or garbage can.

Erosion and Sediment Control: Example 2 - Unplanned Discharges	
Appropriate Applications	▪ Sheared fire hydrants ▪ Broken water mains ▪ System leaks
Limitations	To be used in unplanned or emergency situations.

Task	Procedure
1. Evaluate release volume and character. Compare with release point and conveyance to determine appropriate BMP use.	Ensure the health and safety of the public and workers first. Set up traffic control and protect private property if necessary. Isolate the main or service prior to any additional excavation needed to repair main break based on standard procedures. Select appropriate BMP based on whether discharge flows over paved or unpaved areas. For discharges to paved streets, ensure that control devices fit properly for receiving system. (i.e. curb inlet, drop inlet, culvert, creek, etc.) Locate denuded or exposed areas that may be especially susceptible to erosion. Protect and redirect flow when possible.
1. Remove debris from discharge flow path	Remove sediment and debris from the flow path to the extent possible. If there is surface flow and it is not appropriate to isolate the service, remove any sediment and debris that can be removed without causing it to become entrained in the flow.
3. Place sediment control devices in flow path	Follow instructions step 3 through 6 in example 1, considering the additional actions as necessary. • If the storm drainage system was clogged prior to the water line break resulting in water jumping to downstream DIs, then use sediment control equipment to contain the flow within reasonable conditions. • When the water main break flows to both sides of the street, BMPs will be used on each flow and the first DIs impacted.
4. Monitor flow and sediment control devices	As situation progresses, monitor flow and sediment control devices. Modify placement if necessary.
5. Clean up and disposal	Soil may be stockpiled in the vicinity of a service repair for a short period of time. The soil will be removed as soon as possible which is normally within a few days. If the soil will remain at the location for an extended period of time, additional protections such as tarps or berms should be employed to contain the soil.

Erosion and Sediment Control: Example 3 - High Flow Rate	
Appropriate Applications	These discharges potentially have high flow rates and high volumes of discharge. Subsequently they can potentially cause increased erosion and may require additional BMPs to control for flow and volume of discharge. • Aquifer Testing • Well Development
Limitations	If the discharge potentially contains other pollutants, other treatment BMPs may need to be used in conjunction. This procedure requires prior planning and may not be appropriate for unplanned discharges.

Task	Procedure
1. Evaluate release volume and character. Compare with release point and conveyance to determine appropriate BMP use.	Ensure the health and safety of the public and workers. Set up traffic control and protect private property if necessary. Evaluate release area, water volume and flow path. Select appropriate BMP based on whether discharge flows over paved or unpaved areas. For discharges to paved streets, ensure that control devices fit properly for receiving system. (i.e. curb inlet, drop inlet, culvert, creek, etc.) Water quality testing will determine if additional control measures are needed. The use of Baker tanks that have been fitted with screening material may be necessary to filter sediment for disposal. Additional water treatment may be needed depending on constituents of concern. On-site treatment equipment may needed to allow for removal of man-made and naturally occurring pollutants. Locate denuded or exposed areas that may be especially susceptible to erosion. Redirect flow when possible and use additional wattles as necessary to protect bare soil.
2. Remove debris from discharge flow path	Remove debris from planned discharge flow path. Use broom to sweep up gutters and remove loose material. Check nearest storm drain to make sure it is not clogged. If it's clogged, contact flood control, city maintenance or appropriate agency. If possible coordinate with street sweeping for scheduling of maintenance flushing activities.
3. Place sediment control devices in flow path	Place dams as indicated in example 1 or use another type of BMP, such as a Baker tank or settling pond as necessary.
4. Monitor flow and sediment control devices	Check the dams periodically to ensure they are staying in place and performing their function. If the sediment has built up to the top of any dam, remove sediment as necessary if an opportunity occurs (flow has temporarily ceased). Do not attempt to remove sediment during discharge. Record volumes of flow and obtain necessary measurements and observations for reporting purposes.
5. Clean up and disposal	Properly dispose of any collected sediment material as indicated in example 1. Additional arrangements for disposal of collected material in Baker tanks may be necessary.

APPENDIX B
WEBLINKS

AMERICAN WATER WORKS ASSOCIATION (AWWA):
Guidance Manual for the Disposal of Chlorinated Water http://www.vita-d-chlor.com/specs/AWWARFDechlorGuides.htm

CALIFORNIA STORMWATER QUALITY ASSOCIATION
CASQA Homepage http://www.casqa.org

CASQA BMP Handbooks: http://www.cabmphandbooks.com/

CALIFORNIA STATE WATER RESOURSES CONTROL BOARD
State Water Resources Control Board – Storm Water Program:
http://www.swrcb.ca.gov/stormwtr/index.html

Statewide Small MS4:
http://www.waterboards.ca.gov/stormwtr/docs/final_sm_ms4_fact_order.pdf

Statewide Permit: Discharges to Land with Low Threat to Water Quality, Order No. 2003-0003-DWQ http://www.swrcb.ca.gov/resdec/wqorders/2003/wqo/wqo2003-0003.pdf

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT, Stormwater Quality Management Committee Homepage http://www.lvstormwater.com/

CLARK COUNTY, NEVEDA MS4 PERMIT:
http://breccia.ccrfcd.org/pdf_arch1/npdes/Clark%20County%20MS4%20Permit%202003-2008.pdf

CITY OF RENO TRUCKEE MEADOWS REGIONAL STORMWATER QUALITY MANAGEMENT PROGRAM
http://www.cityofreno.com/gov/pub_works/stormwater/

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
http://ndep.nv.gov/bwpc/storm01.htm

STORMWATER AUTHORITY
Stormwater Resource Library http://www.stormwaterauthority.org/library/default.aspx

U.S. ENVIRONMENTAL PROTECTION AGENCY

U.S. EPA Stormwater Home Page http://cfpub.epa.gov/npdes/home.cfm?program_id=6

U.S. EPA Storm Water Discharges From Municipal Separate Storm Sewer Systems (MS4s)
http://cfpub.epa.gov/npdes/stormwater/munic.cfm

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U.S. EPA National Menu of Best Management Practices for Stormwater Phase II:
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/menu.cfm

U.S. EPA Stormwater Link Categories: http://cfpub.epa.gov/npdes/links.cfm?program_id=6

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARDS

CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

General NPDES Permit: Discharges with Low Threat to Water Quality (01-119)
http://www.waterboards.ca.gov/centralcoast/Permits/NPDES%20Permits/Order01-119/GeneralNPDESPermitLowThreatToWaterQuality.pdf

Central Coast RWQCB Storm Water Program (99-087)
http://www.waterboards.ca.gov/centralcoast/SWNEW/Index.htm

MS4 Permit:
City of Salinas (99-087)
http://www.waterboards.ca.gov/stormwtr/docs/salinas_permit_99_087.pdf

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

Central Valley RWQCB NPDES Program
http://www.waterboards.ca.gov/centralvalley/programs/npdes/npdes-prog-rpt.pdf

General NPDES Permit: Dewatering and other low threat discharges to surface waters
http://www.waterboards.ca.gov/centralvalley/adopted_orders/GeneralOrders/5-00-175.pdf

Central Valley Stormwater Program
http://www.waterboards.ca.gov/centralvalley/programs/stormwater/stormwater-prog-rpt.pdf

MS4 Permits:
City of Stockton and County of San Joajuin (R5-2002-0181)
http://www.waterboards.ca.gov/stormwtr/docs/stockton_r5_2002_0181.pdf

City of Modesto (R5-2002-0182)
http://www.waterboards.ca.gov/stormwtr/docs/modesto_r5_2002_0182.pdf

MS4 Permits (Cont.):
County of Kern and City of Bakersfield (5-01-130)
http://www.waterboards.ca.gov/stormwtr/docs/bakersfield_permit_5_01_130.pdf

County of Fresno, City of Fresno and City of Clovis (5-01-048)
http://www.waterboards.ca.gov/stormwtr/docs/fresno_permit_5_01_048.pdf

Contra Costa County, City of Antioch, City of Brentwood, and City of Oakley (5-01-048)
http://www.waterboards.ca.gov/stormwtr/docs/antioch_5_00_120.pdf

County of Sacramento and Applicable Cities (R5-2002-0206)
http://www.waterboards.ca.gov/stormwtr/docs/sacramento_r5_2002_0206.pdf

Port of Stockton (97-042)
http://www.waterboards.ca.gov/centralvalley/adopted_orders/SanJoaquin/R5-2004-0136.pdf

LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

General NPDES Permit: Limited Threat Discharges to Surface Waters (R6T-2003-0034)
http://www.waterboards.ca.gov/lahontan/Adopted_Orders/2003/R6T-2003-0034_Revised_LTD_NPDES_Permit.pdf

MS4 Permit:
City of South Lake Tahoe, Counties of El Dorado and Placer (00-82)
http://www.waterboards.ca.gov/lahontan/files/00-82.pdf

COLORADO RIVER REGIONAL WATER QUALITY CONTROL BOARD

Colorado River RWQCB NPDES Program
http://www.waterboards.ca.gov/coloradoriver/regulatory2/npdes.html

General NPDES Permit: Discharge of Hydrostatic Test Water to Surface Waters (98-300)
http://www.waterboards.ca.gov/coloradoriver/documents/general_board_orders/98-300gen.pdf

Colorado River RWQCB Stormwater Fact Sheet:
http://www.waterboards.ca.gov/coloradoriver/documents/board_orders/year_2001/01-077FactSheet.pdf

MS4 Permit:
Riverside County Flood Control District, County of Riverside, Coachella Valley Water District, Incorporated Cities of Riverside within the Whitewater River Basin (01-077)
http://www.waterboards.ca.gov/coloradoriver/documents/board_orders/year_2001/01-077wdr.pdf

SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD

General NPDES Permit: Discharges to Surface Waters of Process Wastewater Associated with Certain Wellhead Treatment Systems (R8-2003-002)
http://www.waterboards.ca.gov/santaana/pdf/03-02.pdf

Santa Ana RWQCB Stormwater Homepage:
http://www.waterboards.ca.gov/santaana/html/stormwater.html

MS4 Permits:
San Bernardino County Transportation, County of San Bernardino and Incorporated Cities of San Bernardino County within the Santa Ana Region. (R8-2002-0012)
http://www.waterboards.ca.gov/santaana/html/san_bernardino_permit.html

County of Orange, Orange County Flood Control District and Incorporated Cities of Orange County within the Santa Ana Region (R8-2002-0012)
http://www.waterboards.ca.gov/santaana/html/san_bernardino_permit.html

County of Orange, Orange County Flood Control District and Incorporated Cities of Orange County within the Santa Ana Region (R8-2002-0010)
http://www.waterboards.ca.gov/santaana/pdf/R8-2002-0010.pdf

Riverside County Flood Control and Water Conservation District, county of Riverside and Incorporated Cities of Riverside County within the Santa Ana Region (R8-2002-0011)
http://www.waterboards.ca.gov/santaana/html/riverside_permit.html

Policy for Waiving Waste Discharge Requirements for Specific Types of Waste Discharge

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NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD

(R1-2002-0080) including, Test Pumpings of Fresh Water Wells, Discharge from Flushing of Domestic Water Lines and Tanks, and Discharge from Hydrostatic Test Lines
http://www.waterboards.ca.gov/northcoast/orders/111502korRes20020080Oct15Final.pdf

North Coast RWQCB Storm Water Program
http://www.waterboards.ca.gov/northcoast/programs/npdesstorm.html

MS4 Permit:
City Of Santa Rosa and County Of Sonoma (Order No. R1-2003-0062)
http://www.waterboards.ca.gov/northcoast/orders/073103NPDES_MS4_SR_SO_SCWA.pdf

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SAN FRANCISCO REGIONAL WATER QUALITY CONTROL BOARD

San Francisco RWQCB NPDES General Permit Homepage
http://www.waterboards.ca.gov/sanfranciscobay/npdes_gen__permit.htm

General NPDES Permit: Discharges from Surface Water Treatment Facilities for Potable Supply (R2-2003-0062) http://www.waterboards.ca.gov/sanfranciscobay/Agenda/06-18-03/06-18-03-7torevised.doc

San Francisco RWQCB Storm Water Programs and Permits Homepage
http://www.waterboards.ca.gov/sanfranciscobay/news_items/Stormwater%20Programs%20Page%20-%20Web%20Site0805.htm

MS4 Permits:
County of Solano (R2-2003-0034) http://www.waterboards.ca.gov/sanfranciscobay/Agenda/04-16-03/04-16-03-7finalto.doc

County of San Mateo County (R2-2003-0034)
http://www.waterboards.ca.go v/sanfranciscobay/Agenda/02-19-03/02-19-03-14finalto.doc

County of Alameda (R2-2003-0021)
http://www.waterboards.ca.gov/sanfranciscobay/Agenda/02-19-03/02-19-03-12finalrev.doc

County of Contra Costa (99-058)
http://www.waterboards.ca.gov/stormwtr/docs/contra_costa_99_058.pdf

Count of Santa Clara (01-024)
http://www.waterboards.ca.gov/stormwtr/docs/santa_clara_01_024.pdf

County of Napa and City of American Canyon (2000-04)
http://www.waterboards.ca.gov/sanfranciscobay/OrderNum/00-004.doc

City of Vallejo (CAS612006)

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

General NPDES Permit: Discharges of Groundwater from Potable Water Supply Wells to Surface Waters (Order R4-2003-0108, CAG994005)
http://www.waterboards.ca.gov/losangeles/html/permits/gen_orders/R4-2003-0108/Order_R4-2003-0108.pdf

General NPDES Permit: Discharges of Low Threat Hydrostatic Test Water to Surface Waters (Regional Board Order R4-2004-0109, CAG674001) http://www.waterboards.ca.gov/losangeles/html/permits/gen_orders/R4-2003-0108/Order_R4-2003-0108.pdf

Standard Urban Storm Water Mitigation Plan (SUSMP):
http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/susmp/susmp_details.html

Los Angeles RWQCB Stormwater Program:
http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/sw_links.html

MS4 Permits:
County of Los Angeles:
http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/lams4.html

County Of Ventura:
http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/VentCoPermit.pdf

City of Long Beach:
http://www.waterboards.ca.gov/losangeles/html/programs/stormwater/LBpermitfinal.pdf

SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

San Diego Regional Water Quality Control Board – Examples of Standardized BMP's for Potable Water Discharges http://www.waterboards.ca.gov/sandiego/orders/order_files/R9-2002-0020/Doc%206_Example%20BMPs.PDF

General NPDES Permit: General Waste Discharge Requirements for Discharge of Hydrostatic Test Water & Potable Water to Surface Waters & Storm Drains or Other Conveyance Systems (Order R9-2002-0020, CAG679001): http://www.waterboards.ca.gov/sandiego/orders/r9-2002-0020.html

MS4 Permits:

County of San Diego: http://www.waterboards.ca.gov/sandiego/programs/rsd_stormwater.html

County of Riverside: http://www.waterboards.ca.gov/sandiego/programs/rsd_stormwater.html

County of Orange: http://www.waterboards.ca.gov/sandiego/programs/oc_stormwater.html

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Santa Clara Valley Urban Runoff Pollution Prevention Program. 2004. *Water Utility Pollution Prevention Plan.* September 1, 2004.

Ventura Countywide Stormwater Quality Management Program 2002. *Technical Guidance Manual for Stormwater Quality Control Measures*, July 2002

RB-AR24023

Environmental Impacts of Non-Treatment Discharges From Drinking Water Utilities

Subject Area:
Environmental Leadership

RB-AR24025

Environmental Impacts of Non-Treatment Discharges From Drinking Water Utilities

Awwa Research Foundation

About the Awwa Research Foundation

The Awwa Research Foundation (AwwaRF) is a member-supported, international, nonprofit organization that sponsors research to enable water utilities, public health agencies, and other professionals to provide safe and affordable drinking water to consumers.

The Foundation's mission is to advance the science of water to improve the quality of life. To achieve this mission, the Foundation sponsors studies on all aspects of drinking water, including supply and resources, treatment, monitoring and analysis, distribution, management, and health effects. Funding for research is provided primarily by subscription payments from approximately 1,000 utilities, consulting firms, and manufacturers in North America and abroad. Additional funding comes from collaborative partnerships with other national and international organizations, allowing for resources to be leveraged, expertise to be shared, and broad-based knowledge to be developed and disseminated. Government funding serves as a third source of research dollars.

From its headquarters in Denver, Colorado, the Foundation's staff directs and supports the efforts of more than 800 volunteers who serve on the board of trustees and various committees. These volunteers represent many facets of the water industry, and contribute their expertise to select and monitor research studies that benefit the entire drinking water community.

The results of research are disseminated through a number of channels, including reports, the Web site, conferences, and periodicals.

For subscribers, the Foundation serves as a cooperative program in which water suppliers unite to pool their resources. By applying Foundation research findings, these water suppliers can save substantial costs and stay on the leading edge of drinking water science and technology. Since its inception, AwwaRF has supplied the water community with more than $300 million in applied research.

More information about the Foundation and how to become a subscriber is available on the Web at **www.awwarf.org**.

RB-AR24027

Environmental Impacts of Non-Treatment Discharges From Drinking Water Utilities

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FOREWORD

The Awwa Research Foundation (AwwaRF) is a nonprofit corporation that is dedicated to the implementation of a research effort to help utilities respond to regulatory requirements and traditional high-priority concerns of the industry. The research agenda is developed through a process of consultation with subscribers and drinking water professionals. Under the umbrella of a Strategic Research Plan, the Research Advisory Council prioritizes the suggested projects based upon current and future needs, applicability, and past work; the recommendations are forwarded to the Board of Trustees for final selection. The foundation also sponsors research projects through an unsolicited proposal process; the Collaborative Research, Research Applications, and Tailored Collaboration programs; and various joint research efforts with organizations such as the U.S. Environmental Protection Agency, the U.S. Bureau of Reclamation, and the Association of California Water Agencies.

This publication is a result of one of these sponsored studies, and it is hoped that its findings will be applied in communities throughout the world. The following report serves not only as a means of communicating the results of the water industry's centralized research program but also as a tool to enlist the further support of the nonmember utilities and individuals.

Projects are managed closely from their inception to the final report by the foundation's staff and large cadre of volunteers who willingly contribute their time and expertise. The foundation serves a planning and management function and awards contracts to other institutions such as water utilities, universities, and engineering firms. The funding for this research effort comes primarily from the Subscription Program, through which water utilities subscribe to the research program and make an annual payment proportionate to the volume of water they deliver and consultants and manufacturers subscribe based on their annual billings. The program offers a cost-effective and fair method for funding research in the public interest.

A broad spectrum of water supply issues is addressed by the foundation's research agenda: resources, treatment and operations, distribution and storage, water quality and analysis, toxicology, economics, and management. The ultimate purpose of the coordinated effort is to assist water suppliers to provide the highest possible quality of water economically and reliably. The true benefits are realized when the results are implemented at the utility level. The foundation's trustees are pleased to offer this publication as a contribution toward that end.

David E. Rager
Chair, Board of Trustees
Awwa Research Foundation

Robert C. Renner, P.E.
Executive Director
Awwa Research Foundation

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EXECUTIVE SUMMARY

OVERVIEW

Drinking water utilities distribute treated, safe water to consumers, but utilities also periodically discharge and dispose of water from non-treatment activities. These non-treatment discharges (NTDs) can occur as a result of routine utility operations and maintenance activities such as tank/reservoir draining, hydrostatic testing and disinfection (from pipeline construction), main breaks/repairs, hydrant flushing (fire flow tests and water quality mitigation) and well pump outs. These routine activities are necessary for proper operation of a drinking water system to ensure the safety and quality of water to the consumer. NTDs can also be caused by unexpected or emergency events such as overflows, main breaks, hydrant flushings (emergency water quality mitigation), relief valve discharges and disposal of contaminated water. Typically NTDs comply with Federal and State drinking water standards and contain low levels of suspended solids and other constituents. However, despite the relatively high quality of these flows, they may still be subject to National Pollutant Discharge Elimination System (NPDES) regulation depending on the location of the discharge point.

The extent of regulation and permitting required for NTDs varies across the United States depending on the policies of the NPDES primacy agency. In most cases, no compliance issues exist for NTDs if the utility follows respective standard best management practices (BMPs) and notification procedures. However, in some cases, issues may exist that are related to compliance with surface water quality standards (WQS). Limits for trace metals, inorganics and organics in the receiving stream are sometimes lower than drinking water maximum contaminant levels (MCLs). NTDs may also contribute to flooding or erosion in the areas impacted by the discharges. This research project was conducted to address these operational discharges, including issues related to permitting, hydraulic and water quality conditions, and flooding/erosion. This report contains information to help a water utility address the operational, permitting, hydraulic, and erosion issues associated with NTDs.

REGULATORY REVIEW

In order to identify the types of NTDs that are currently regulated or may be regulated in the near future, a review of state regulations was performed. The review addressed current or planned individual, multiple source or general permits, along with crucial standards and BMPs that apply to storm water, combined sewer overflows, sanitary sewers, and receiving streams. Regulations from states throughout the country were researched to identify critical regulatory issues on a regional basis. Impacts of regulations related to groundwater protection and storm water discharge were also identified, as applicable to NTDs.

Under the CWA, the NTDs from a drinking water utility could require an NPDES permit if they have the potential to reach *Waters of the United States (Waters of the U.S.).* This section summarizes the types of NTD streams that are currently regulated under various general and individual permits by the states of the U.S. In addition, published literature was reviewed for BMPs which can be utilized by water utilities to comply with various regulations affecting NTDs.

General requirements under an NPDES permit include monitoring for water quality parameters to demonstrate the potential impact of the discharge on the quality of the receiving water and development and implementation of site-specific BMPs to minimize volume of the discharges, introduction of contaminants into the environment, and erosion caused by the discharge. NPDES requirements also include reporting of monitoring results and notification of noncompliance activities.

There are two basic types of NPDES permits: individual and general. An individual permit is tailored for a specific facility based on an individual application. A general permit covers multiple facilities within a specific category, industry, or area. General permits offer a cost-effective and efficient option for agencies to cover a large number of facilities with elements in common under one permit.

Overall, NTDs are regulated more widely in Western states versus Northeast and Midwest states. In California, nine regional water quality boards regulate their jurisdictions with their own version of permits with different conditions. Some water utilities are regulated by more than one regional board and have to follow different permit conditions for the same distributed water. Unified regulatory criteria in a state would simplify the process for the utilities as well as regulatory agencies.

CURRENT UTILITY PRACTICES

A utility review was performed to gather information on the types, quality, and quantity of discharges and the particular NTD issues that utilities face, based on operational experience. The surveys were conducted to identify the specific types of NTDs and addressed utility specific and non utility specific discharges.

The survey was distributed to the participating case study utilities and to at least three utilities in each of the other geographical regions. The utility survey was sent electronically in March 2006 to 49 drinking water utilities. The utilities completing the survey represented a wide range of water quality, current regulations in place, and hydrological profiles. Responses were received from 19 drinking water utilities. Of the 19 drinking water utilities that responded, 15 utilities have policies and regulations in place for NTDs.

Dechlorination is commonly practiced by a majority of water utilities due to receiving water standards. Other water quality parameters of concern include pH, phosphorus (where a phosphate-based corrosion inhibitor is used), ammonia (chloraminating systems), total suspended solids, THMs and organic contaminants found in pipe linings, and certain trace metals (copper, selenium, etc.). Whole effluent toxicity assays are generally not required by most states. Dechlorination chemicals work adequately, however, utilities expressed concerns with their handling by workers and issues regarding unattended dechlorination devices. Survey results showed that utilities feel that more research is needed on the toxic effects of dechlorination chemicals on receiving waters. One significant permitting issue common to most utilities is the low chlorine residual detection limit that most NPDES permits require to demonstrate compliance. Current test methods do not reliably measure chlorine at levels below 5 µg/L.

UTILITY CASE STUDIES

As part of the project, field testing activities were conducted at seven of the 11 participating utilities to characterize their NTDs and assess the impacts that the discharges have on soil, receiving waters, and biota. Water quality samples were collected to adequately represent the nature of typical discharges occurring within a PWS and to assess the environmental impacts of these discharges. The field sampling results and a review of historical data from the case study water systems indicate that the constituents that are present in NTDs above detectable levels include chlorine, ammonia (chloraminating systems), phosphorus (where a phosphate-based corrosion inhibitor is added), oil and grease (from well lube oils), phosphorus (some regions), THMs, trace metals (selenium, copper, iron), elevated pH levels, and VOCs (pipe linings). The levels of these constituents can pose concerns with surface WQS compliance based on site specific factors. If these concerns are mitigated, either by BMPs or simple chemical treatment prior to discharge, the environmental impacts to receiving stream quality, TMDL mass loadings, and aquatic life can be minimized.

BEST MANAGEMENT PRACTICES FOR NON-TREATMENT DISCHARGES

If a utility discharges an NTD to a receiving water, it must meet the specified limits in its permit, as well as water quality standards established for a receiving water. The specified permit requirements are generally met by adopting BMPs approved by the regulatory agencies. Prevention and minimization of NTDs are integral parts of a well-developed BMP plan. Treatment BMPs are developed when NTDs require additional treatment for pH control, dechlorination, or other constituents of concern. Non treatment BMPs relate to volume minimization, pollution prevention, erosion control, and other preventive methods. Adoption and use of BMPs relaxes the monitoring requirements for NTDs. Based on the typical BMPs followed by water utilities, guidance BMPs were developed which can be adopted by a water utility after incorporating site specific modifications (NCS, 2003).

GUIDANCE FOR UTILITIES AND REGULATORY AGENCIES

Based on the findings of this project, guidance was developed to provide decision analysis tools to assist system operators and regulators with appropriate methods for disposing of NTDs from water systems. The findings presented from the literature review, regulatory and utility surveys, field monitoring activities, workshops, and BMP development tasks have been integrated into an overall planning tool. The guidance is presented by type of discharge and a list of disposal priorities has been developed for each type. Key regional issues are also identified to assist utilities in developing and complying with multi-source or general NPDES permits.

CHAPTER 1
INTRODUCTION

PREFACE

Drinking water utilities periodically discharge water from non-treatment activities as part of normal utility operations. These discharges occur as a result of distribution system flushing, well development and maintenance, well flush outs, reservoir maintenance, pipeline repair and construction, and equipment malfunctions or hydraulic conditions in the distribution system that cause reservoir and tank overflows. Some of these discharges are planned activities while others are not planned and occur because of emergencies. Many of these non-treatment discharges (NTDs) contain low levels of suspended solids and other pollutants but comply with Federal and State drinking water standards. However, despite the high quality of these flows, they may still be subject to National Pollutant Discharge Elimination System (NPDES) regulations depending on the location of the discharge point. Since these discharges are regulated by state and local regulatory agencies, the extent of regulation and permitting required for these discharges varies across the United States, depending on the rules and policies of the NPDES primacy agency.

Historically, many water systems have performed these activities without considering NPDES impacts or permitting criteria. Although this approach may have been acceptable in the past, many regional NPDES primacy agencies now require some form of regulation for these NTDs to demonstrate Clean Water Act (CWA) compliance. Additionally, complying with CWA provisions in some form will protect water system operators from citizen lawsuits regarding NTDs and future enforcement actions from the NPDES primacy agency.

In most cases, compliance issues can be minimized for these discharges if the utility implements best management practices (BMPs) and follows notification procedures. In some instances, issues relating to surface water quality standards (WQS) compliance may exist, as limits for trace metals, inorganics and organics in the receiving stream are sometimes lower than the drinking water maximum contaminant levels (MCLs). At certain locations, these activities may also cause flooding or erosion in the areas impacted by the discharges. This research project was conducted to address these operational, permitting, hydraulic, and erosion issues. The need to treat these NTDs to minimize environmental impacts is also addressed.

BACKGROUND

NTDs can originate from either specific facilities (e.g., tanks, booster stations, and relief valves) or unspecified locations in the distribution system. Discharges from wells, reservoirs, booster stations, relief valves and tanks occur at specific locations that can be monitored, both hydraulically and with respect to water quality. These are individual sites that can be identified with respect to their location, attributes, and operational considerations. In contrast, potential unspecified locations do not allow a similar approach, as water main breaks and repairs and new main construction activities can potentially occur at thousands of undetermined locations.

Utilities may discharge NTDs to receiving waters such as streams, lakes, sanitary sewers, storm water conveyances, canals, and irrigation waterways. Land application (retention basins) or discharge to a dry wash are other possible options. In addition, some utilities discharge to combined sewer overflows (CSOs). In many instances, NPDES permits may not be required for drinking water facilities that discharge to storm drain channels or pipelines that are covered by other NPDES permits, providing the discharges are not a source of pollutants, and the operators of the conveyances that receive the discharges accept them.

However, CSOs, sanitary and/or storm sewers may be under the jurisdiction of other agencies that have specific requirements governing additional discharges. For example, a storm water agency may limit additional discharges to their conveyances during storm events in order to limit wet weather discharges. In many instances, a water system is separate from the storm water agency, and this situation may further complicate disposal of NTDs to storm water conveyances.

WATER SYSTEM OPERATIONAL CONSIDERATIONS

NTDs are necessary for proper operation of a drinking water system to ensure the safety and quality of water to the consumer. Planned NTDs include tank/reservoir drains, hydrostatic testing and disinfection water (from pipeline construction), water from main repairs, routine hydrant flushings for fire flow tests and water quality mitigation, and well pumpouts. Unplanned NTDs include overflows, water from main breaks, routine hydrant flushings for emergency water quality mitigation, relief valve discharges and disposal of contaminated water. With the exception of hydrant flushings, these discharges are occasional and are of high enough quality such that they do not pose any significant compliance issues with respect to the intent of the CWA. However, if levels of chlorine, oil and grease, nutrients, trace metals, or organic contaminants are present above CWA limits, and these discharges reach *Waters of the U.S.,* NPDES criteria must also be evaluated (even though the discharges comply with drinking water standards). Some method to ensure CWA regulatory compliance for NTDs is desirable from the water utility's perspective.

SUMMARY OF RESEARCH APPROACH

A literature review of related information and research was conducted. This included reviews of published literature, unpublished literature that the authors and utility participants had access to, Internet-based searches, and regulatory agency Web sites. A regulatory survey was conducted in which 23 state and regional NPDES primacy agencies responded to a questionnaire regarding their policies and regulations on drinking water NTDs. A utility survey was conducted to which 19 water systems across the nation responded and provided information about their operational procedures and regulatory practices on NTDs. Further, six utility case studies were conducted to characterize NTDs, evaluate the environmental impacts of these discharges on aquatic biota, and document the management strategies that are being used to deal with these discharges. Field sampling of various NTD streams were conducted as part of these case studies. In addition, two regional workshops were conducted to discuss findings from the project and obtain additional information on utility and regulatory policies, procedures, key regional issues, and program implementation.

OBJECTIVES

The primary objectives of this project were to document the types and characteristics of various NTDs and develop practical and effective management techniques for these discharges that comply with the provisions and intent of the CWA. An assessment of the environmental impacts (e.g., on aquatic biota, wildlife, and soils) was also performed as a baseline indicator of the potential risks associated with these discharges. Practical and cost-effective BMPs and monitoring programs were identified along with appropriate notification and communication programs. A review and evaluation of existing BMPs that minimize the environmental impacts of NTDs was also performed.

Water utilities that discharge NTDs to either *Waters of the U.S.*, storm drains or conveyances, sewers, or retention areas will be impacted by regional regulatory drivers under the CWA. Instead of individual approaches for each utility within a region or state, this project developed uniform guidelines that could be used as a reference for future regional NPDES general permits (GPs) for NTDs. Utilities can use this guidance to assist with determining the appropriate actions and documentation for these discharges, based on the ultimate discharge location.

REPORT ORGANIZATION

Chapter 2 presents a summary of surveys of state regulatory information and review of state documents focusing on managing NTDs from drinking water utilities. This regulatory information should serve as examples of the type of regulation for NTD, but is not a comprehensive review of all state regulations.

Chapter 3 summarizes and discusses the results of a survey sent to utilities to gain information on current and planned utility practices related to the permitting and management of NTDs in various regions of the U.S.

Chapter 4 presents the results of the case studies, which were conducted at the City of Portland, Oregon Water Bureau (PWB), City of Phoenix, Arizona (COP), Contra Costa Water District, California (CCWD), District of Columbia Water and Sewer Authority (DCWASA), Metropolitan Water District of Southern California (MWD), Arizona American Water Company (AAWC), and Golden State Water Company, California (GSWC). The protocol for the field sampling activities conducted at the seven drinking water utilities is also discussed. This chapter also compares regulatory and monitoring requirements for the case study utilities.

Practical and cost-effective BMPs and monitoring programs are identified in Chapter 5 along with appropriate notification and communication programs for portable treatment systems. An overview of currently practiced BMPs, including several novel technologies to minimize the environmental impacts of NTDs, is also provided in the chapter.

Chapter 6 provides guidance for utilities and regulatory agencies on effective management and disposal options for NTDs based on their quantity and quality. The chapter also focuses on various regional issues, receiving water body characteristics and their impact on disposal practices. For each type of NTD, a list of recommended activities was developed to assist utilities in complying with permitting, water quality issues, and BMPs. The guidance provides practical approaches in regulating these discharges that meet CWA requirements, while providing operational flexibility to utilities.

Several appendices to the report are included which provide detailed information and data on the survey, literature review, regulatory review, field testing activities, and BMPs. Specifically, Appendix F presents a detailed discussion on the two workshops conducted during the project. This appendix summarizes the findings of the workshops, presents utility and regulatory agency perspectives, and discusses future regulatory direction and various NTD issues.

CHAPTER 2
REGULATORY REVIEW

INTRODUCTION

In order to identify the types of NTDs that are currently regulated, or may be regulated in the near future, a review of state regulations was performed by searching each state's Web site and by surveying selected CWA agencies in various regions. The review addressed current or planned individual, multiple source or GPs along with crucial standards and BMPs that apply to storm sewers, CSOs, sanitary sewers, and receiving streams. Regulations from states throughout the U.S. were researched to identify critical regulatory issues on a regional basis. Impacts of related regulations such as groundwater protection, storm water discharge, and other incidental applications were also considered. In general, there is limited information available on NTD regulation and there is significant variability across the U.S. in the amount of published regulations on NTDs.

The NTDs from drinking water systems may contain certain constituents that can potentially pose a threat to aquatic life. For example, chlorine that is widely used as a disinfectant in drinking water to protect humans from pathogens may become toxic to aquatic life at or above certain concentrations in the receiving water. Sediment and debris (also considered pollutants) can be picked up in the flow path of the NTD stream after it leaves the potable water system and may impact compliance with surface WQS. Sediment and debris can clog storm drains and cause impairments in a water body (Arizona Department of Transportation [ADOT], 1995).

Under the CWA, the NTDs from a drinking water utility could require an NPDES permit if they have the potential to reach *Waters of the U.S.* This chapter describes the types of NTD streams that are currently regulated under various GPs and individual permits (IPs) by CWA regulatory agencies. Regulatory information was obtained from surveys of state regulatory information and review of state documents focusing on managing NTDs from drinking water utilities. This information is intended to provide examples of the type of NTD regulations that exist, but is not a comprehensive listing of all state regulations. Since these types of regulations are constantly evolving, utilities should consult their local or regional regulatory authorities for current information regarding NPDES permitting details for NTDs. A state NPDES contact list is provided in Appendix A.

REGULATORY FRAMEWORK

The NPDES, which was authorized by the CWA, is a permit program that controls water pollution by regulating point sources that discharge pollutants into *Waters of the U.S.* The program is administered by states, tribes, and territories that are authorized through a process defined by the CWA. The program has also been extended in some instances to cover non-point sources, as with the storm water program. Currently, 45 states in the U.S. and one territory (U.S. Virgin Islands) are authorized to administer the NPDES program. The United States Environmental Protection Agency (USEPA), in coordination with the authorized agencies, the regulated community, and the public develops, implements, and conducts oversight of the NPDES permit program based on statutory requirements contained in the CWA and regulatory requirements contained in the NPDES regulations. As changes to the NPDES regulations are needed, USEPA issues proposed and final rules related to the NPDES permit program.

Under the CWA, the NTDs from a drinking water utility could technically require an NPDES permit if they have the potential to reach *Waters of the U.S.* or discharge to conveyances, washes or streams that are tributary to *Waters of the U.S.* General requirements under an NPDES permit include monitoring for water quality parameters to demonstrate the potential impact of the discharge on the water quality of the receiving water and development and implementation of site-specific BMPs to minimize volume of the discharges, introduction of contaminants into the environment, and erosion caused by the discharge. NPDES requirements also include reporting of monitoring results and notification of noncompliance issues.

A permit can be defined as a license for a facility to discharge a specified amount of a pollutant into a receiving water under certain conditions. There are two basic types of NPDES permits: IP and GP. An IP is tailored for a specific facility based on an individual application. A GP covers multiple facilities within a specific category, industry, or area. GPs offer a convenient and cost-effective and efficient option for agencies to cover a large number of facilities with elements in common under one permit. A GP could be written to include all facilities within a common geographic area that:

- Involve the same or substantially similar types of operations.
- Discharge the same types of wastes.
- Require the same effluent limitations or operating conditions.
- Require the same or similar monitoring requirements.

General NPDES permit programs have been developed for CSOs, municipal separate storm sewer systems (MS4s), and animal feeding operations. In many states, GPs have been developed specifically to regulate NTDs from drinking water utilities. These are discussed later in this chapter under the section describing and discussing the regulatory survey.

WATER QUALITY STANDARDS

In order to protect the designated uses of surface waters, many states have adopted WQS depending on the level of protection required. The WQS regulation requires that states and authorized Indian tribes specify appropriate water uses to be achieved and protected. Appropriate uses are identified by taking into consideration the use and value of the water body for public water supply, for protection of fish, shellfish, and wildlife, and for recreational, agricultural, industrial, and navigational purposes. In designating uses for a water body, states and tribes examine the suitability of a water body for the uses based on the physical, chemical, and biological characteristics of the water body, its geographical setting and scenic qualities, and economic considerations.

Section 304(a)(1) of the CWA requires the USEPA to develop criteria for water quality that accurately reflects the latest scientific knowledge. These criteria are based solely on data and scientific judgments on pollutant concentrations and environmental or human health effects. Criteria are developed for the protection of aquatic life as well as for human health.

Aquatic Life (AL) criteria lists chemical concentration goals to protect surface water for aquatic life use. Subcategories of the AL criteria include warm water, cold water, and salt water standards. For aquatic uses, chronic standards for contaminants are established to protect the long term impacts on the aquatic life. Acute standards are also established to protect short term incidents with elevated levels for the same contaminants. For some trace metals, the aquatic standards vary by the level of hardness in the water, which impacts the uptake capacity of the aquatic organisms.

Biological criteria are based on the numbers and kinds of organisms present and describe the biological condition of aquatic communities inhabiting surface waters. Microbial (pathogen) criteria are used to protect the public from exposure to harmful levels of pathogens in ground and surface waters, food sources, and drinking water sources. Human Health includes criteria to protect the surface water on potential drinking water and incidental human contact uses of a stream. Agricultural and irrigation criteria are also developed to protect such uses of a water body. Nutrient criteria (e.g., nitrogen and phosphorus) are developed to prevent over enrichment in surface *Waters of the U.S.*

States may also develop criteria for ephemeral streams (predominantly dry washes with occasional storm flows), wastewater effluent dependent waters and other site specific conditions. For AL standards, contaminants are regulated on acute (short term exposure) and chronic (long-term) levels. Acute levels are generally several fold higher than chronic levels and given the occasional nature of NTDs, are more applicable for these types of discharges.

One or more of the uses or criteria may apply to a particular receiving stream, depending on the number of designated uses that the state or water quality governing board has determined to apply to the receiving stream. The numeric values and basis for setting the WQS for each contaminant are generally consistent, using standards such as the Gold Book (USEPA, 1986) or other accepted sources. State and local factors do apply, however, with respect to individual contaminants, given use attainability and total maximum daily load (TMDL) issues. As such, WQS for certain constituents may vary from the aforementioned published values. The ability of water systems to comply with WQS in an NTD is largely dependent on the designated uses of the receiving stream.

FUTURE REGULATORY CONSIDERATIONS

In addition to current WQS under the CWA, more stringent requirements may apply from ongoing TMDL activities, where receiving streams designated as impaired may be required to lower discharge standards for certain contaminants, resulting in more stringent criteria for NTDs to comply with. For these issues, utilities must understand the receiving stream standards to assess the impact of their NTD streams. Additionally, more stringent storm water permitting approaches, including numerical limits, have been used by NPDES primacy agencies in implementation of the storm water regulations. Previously, permit limits were not applied to storm water discharges and a BMP-based approach was primarily used. These will impact NTDs to storm drains and conveyances because the more stringent compliance criteria will likely be passed on to the water system from the storm water utility that receives the NTDs (a "trickle down" effect).

REGULATORY INFORMATION SYNOPSIS

NTD regulatory information was obtained for 25 of the 50 states, based on Web site research, telephone calls, emails, and survey tool developed for this project. Details of the permitting requirements for each state are included in Appendix A. Utilities are encouraged to contact their state or regional NPDES permitting officials to discuss the appropriate approach for permitting NTDs for their water system.

Based on the information obtained for this project, 25 states regulate at least one NTD. Thirteen states do not regulate the NTDs directly, but one or more of these discharges may be regulated under other facility permit programs. Regulatory information was not available for twelve states based on Web site research and telephone discussions, and e-mails. The types of NTDs regulated by the 25 states include pipeline dewatering; hydrostatic test waters from pipelines, tanks, or other similar vessels; well pumpouts, tank drain and maintenance activities; disinfection waters; well pump testing; hydrant flushing; and other high quality, short term discharges. Hydrostatic test water was the most commonly regulated NTD.

Of the 25 states that were determined to regulate NTDs, 20 use GPs. Three states use either a GP or an IP to regulate NTDs. One state uses an IP to regulate NTDs. One state uses a temporary permit to regulate NTDs. In addition to NPDES regulations some states also have groundwater permitting regulations, which may also regulate retention and percolation of NTDs.

Most states regulating NTDs require an advance notice of intent (NOI) for the discharge, though the notice period varied. Most regulating states require a BMP plan, sediment and erosion control, dechlorination, and compliance with receiving stream WQS. The reporting requirements varied with states, but most states require to report non compliance within five days of receipt of analytical results.

Generally, an NOI describing the NTDs and a BMP plan to minimize the impacts of the NTDs is required for all GPs. Dechlorination, and erosion and sediment control are generally recommended in many GPs, as site specific conditions dictate. Within the GPs, NTD monitoring requirements vary from state to state. In many states, a utility is required to propose monitoring of expected pollutants in NTDs based on the potential for a contaminant to be present in the discharge stream. Historical water system data can be used to help make this assessment. The type of parameters that are typically required to be monitored may include flow, oil and grease, total suspended solids (TSS), total residual chlorine (TRC), pH, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total dissolved solids (TDS), total petroleum hydrocarbons (TPH), nitrogen, settleable solids, nitrates, phosphorus, sulfides, dissolved oxygen (DO), critical organic and inorganic contaminants (IOCs), iron, and polynuclear aromatic hydrocarbons (PAH). This represents a compiled list across all regions and all of the parameters are not required in any one GP. In some instances, discharge monitoring and disposal requirements may vary with the classification of receiving waters (dry wash versus flowing stream).

Treatment or blending of specific pollutants (trace metals and volatile organic compounds [VOCs]) is required for NTDs if the discharge levels are of concern. In rare instances, an acute whole effluent toxicity (WET) test may be required for some NTDs, depending on the receiving stream characteristics.

One key issue is agency notification; utilities should check with the regulatory agency to verify notification requirements. For example, in Pennsylvania, a water main break incident report is required to avoid discharge of chlorinated water into surface waters. Connecticut also regulates discharge of hydrostatic testing of NTDs into sanitary sewers.

Some states do not have a GP for NTDs and the water system must file an IP for disposal of NTDs. Some states allow a utility to use either a GP or an IP. In these cases, the GP should be reviewed to ensure that efficient flexibility is provided in operations before finalizing the decision. A GP is typically easier and quicker to obtain, but an IP may provide more flexibility.

REGULATORY SURVEY

As part of the regulatory review, a tabular survey was developed to obtain information directly from state agencies on regulations pertaining to the types, quality, and quantity of discharges resulting from non-treatment drinking water utility operations. The full survey (see Appendix B) addressed state experience in regulating NTDs and included information requests on current rules, policies, and guidance in place for management, reporting, and monitoring criteria.

The survey was sent electronically in March 2006 to all 50 U.S. state agencies that regulate or assist USEPA in regulating the CWA, and to eight regional water quality control boards (RWQCBs) in California. The research team contacted the appropriate personnel at each agency via both email and telephone after the survey was initially sent to follow-up on the status of the responses. The states were grouped into eight regions (not the same as USEPA Regions) to represent common water quality, climate, and geographic considerations, as shown later in Figure 6.1. The regions included Pacific Northwest, Far West, Southwest, South, Southeast, Midwest, Northeast, and North.

Completed responses were received from 20 states and three California RWQCBs, resulting in a total of 23 completed state regulatory surveys. The survey respondents were located in 21 states and seven geographical regions—Pacific Northwest (Alaska, Idaho), Far West (California region 4, Oakland, Santa Ana), Southwest (Arizona, Colorado), South (Arkansas), Southeast (Tennessee, Florida), Midwest (Kansas, Wisconsin, Michigan, Iowa, Minnesota, Nebraska), and Northeast (Connecticut, Virginia, Maryland, Delaware, Massachusetts, West Virginia, Rhode Island). No responses were received from the North region. A tabulation of the responses is presented in Appendix C.

Of the 21 states that responded, 16 states have policies and regulations in place for NTDs, and five of these states do not regulate any NTDs for a public water system (PWS). Completed surveys were received from approximately one-half of the respondent states that have the most stringent and defined regulatory standards. Appendix C includes a tabular summary of the survey responses from all the participating agencies.

CHAPTER 3
CURRENT UTILITY PRACTICES

UTILITY SURVEY

A utility survey was conducted to gather information on the types, quality, and quantity of discharges and the particular NTD issues that utilities face, based on operational experience. The survey was distributed to the participating case study utilities and to at least three utilities in each of the other geographical regions. Similar to the regulatory survey, the utility survey was sent electronically in March 2006 to 49 drinking water utilities. The survey included open-ended queries to facilitate easy completion and encourage a high response rate (the complete survey is included in Appendix D). The research team began the follow-up activities in mid-March and contacted each respondent via both email and telephone. The survey was conducted using an electronic format (spreadsheet).

The utilities completing the survey represented a wide range of water quality, current regulations in place, and hydrological profiles. Responses were received from 19 drinking water utilities. The survey respondents were located in 12 states and eight geographical regions. The geographical regions and states represented by the respondents included the Pacific Northwest (Oregon, Idaho), Far West (California, Nevada), Southwest (Arizona, Colorado, New Mexico), South (Texas), North (South Dakota), Midwest (Illinois), and Northeast (Pennsylvania, Maryland, Washington, D.C.). No responses were received from the Southeast. The survey responses are detailed in Appendix E (Tables E.1 through E.3). Of the 19 drinking water utilities that responded, 15 utilities have policies and regulations in place for NTDs. The key issues and critical information from these responses are discussed below.

Utility information was obtained from surveys of drinking water utilities and reviews of water quality data obtained with the cooperation of drinking water utilities. This information should serve as examples of the type of NTD flows, quality, and management activity, but is not meant to be representative of all activities in the state.

MONITORING AND REPORTING REQUIREMENTS

Various NTDs and their monitoring requirements for each utility are listed in the following sub sections. The NTDs are classified as planned, unplanned, and emergency discharges.

Planned Discharges

Planned discharges result from operations and maintenance (O&M) activities such as disinfection of mains, testing of hydrants and routine flushing of distribution system lines and mains for maintenance. Several utilities from six states indicated that they are required to provide advance notice to the state regulatory agency for any planned NTDs. The respondents indicated that South Dakota requires at least a month notice prior to any discharge; while Maryland requires 48 hours notice for discharges greater than 100,000 gallons.

Emergency and Unplanned Discharges

Emergency discharges are urgent in nature and are harder to manage due to limitations in response time, staff availability and the difficulty in containing these discharges. One utility from California (Corona) indicated that the state regulates emergency discharges resulting from system failure, pressure release, etc. Corona reported a frequency of five times in a year for this type of discharge. These requirements generally consist of responding to the leak and repairing it in a timely manner, and taking responsible remedial measures to dechlorinate and control erosion.

Reporting Requirements

Of the survey respondents, approximately three-fourths (14 utilities out of 19 respondents) have some kind of reporting requirement. Colorado and certain California regions (e.g., Carson) require an annual monitoring report. In Idaho, reporting requirements depend on the water quality parameters; parameters such as maximum residual disinfectant level (MRDL) and total organic carbon (TOC) are required to be submitted monthly; total trihalomethane (THM) and haloacetic acid (HAA) are required to be monitored quarterly; and VOCs, synthetic organic chemicals (SOCs), IOCs, and radiological parameters are required annually. Most of the utilities in the states of Illinois, California, Oregon, and South Dakota indicated that they are required to submit monthly discharge monitoring reports (DMRs).

Concerns With Water Quality Standards Compliance

The majority of the survey respondents (11 of 19) had no concerns about NTDs and surface WQS compliance. Four systems did not answer the question. PWB, Oregon had concerns about phosphorus and TRC while Denver, Colorado, also had concerns about TRC. MWD, California, had concerns about TSS, TDS, and chlorine in flushing discharges.

Monitoring Parameters

Most of the survey respondents perform some type of water quality monitoring of NTDs. Only three of the 19 respondents do not perform any monitoring at all while two respondents did not answer the question. Regional considerations did not seem to be a factor in the type of parameters that systems monitor. Thirteen systems monitor for TRC. Philadelphia, Pennsylvania, also observes the receiving stream for fish kills. Ten systems monitor for pH, five systems monitor for turbidity, and nine systems monitor for TSS. Nine systems monitor for oil and grease while five systems monitor for TPH. Two western systems, MWD, California; and COP, Arizona; monitor for TDS; while COP, Arizona and PWB, Oregon; monitor for phosphorus. COP also monitors for nitrates. Sioux Falls, South Dakota, monitors for certain VOCs. COP and Carson City, Nevada, monitor for microbial parameters.

Typical Monitoring Frequencies

Monitoring frequencies reported in the survey varied significantly depending on the region and the type of permit. Eight systems in California, Colorado and Nevada monitored each event. Santa Ana, California; Carson City, Nevada; Fountain Valley, California; and Orange County, California, also monitor during the first 30 minutes of each discharge. COP, Arizona, conducts 20 representative sampling events per year while PWB, Oregon, monitors daily and Sioux Falls, South Dakota, monitors weekly. From the results of the survey, it seems that more systems are required to monitor in the West compared to the rest of the United States.

Types of BMPs Used

It was apparent from the responses that BMPs are more widely used in the West than in other locations in the country. Four water systems use dechlorination BMPs while three also use erosion control BMPs. The erosion control devices included plastic sheets, silt screens, and sand bags. Flow control is also important to several of the respondents. Continuous monitoring was listed as a BMP by Orange County, California. Public notification was identified as a BMP by Grants, New Mexico.

Discharge to MS4 Systems

Seven of the 19 survey respondents indicated that higher quality NTDs could be discharged to MS4 systems without additional permitting. These included most overflows, well flushing, pipeline repair and maintenance, hydrostatic test water, and disinfection water. All respondents that indicated that this practice was feasible were located in the Southwest, Far West, or Pacific Northwest regions.

Frequency of Discharges and Their Regulation

The most common types of NTDs monitored by drinking water utilities are hydrostatic testing of pipelines, pipeline repair and maintenance, and pipeline disinfection test waters, which are monitored by 12 of the responding utilities. The frequency of distribution system flushing ranges from 6,000 hydrant flushings per year (Sioux Falls, South Dakota) to once per year (Denver, Colorado and Lewiston, Idaho). Well development/maintenance is a rare activity and typically occurred only once or twice per year. However, in California, at utilities such as Fountain Valley, Orange County, and Santa Ana, these discharges occur approximately 60 times in a year. Reservoir maintenance depends on the number of reservoirs a utility owns. The frequency ranges for each reservoir from once per year (Carson City, Nevada) to once every five years (PWB, Oregon). The frequency for pipeline repair and maintenance depends on the size of the utility. Typically, it is a non-routine activity which is conducted when needed. Based on the data collected, the frequency ranges from one or two times per year (Carson, California) to approximately 2,000 times per year (Philadelphia, Pennsylvania). Hydrostatic testing of pipelines and pipeline disinfection test waters have similar frequencies. The frequency for these discharges ranges from none to approximately 150 (Philadelphia, Pennsylvania) times per year. As seen from the data in Appendix E (Tables E.2 and E.3), the quantity of NTDs per event varies widely amongst the utilities and depends on the type of discharge.

REGIONAL CONSIDERATIONS

The utility survey was targeted for responses from representatives from the following geographical regions: Pacific Northwest, Far West, Southwest, South, Southeast, North, Midwest, and Northwest. The responses and key issues by region are discussed below.

Pacific Northwest

Two of the responding utilities (Lewiston, Idaho, and PWB, Oregon) are located in the Pacific Northwest region. Both of these utilities indicated that they have an NPDES permit for well development and maintenance. No other NTDs are regulated in the Pacific Northwest region, according to the results of this survey. PWB indicated it has an issue with chlorine and phosphorus levels in these discharges under the state regulations. None of the regulated NTDs are allowed to be discharged to permitted MS4 systems; sewer discharge is the preferred option. However, in Lewiston, Idaho, distribution system flushing can be discharged to permitted MS4 systems without any additional permit requirements. Chlorine residuals (free or combined) are regulated in both states, however, parameters such as pH and turbidity are regulated only by Oregon. Based on the answers provided in the survey, the Pacific Northwest region requires minimal coordination with the state for disposal of specified NTDs prior to undertaking the operational activities resulting in these discharges. Both states indicated that WET testing is not considered in the permits regulating the NTDs. In addition, both utilities indicated that the person collecting the samples is not required to have any special certification issued by the regulatory agency.

Far West

Two states, California and Nevada, represent the Far West region. There are many different regulatory standards in different California regions; therefore, many utilities in California were contacted. Seven water utilities from California and one utility from Nevada responded to the utility survey. Several California utilities—Corona, Carson, CCWD, Fountain Valley, MWD, Orange County, and Santa Ana—indicated that all the NTDs included in the utility survey are regulated by the state. Carson City, Nevada indicated that distribution system flushing is not regulated by the state; however, all the other discharges are regulated. The frequency and quantity of these discharges are variable, depending on the size of the water utility. Except for Corona, none of the above-mentioned utilities indicated a provision for NTDs to be discharged to MS4 systems without any additional permit requirements. The Far West region does regulate chlorine residuals (free or combined), ranging from 0 milligrams per liter (mg/L) (CCWD) to <0.02 mg/L (Carson City). Either TSS or turbidity is regulated by all the utilities in the Far West region. The range for TSS in hydrostatic test waters varies from <75 mg/L (Corona, Fountain Valley, MWD, Orange County, and Santa Ana, California) to a daily maximum of <150 mg/L (Carson, California), and turbidity limits vary from <1 nephelometric turbidity unit (NTU) (Carson City) to <150 NTU (Carson, California). The pH level in a discharge is a commonly regulated parameter and limits range of 6.5 to 8.5 in California.

The overall responses to the survey indicated that TDS, color, microbiological parameters, temperature, phosphorus, discharge flow, and nitrogen are not among the common NTD water quality parameters that are regulated by the states. These parameters are regulated at one or two of the utility respondents in the Far West region. The Far West region does not require any coordination with the state prior to undertaking the operational activities resulting in NTDs. WET testing is not included in the permits regulating NTDs (with the exception of Carson, California). Depending on the type of NTD, a certified lab technician may be required to collect the sample.

Southwest

Three utilities from the Southwest region (COP, Arizona; Denver, Colorado; and Grants, New Mexico) responded to the survey. Although the three states are located in a common geographic region, they have varying regulatory requirements for NTDs. All the NTDs included in the survey are regulated by Arizona; all NTDs except well development and maintenance are regulated by Colorado; and none of the discharges are regulated by New Mexico. In Arizona, these discharges are allowed in permitted MS4 systems, but the utility is required to obtain a storm water discharge permit. No discharges are allowed in permitted MS4 systems in Colorado, and all the discharges are allowed to be discharged in MS4 systems in New Mexico without any additional permit requirements. Various water quality parameters such as TRC, TSS, turbidity, pH, oil and grease, and discharge flow are regulated by Arizona and Colorado. In addition, Arizona also regulates microbiological parameters, TDS, temperature, phosphorus, and nitrogen. WET testing is not required in the permits regulating NTDs in the Southwest region.

South

Amarillo, Texas, was the only utility respondent from the South region. The utility indicated that they were not regulated under the State's NPDES permit program for NTDs. However, the survey results should not be generalized for the whole region.

Southeast

No responses were received from utilities in the Southeast.

North

Only one utility (Sioux Falls, South Dakota) located in the North region responded to the utility survey. In South Dakota, the regulated NTDs include distribution system flushing, pipeline repair and maintenance, hydrostatic testing of pipeline, and pipeline disinfection test waters. None of the NTDs are allowed in permitted MS4 systems without additional permit requirements. TRC, TSS, pH, oil and grease, and discharge flow are the water quality parameters that are regulated by the state. South Dakota also requires utilities to provide at least one month notice prior to any activities resulting in NTDs. DMRs are required to be submitted monthly to the state. WET testing is not considered in the NTD permits. No special certification is required by the regulatory agencies for persons collecting the NTD samples.

Midwest

Out of 19 total respondents, only one utility (Elgin, Illinois) is located in the Midwest region. Reservoir maintenance is the only activity that is covered under an NPDES permit. Elgin, Illinois indicated that the activity is, however, very rare, and no BMPs are necessary for NTDs.

Currently, Illinois does not have regulations in place regarding water quality parameters for NTDs. Utilities in the state are required to contact the EPA Regional office at least three days in advance if the utility decides to discharge dechlorinated finished water from the reservoirs to the river. In addition, the utility is required to submit monthly NPDES DMRs for outfalls (finished water reservoirs). The state does not consider WET testing in the NTD permits.

Northeast

The City of Philadelphia, Pennsylvania; WSSC; and DCWASA were the three utilities from the Northeast region that responded to the utility survey. All of the NTDs that are included in the survey, except well development and maintenance, are regulated by Pennsylvania and Maryland. DCWASA reported that large volume NTDs, such as reservoir maintenance, are covered under their MS4 permit. Philadelphia indicated that the frequency of these discharges varies from once per year (reservoir maintenance) to approximately 2,000 times per year (pipeline repair and maintenance). WSSC reported a higher frequency of 16 times per year for reservoir maintenance, while their frequency of pipeline repair and maintenance is only 432 times per year. DCWASA reported a frequency of reservoir drainage and major maintenance on each reservoir of once every one to three years; while occurrences of major line breaks were approximately 12 per year. No water quality parameters are currently regulated by Pennsylvania or Washington D.C. for NTDs. WSSC monitors temperature of an NTD twice during each discharge (once at the start, and once midway during the discharge). The three utilities indicated that WET testing is not required by the state or regulatory agencies.

Key Issues From Utility Workshop

In addition to the findings from the survey, several key utility issues were identified during the two regional NTD workshops. The key issues are listed below and the complete discussions from the workshops are presented in Appendix F.

- While regulation of NTDs vary from state to state, environmental impacts associated with these NTDs can be significant. The impacts may include adverse effects on aquatic life, degradation of water quality and erosion related effects.
- Variation in monitoring requirements can also delay NTD discharges requiring storage of NTDs due to time required to receive analytical results for parameters which cannot be analyzed onsite, or require days for their analysis.
- Most of the utilities have two types of flushing events: low velocity flushing, which is primarily used for disposal of water at dead ends or high detention time locations, and high velocity (such as unidirectional flushing), which is mostly used for removing biofilms or sediments from pipelines and other conveyance structures. Fire department flushing activities are generally separate from the drinking water utility activities but may be coordinated between the two agencies to promote environmental stewardship. Main flushing can result in a substantial volume of water and sometimes require dechlorination of superchlorinated discharges. Main breaks require dechlorination of distribution system water having significantly lower chlorine residuals.
- Additional treatment of certain NTDs may be required depending on discharge location and receiving WQS, but pH adjustment and dechlorination are commonly

applied BMPs. Corrosion control in drinking water systems and cement lining of new mains can affect the pH of NTD streams.

- Presence of individual contaminants, such as metals, nutrients, and radionuclides can impact the discharge of well pumpouts into receiving waters.
- Additional treatment may be required where watershed TMDLs are much lower than the drinking water regulations for specific contaminants.
- While reservoir maintenance and tank drains are planned discharges, tank overflows are not. Tank overflows are very rarely observed due to implementation of reliable altitude valves. The main issues with tank draining operations are chlorine and sediments. Filtration of these NTDs and dechlorination are the commonly utilized BMPs. Hydro-geomorphological and toxicity tests may also be required.
- While main breaks are unplanned discharges, main repairs and maintenance are planned discharges. A utility is generally responsible for managing the main break discharge when it arrives at the location. Most utilities prefer to discharge these NTDs into either sanitary or storm sewers. Hydrostatic testing NTDs and disinfection waters (generally superchlorinated) are generally managed separately due to separate applicable regulations. Many utilities require their contractors to dispose of these NTDs as per applicable regulations.
- The monitoring location of an NTD is an important consideration. Most utilities prefer to monitor the NTD source instead of the point where it enters the *Waters of the U.S.* This is because a water system does not have control over additional contamination acquired by a discharge during its passage over ground, or other conveyance infrastructure. However, an NTD may be regulated at the point when an NTD reaches a receiving water due to applicable WQS. Further guidance is needed to resolve the monitoring location.
- Operator/employee and public safety are major concerns with the use of dechlorination chemicals.

CHAPTER 4
UTILITY CASE STUDIES

INTRODUCTION

As part of the project, field testing activities were conducted at seven of the 11 participating utilities to characterize their NTDs and assess the impacts that the discharges have on soil, receiving waters, and biota. The participating utilities included PWB, COP, CCWD, DCWASA, MWD, GSWC, and AAWC. Water quality samples were collected to adequately represent the nature of typical discharges occurring within a PWS and to make an assessment of whether these discharges comply with requirements specified in a PWS' GP or IP, and surface WQS.

A standardized field testing protocol was developed so that similar sampling procedures and analytical methods were employed at the participating utilities and complied with the specified data quality objectives. The field testing protocol was finalized after a review by the Project Advisory Committee (PAC) members and representatives from the case study utilities. The dates for sampling events were finalized in discussions with each participating utility representative. The research team members assisted the utility in collection of samples. All samples were collected at the source of the NTD, prior to contact with potential pollutant streams on the ground, roadways, etc. The samples were analyzed for the specified water quality parameters by the participating utility and a certified laboratory. In addition, three to five years of historical drinking water quality data was reviewed from each case study utility. A comparison of NTD sample results with drinking water data was performed to assess if any significant differences exist between the data sets. For each case study utility, historical source and treated water quality information for the applicable NTDs was collected to compare with the field testing data to assess possible changes in water quality due to distribution system factors.

To assess the impacts of NTDs on the environment, acute and chronic toxicity testing was performed at three case study utilities (COP, PWB, and CCWD). The samples for toxicity testing were collected and shipped to Aquatic Consulting and Testing (AC&T) Laboratory in Tempe, Arizona.

In this chapter, the historical water quality data for each case study utility is presented first followed by the applicable permit requirements. The NTD monitoring results are then presented and compared with the applicable requirements of the permits to assess the overall environmental impacts of these discharges.

FIELD TESTING PROGRAM

A field testing protocol was developed to maintain consistency in the sampling procedures, analytical methods, and data quality objectives. The protocol was finalized after a review by PAC members and case study utility representatives. The main elements of the protocol are summarized below.

For this project, the NTDs that were sampled included potable water reservoir/tank overflows and drains, well pumpouts, water main repair discharges, hydrant and water main flushing, hydrostatic water testing from new water main construction, and disinfection water from new water main construction and main repairs.

Table 4.1
NTDs monitored at each case study utility

Utility	NTD types
COP	Tank/reservoir overflow Well pumpout Hydrant flushing water
AAWC	Hydrant flushing water
GSWC	Hydrant flushing water Disinfection water (sampled at closest hydrant after main replacement) Tank Overflow
MWD	Tank/reservoir overflow Tank/reservoir drain
CCWD	Tank/reservoir overflow Hydrostatic test water
PWB	Tank/reservoir overflow Well pumpout Hydrant flushing water Disinfection water
DCWASA	Hydrant flushing water Reservoir overflow

Note: All NTD samples were collected at the location of the discharge, prior to contact with the ground surface and upstream of any overland flow.

Reservoir/tank overflows are generally unplanned events which result during normal operation of a drinking water utility. While most reservoirs and tanks have altitude valves linked to Supervisory Control and Data Acquisition (SCADA) systems, water at the top of the reservoir or tank is discharged during overflow events. These discharges can neither be controlled nor be easily monitored during an actual discharge event. For this project, grab samples were taken from the top one-foot depth of the water in the tanks/reservoirs. For reservoir/tank drains, grab samples were collected from the bottom of the tank using a drain valve, or from another bottom outlet that is representative of the discharge.

Well pumpouts (or pump to waste) are planned events practiced to discharge well water at the start up before water is pumped to consumers. During the sampling events, grab samples were collected from the pumpout piping at the beginning of a well pumpout cycle.

Discharge samples of hydrostatic test water and disinfection water from new main construction and water main repairs were collected from adjacent piping locations or sample ports. For hydrant flush samples, hydrants were flushed for a few minutes to represent actual NTD water instead of high sediment stagnant water in the hydrants. However, discharges from water main breaks and miscellaneous flows during repair activities were not monitored due to their emergency nature.

Table 4.1 summarizes NTDs monitored at each of the case study utilities. Discharges were monitored for flow, pH, temperature, turbidity, oil and grease, TOC, total hardness, TRC, DO, TDS, TSS, BOD, COD, *E. coli*, total coliform, total phosphorus, ammonia, total Kjeldahl nitrogen

Table 4.2
Analytical methods and method detection limits for NTD monitoring

Parameter	MDL or method precision	Standard Method no.	USEPA method
pH	$\pm$0.05	4500 H^+ B	150.1
Temperature	$\pm$0.1 deg. C	2550 B	170.1
Total phosphorus	< 0.5 mg/L	4500 P-B	365.2
Oil and grease	< 1.5 mg/L	5520 B	413.1
Total coliform	1.1 MPN/100mL	9221 B	114
DO	0.05 mg/L	4500 OC	360.2
TRC	< 0.05 mg/L	4500Cl D	330.1
Turbidity	0.05 NTU	2130 B	180.1
TSS	2.4 mg/L s.d.*	2540 D	160.2
TDS	21.20 mg/L s.d.	2540 C	160.1
Total hardness	2.9 % s.d.	2340 B or C	130.2
BOD	2 mg/L	5210 B	405.1
COD	5 mg/L	5220 B	410.1
Metals		3120 B	200.7
Selenium, total	0.001 mg/L	3120 B	200.7
Cadmium, total	0.001 mg/L	3120 B	200.7
Arsenic	0.002 mg/L or less	3113, 3114, or 3500 As	206.3
Mercury	< 0.0004 mg/L	3112 B	245.1
Zinc	0.005 mg/L or less	3111, 3120, or 3500 Zn	289.1 or 289.2
Cyanide	0.0003 mg/L	4500 CN^- E	335.2
Sulfides	0.3 mgL	4500 S^{2-} D	376.1
THMs	< 0.001 mg/L	6232	502.2
VOCs	0.5 µg/L	6410 B	625
TOC	0.1 mg/L	5310 B, C or D	415.1
Ammonia	0.1 mg/L	4500-NH_3 B	350.2
TKN	0.1 mg/L	4500-NH_3 B or C	351.3
E. coli	1 CFU†/100 mL	9221 F	

* s.d. = standard deviation
† CFU = colony forming units

(TKN), VOCs, metals (including zinc, selenium, arsenic, cadmium, and mercury) and IOCs (including cyanide, sulfides, and THMs).

Table 4.2 summarizes analytical methods and the associated detection limits used in the testing program. All parameters were not sampled at each location since the key water quality issues were different at each utility.

In addition to the above analyses of NTDs, WET assays were conducted at three case study utilities (COP, PWB, and CCWD). Acute toxicity assays were conducted at PWB and CCWD. A chronic toxicity assay was conducted at COP. The objectives of the toxicity analyses were to assess the impacts on density, composition, and diversity of aquatic biota and receiving streams, assess the impacts on native biota and evaluate the overall impact including synergistic or antagonistic chemical effects. In association with each utility, the research team collected the samples in nontoxic carboys and shipped the samples to the AC&T laboratory in Tempe, Arizona.

CHARACTERIZATION OF NTDs AT EACH CASE STUDY UTILITY

In this section, water supply operations at each case study utility are described. Historical source and treated water quality data for each case study utility are summarized. Quality and quantity of NTD discharges monitored at each water utility are described for each utility. In some instances the laboratory detection limits were not available and the results are reported as not detected (ND).

Metropolitan Water District of Southern California

MWD is one of the nation's largest wholesale provider of drinking water. MWD supplies water to 26 agencies, which supply water to approximately 18 million customers residing in a 5,200 square mile area in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Water is supplied via 350 service connections. The sources of water supply include the Colorado River and the State Water Project (SWP). The SWP brings supplies south from the Sacramento-San Joaquin Delta, while the Colorado River Aqueduct moves water to the west from Lake Havasu. MWD operates five water treatment plants (WTPs) capable of producing about 2.6 billion gallons of water a day. These WTPs employ flocculation, coagulation, sedimentation, filtration, and disinfection. Two WTPs (the Henry Mills and Joseph Jensen) are being retrofitted with an ozone process. MWD's Water Quality Laboratory in La Verne conducts more than 300,000 water analyses each year to make sure that the distributed water meets the highest quality standards, surpassing all state and Federal regulations. MWD maintains and operates a regional distribution system that includes hundreds of miles of pipelines, power transmission lines, unpaved roads, 17 reservoirs, 16 hydroelectric power plants, 45 pressure control structures, thousands of pumps and valves, and hundreds of buildings, shops, and other structures. The 17 reservoirs have the capacity to hold about one million acre-feet (AF) of water.

Discharge Permit Requirements and Receiving Stream Standards

Disposal of NTDs such to a receiving water by MWD is regulated by GPs issued by the Santa Ana and Los Angeles RWQCB or must comply with the provisions of the Los Angeles MS4 permit, depending on the discharge pont. Regulated parameters for various NTDs as summarized by the RWQCB GPs are summarized in Table 4.3. The MS4 permit requires that a discharger is responsible for WQS compliance.

In addition to discharge limits, these permits specify narrative standards for taste and odor, toxicity, color, biostimulatory substances, TSS and settleable solids. Numeric standards for fecal coliform and turbidity also apply.

Based on a comparison of permit limits with the treated water quality data, it appears that the NTDs in the MWD water supply system meet the discharge permit requirements. MWD dechlorinates the NTDs prior to their discharge to receiving waters and therefore meets the specified TRC limits. In addition, MWD practices established BMPs to control any erosion attributable to NTDs.

Table 4.3
Applicable permit requirements for MWD NTDs

Regulated parameter	Santa Ana RWQCB levels	Los Angeles RWQCB levels*,† Monthly average	Los Angeles RWQCB levels*,† Daily maximum
Oil and grease, mg/L	15	10	15
TSS, mg/L	75	50	150
Sulfides, mg/L	0.4	NS‡	1
TRC, mg/L	0.1	NS	0.1
TPH, micrograms per liter (µg/L)	100	NS	NS
pH	6.5–8.5	6.5–8.5	
Temperature, °F§	< 92 June to October < 78 November to May	100	
DO, mg/L§	Ambient or > 5 mg/L		
Settleable solids, mL/L	NS	NS	0.3
BOD_5, 20°C, mg/L	NS	20	30

* For the hydrostatic testing of pipes, tanks and storage vessels, Los Angeles RWQCB specifies additional TDS, sulfate, chloride, boron and nitrogen discharge levels which vary for different locations in a given watershed.
† For the hydrostatic test discharges from existing pipes, tanks and storage vessels, Los Angeles RWQCB specifies limits for individual organic and inorganic contaminants.
‡ NS = No standard
§ Receiving water requirement.
** A review of NTD reports submitted by MWD show complete compliance with applicable permits.

Historical Source and Treated Water Quality

Water quality data for MWD's sources of supply and treated water from its five WTPs, as summarized in the annual water quality reports to its member agencies, were analyzed from 2001 to 2005 (Appendix G, Table G.1). Total and fecal coliform were not detected in the treated water. Among the regulated organic contaminants (62) in California, only toluene and methyl-tert-butyl-ether (MTBE) were observed above their detection limit in the source as well as treated waters. Both of these were below their respective NPDES limits. None of the unregulated organic contaminants (28) were detected in either source or treated waters.

Aluminum levels in the source water ranged from below detection limits to 2.3 mg/L and in treated water from below detection limits to 0.23 mg/L. Arsenic was observed in source water (ND to 5.9 µg/L) and treated water (ND to 2.4 µg/L) below its drinking water MCL. Barium was observed in source water (ND to 174 µg/L) and treated water (ND to 148 µg/L). Cadmium was observed below its MCL in source water (ND to 4.1 µg/L) but was below the detection limit in treated water. Copper was detected in source water at 0.069 mg/L in 2001 but not in the treated water. Fluoride was observed in source water (ND to 0.49 mg/L) and treated water (ND to 0.3 mg/L). Nitrates in source water ranged from below detection limits to 1.4 mg/L and in treated water from below detection limits to 1.5 mg/L. Other regulated inorganic contaminants with primary standards were below their detection limits.

Regulated radionuclides were observed in source as well as treated waters, and the observed levels were below their respective MCLs. Gross alpha particles ranged from below detection to 10 pCi/L in source water and below detection limits to 6.3 picocuries per liter (pCi/L) in treated water. Gross beta particles were observed in source water (ND to 12 pCi/L) and in treated water (ND to 7.8 pCi/L). Combined radium was below 3 pCi/L in source and treated water. Uranium ranged from below detection level to 4.7 pCi/L in source water and below detection limit to 4 pCi/L in treated water.

Distribution system combined chlorine residuals ranged from 1.5 to 3 mg/L. THMs and HAA5 in treated water ranged from 10 to 89 µg/L and 5.4 to 54 µg/L, respectively. The running annual average THM and HAA5 levels were below their respective MCLs. The source water TOC ranged from 2.2 to 6.8 mg/L. The treated (filtered) water TOC ranged from 1.6 to 4 mg/L.

Based on a comparison of permit limits with the treated water limits, it appears that the NTDs (representing treated water) in the MWD water supply system meet the regulatory requirements. MWD dechlorinates the NTDs prior to their discharge to receiving waters and therefore meets the specified TRC limits. In addition, MWD practices established BMPs to control any erosion attributable to NTDs.

Monitoring of NTDs

At MWD, tank overflow and drain NTDs were monitored. As per the field testing protocol, MWD personnel collected samples from the top and drain of the Sepulveda Tank #2 on April 7, 2006. Appendix H, Table H.1 summarizes the observed results at the top of the tank and tank drain. Of the 59 analyzed VOCs, only four VOCs (chloroform, diboromochloromethane, dichlorobromomethane and bromoform) were observed in quantities above their respective detection limits. These VOCs represent THMs which are generally found in most drinking waters and are produced upon disinfection of water. The THM level ranged from 24.3 µg/L at the tank drain to 26.9 at the top of the tank. These levels are much lower than the MCL of 80 µg/L.

Arsenic, cadmium, mercury and selenium were below their detection limits for both samples. Zinc was below the detection limit in the tank overflow sample but was observed at 0.08 mg/L in the tank drain sample. Its presence was likely due to sedimentation occurring in the tank, and/or tank or pipe material leaching. Ammonia, COD, cyanide, oil and grease, phosphorus, sulfide and TSS were below their detection limits in the tank overflow and drain samples. Turbidity was below 1 NTU in the tank overflow sample and 1.8 NTU in the tank drain sample. TKN was observed at 2 mg/L and 3.1 mg/L in tank overflow and drain samples, respectively. BOD ranged from 14 mg/L in the tank overflow sample to 15 mg/L in the tank drain sample. DO was 10 mg/L in both samples. Hardness was observed at 120 mg/L as $CaCO_3$ in both samples. Calcium and magnesium, which represent hardness, were observed at 27 and 13 mg/L, respectively, in both samples. Water temperature collected at the time of sampling was 56 deg. F. TDS in tank overflow and drain samples were observed at 290 and 280 mg/L, respectively. TOC ranged from 1.9 mg/L in the tank overflow to 2 mg/L in tank drain samples. Generally, no significant water quality differences were observed between tank overflow and tank drain samples. A comparison of permit limits with NTD water quality indicates that the properly dechlorinated tank overflow and drain discharges would comply with the permit requirements.

Portland Water Bureau

PWB, a department within the City of Portland, Oregon, serves drinking water to a combined retail and wholesale population of approximately 770,000 persons in a service area comprising approximately 253 square miles. The retail customers include 146,000 residential and 20,000 commercial customers. The Bull Run watershed provides the majority of source water for PWB. An average annual rainfall of 135 inches in the Bull Run watershed ensures sufficient supply. Ground water is used as an emergency backup and supplemental water supply source to the Bull Run. Water from the Bull Run typically has excellent quality and only corrosion control (sodium hydroxide) and disinfection chemicals (chlorine for primary and chloramine for secondary) are added for treatment. Based on a review of its Consumer Confidence Reports, PWB meets all primary and secondary Federal and State drinking water MCLs.

Treated water flows by gravity to distribution reservoirs, with storage capacities ranging from 30,000 gallons to 50 million gallons. The total storage capacity in distribution system reservoirs is about 250 million gallons. The majority of water is distributed by gravity to customers via more than 2,000 miles of pipeline. There are approximately 14,200 fire hydrants within PWB.

Discharge Permit Requirements and Receiving Stream Standards

PWB experiences a number of NTDs within its water system. An IP (NPDES #101617) issued by the Oregon Department of Environmental Quality (DEQ) regulates water supply discharges such as tank and reservoir draining, conduit and collection main draining for maintenance and repair, well pump to waste at start up, well tests, and tank (reservoir) overflows (emergency or accidental). Distribution system discharges include tank and reservoir draining, fountain draining, tank "freshening" discharges to maintain water quality, hydrant flow tests, low velocity flushing in response to customer complaints or maintenance, high velocity unidirectional flushing for water quality and main disinfection, superchlorinated main disinfection water, main dewatering and emergencies such as main breaks and tank overflows. These discharges are regulated locally depending on where they are discharged—combined sewer system (IP NPDES # 101505 issued to the Bureau of Environmental Services [BES]), sanitary sewer (IP NPDES # 101505 issued to BES), storm sewer (GP MS4 NPDES Stormwater #108015), or sump/dry wells (State of Oregon Underground Injection Control Administrative Rules [for Water Bureau owned sumps and dry wells] and IP issued by Oregon DEQ to BES).

The majority of PWB's distribution system NTDs are directed to sewers and sumps, and water supply discharges to receiving waters are regulated with the following parameters:

- pH: 6.0 to 9.0 S.U.
- Total chlorine: < 0.1 mg/L
- Total reactive phosphorus: < 0.26 mg/L (applies to outfalls on the Columbia Slough only)

In addition, all these discharges must meet the WQS established to protect human or aquatic life in fresh and marine waters. For aquatic life, acute (average of one hour) and chronic (average of 96 hours) standards are developed. WQS for protection of human health are based on either fish and water ingestion, fish ingestion, or the drinking water regulatory limit.

Historical Drinking Water Quality

Since PWB does not treat its water except for pH control and disinfection, only treated water quality is summarized and discussed here. PWB develops Triannual Water Quality reports which generally provide more information than Consumer Confidence Reports. These reports were analyzed from May 2005 to November 2005, and the observed water quality parameters are summarized in Appendix G, Table G.2.

The Bull Run source water is slightly alkaline (pH 7.6 to 8.0) and consists of low TDS (15 to 33 mg/L) and TSS (0.5 to 1 mg/L). The water color ranged from 5 to 15 color units (CU). The TOC ranging from 1 to 2 mg/L is relatively low compared to surface water sources. Nitrite, nitrate, ammonia, organic nitrogen and phosphorus were all below 0.07 mg/L. Silica levels were below 5 mg/L. The treated water had low alkalinity (<13 mg/L as $CaCO_3$) and hardness (<14 mg/L as $CaCO_3$). Fluoride was below the detection limit (<0.05 mg/L). Among the metals, antimony, arsenic, cadmium, chromium, lead, mercury, silver, nickel and zinc were all below their respective detection levels. The maximum values of barium, copper, selenium, aluminum, iron, manganese were below 0.006, 0.016, 0.002, 0.07, 0.092 and 0.032 mg/L, respectively.

According to the 2006 Consumer Confidence Report, THMs in PWB distributed water ranged from non detect (ND) to 53 µg/L, and the running annual average level ranged from 22 to 29 µg/L. The corresponding HAA5 level ranged from 17 to 57 µg/L, with the running annual average ranging from 29 to 35 to µg/L.

Monitoring of NTDs

For PWB, reservoir overflow (NE Halsley and 148th Street), well pumpout (Well 36), hydrant flushing water (N Hancock Court) and disinfection water (SW 26th and Miles Street) NTDs were monitored on March 29, 2006. Appendix H, Table H.2 summarizes the observed water quality NTD monitoring results.

For the well pump out water, arsenic was observed at 1 µg/L. Ammonia, BOD, cadmium, COD, cyanide, mercury, oil and grease, selenium, sulfide, total chlorine, TKN and zinc were all below their respective method reporting limits. The pH of well water was 7.6, which is within the IP limits. Calcium and magnesium were observed at 24 and 8.9 mg/L, respectively, indicating that the water is soft. The DO concentration of 2.4 mg/L is typical of groundwater. *E. coli* and total coliform were absent. The TDS value was 140 mg/L, and the total solids value was 150 mg/L. The turbidity of the pumpout water was 2.3 NTU, probably due to contact with soil in the detention basin prior to discharge to the Columbia Slough. TOC, at 0.86 mg/L, is low compared to similar source waters. Based on these results, well pump out water would meet the WQS and the IP requirements.

The hydrant flush water and reservoir overflow water should generally represent distribution system water. At the sampling locations for this project, hydrant flush water was de-chlorinated and discharged to a storm drain. The reservoir overflow also drained to a storm drain. Measured values for hydrant flush water and reservoir overflow water are comparable. Arsenic, BOD, cadmium, COD, cyanide, mercury, oil and grease, selenium, sulfide, and zinc were all below their respective method reporting limits. Ammonia of 0.27 mg/L in hydrant flush water and 0.28 mg/L in the reservoir overflow sample is due to the ammonia added to produce a chloramine residual in the finished water (the ammonia level in source water is below 0.04 mg/L). Low levels of calcium and magnesium in hydrant flush and reservoir overflow water compared well with low source water hardness levels. The pH of hydrant flush water (7.6) and reservoir flow water (8.2) compared well with treated water pH (7.6 to 8.0). The DO concentration of 10.2 mg/L in hydrant flush water and 11.5 mg/L in reservoir overflow water are comparable to the saturation value of 11.7 mg/L at a temperature of 8.4 deg. C. Total chlorine of 1 mg/L in hydrant water and 1.3 mg/L in reservoir overflow water is typical of distribution system chlorine levels. The TDS levels in hydrant flush water (25 mg/L) and reservoir overflow sample (29 mg/L) compare well with treated water levels of 15 to 33 mg/L. The TKN level is comparable to the low concentrations of source water ammonia, nitrite, and nitrate. The TOC levels in hydrant flush water (0.83 mg/L) and reservoir overflow water (0.77 mg/L) compared well with the lower range found in the treated water (1 to 2 mg/L). *E. coli* and total coliform were absent in both samples.

PWB discharges the majority of NTDs to sewers, and the contaminant levels in NTDs do not exceed the receiving stream WQS, or the specified permit limits, except for total chlorine levels which can be controlled by dechlorinating the water prior to its discharge. The utility actively practices dechlorination using ascorbic acid for all its discharges to receiving waters.

Super chlorination for disinfection (e.g., >25 mg/L total chlorine) is practiced for new main installation. In this procedure, superchlorinated water remains static in a water main for period of 24 hours. For this study, disinfection water was monitored in new main construction at SW 26th and Miles Streets. PWB uses sodium hypochlorite for main disinfection, and a TRC of 64.3 mg/L was measured during sample collection. The sample pH was measured at 11.5, which can be partially attributed to the addition of sodium hypochlorite and the low alkalinity of treated water (8 to 13 mg/L as $CaCO_3$). Since the new water main is cement lined, any dissolution of cement during the disinfection process could also increase pH. Arsenic, cadmium, COD, cyanide, mercury, oil and grease, selenium and sulfide were all below their respective method reporting limits. The observed zinc level at 0.13 mg/L can be attributed to exposure in ductile iron mains in the system. The zinc level is higher than receiving stream WQS (86 to 120+ µg/L) established for protection of aquatic life. The TDS and total solids levels of 350 mg/L were much higher than those observed in treated water (15 to 34 mg/L) and may be attributed to cement lining, sodium hypochlorite solution, and coating material for lining used for water mains. The TOC level of 7.2 mg/L may also be attributed to lining materials. Water samples were also analyzed for 61 VOCs, including THMs. The elevated THM level of 350 µg/L (mostly chloroform) can be attributed to continued reaction of chlorine with TOC, accelerated and amplified by superchlorination. Besides chloroform and bromodichloromethane THMs, the only other VOCs detected were styrene (0.6 µg/L), toluene (2.1 µg/L) and xylenes (0.7 µg/L). These chemicals may be contributions from main lining and/or gasket materials. Only toluene has a WQS associated with water ingestion and fish consumption, but the regulated levels are much higher (14.3 to 424 µg/L) than the observed level found in the NTD.

PWB prefers to discharge disinfection water to the sanitary or combined sewers whenever possible. De-chlorinated disinfection water is not discharged directly to receiving waters.

City of Phoenix, Arizona

The COP water department covers over 500 square miles of service area, serving a population of over 1.5 million. The main sources of water supply to COP are from three rivers (the Salt, Verde, and Colorado), and groundwater. Water is treated at one of COP's five surface WTPs. These five treatment plants and over 30 wells have a combined capacity of approximately 700 million gallons per day (MGD). The water distribution system in COP spans more than 5,000 miles of pipe, has 48 reservoirs, and 85 booster stations. The COP also has a storage capacity to hold approximately 450 MG of drinking water.

Discharge Permit Requirements and Receiving Stream Standards

In accordance with the provisions of the Arizona Permit, AZ0024961, the COP is authorized to discharge NTDs from 15 locations specified in its water distribution system and from other unspecified locations. The specified locations include well pumpouts, reservoirs, and tanks, while the unspecified discharge locations are comprised of hydrant flushing, hydrostatic tests, disinfection of new main construction and main repairs, water main breaks, and miscellaneous repairs. The quality of the discharge from the specified locations must be monitored at least once per year. The discharges from these specified locations eventually flow into the Gila River in the Middle Gila River Basin, and various discharge standards are set based on the receiving water. These discharge limitations are based on the Arizona WQS and a violation of these limits requires an evaluation of the potential impacts and additional monitoring. Unspecified locations are monitored monthly for the parameters listed below:

- TRC
- pH
- *E. coli*
- Temperature
- TSS
- Total coliform

In addition to discharge limits, these permits specify narrative standards for taste and odor; toxicity; color; algae; settleable solids; impacts on aquatic life; oil and grease; floating debris, foam, and scum; and compliance with aquifer water quality standards. The permit specifies that tank/reservoir overflow samples should be collected from the top one foot of the tank/reservoirs and that all samples collected should be discrete samples.

Historical Treated Water Quality

Historical treated water quality data from 2003 to 2006 is summarized in Appendix G, Table G.3. Most of the trace metals such as antimony, beryllium, cadmium, mercury, selenium and thallium were below their respective detection limits.

In the treated water, concentrations of hardness ranged from 128 mg/L to 314 mg/L. The average zinc concentration was found to be 0.1mg/L. TDS concentrations ranged from 254 mg/L to 872 mg/L, with an average level of 523 mg/L.

Although detectable concentrations of lead and copper were present, the COP was in compliance with respect to action levels. For other parameters of concern, pH ranged from 7.0 to 8.5, manganese concentrations ranged from 0.0003 to 0.07 mg/L, chloride ranged from 24 mg/L to 319 mg/L, and sulfate ranged from 14 mg/L to 276 mg/L. Fluoride concentration ranged from 0.1 mg/L to 1.6 mg/L. THMs in the treated water were below 80 µg/L on a system-wide average basis. Other VOC contaminants in the treated water were below their detection levels. Average arsenic, barium, and chromium levels were detected at 0.005, 0.07, and 0.008 mg/L, respectively.

Monitoring of NTDs

The NTD water quality data was available from historic sampling performed by COP and from additional field testing performed for this study in 2006. The data is summarized in Appendix H, Table H.3. The sampling data was collected from three locations:

- Well pump out at Well 279,
- Reservoir overflow at Well 281, and
- Various hydrant flushing locations

The hydrant flushing sample was collected 30 to 40 feet downstream of the hydrant in a channel for ease of sample collection. The analytical results for each of these NTD samples are discussed below.

Fire Hydrant Flushing. In the fire hydrant flushing samples, ammonia, BOD and COD were below their respective detection limits. *E. coli* and total coliform were also not detected. The total hardness was 205 mg/L as $CaCO_3$, which compares well with the average hardness level in COP distributed water. The TDS level of 794 mg/L also represented COP distributed water. Most VOCs were below their detection levels except for the four THM species. Chloroform, dichloro-bromomethane, dibromochloromethane and bromoform levels were 27, 29, 20 and 3.2 μg/L, respectively. The total THM level was 79 μg/L. For the hydrant sample, the turbidity was 0.05 NTU. Inorganics and metals were below their detection limits except for arsenic with a level of 1 μg/L.

Well Pump Out. For the well pumpout sample, total hardness and TDS were 270 and 528 mg/L as $CaCO_3$, respectively. *E. coli* was absent and TSS were below the detection limit. Boron, chromium and lead levels were 0.1, 0.002 and 0.005 mg/L, respectively. Most other inorganic and organic contaminants were below their detection levels.

Reservoir Overflow. Ammonia, BOD and COD levels were below their detection limits in the reservoir overflow water. Hardness and TDS levels were at 324 and 420 mg/L, respectively. The TOC level was relatively low at 0.42 mg/L. THM species were relatively low with a total of 5.2 μg/L. Most other contaminants were below their detection limits. Boron, chromium and lead levels were 0.09, 0.004, 0.005 mg/L, respectively. As shown in Table H.3, the boron, chromium and lead levels compare well with the well pump out water, indicating the sample reservoir is serviced by COP ground water.

For the well pump water sample, hardness and TDS were 270 and 528 mg/L, respectively. Data for organic contaminants were not available but the levels have been below the detection limits. Boron, chromium and lead levels were 0.1, 0.002, 0.005 mg/L, respectively, and compare well with the reservoir overflow sample.

Based on the data for the hydrant flushing discharge sample, the water quality data compared well with the COP potable water data. The well pumpout and reservoir overflow samples represent groundwater and compared well with each other.

District of Columbia Water and Sewer Authority

DCWASA provides retail water and wastewater services to its residential and commercial customers in the District of Columbia. DCWASA buys its drinking water from the Washington Aqueduct, a division of the Army Corps of Engineers. This water is treated by Aqueduct and distributed by DCWASA. It is a multi-jurisdictional regional utility that provides drinking water to more than 500,000 residential, commercial, and industrial customers. DCWASA's service area covers approximately 725 square miles and delivers water to over 130,000 locations in Washington, DC, and provides nearly 135 MGD of drinking water. The water distribution system includes 1,300 miles of pipes, five pumping stations, five reservoirs, four elevated water storage tanks, 36,000 valves, and 8,700 hydrants. Currently, there is no permit available in the areas served by DCWASA for regulating the discharges associated with NTDs (large NTDs such as reservoir draining are regulated under MS4 permit), therefore, the results are being compared to the most stringent discharge limits in the Chesapeake Bay region.

Historical Treated Water Quality

Historical treated water quality data for 2004 to 2006 (at the tap) is summarized in Appendix G, Table G.4. Trace levels of copper, manganese and aluminum are present while average pH level was 7.6. The water is moderately buffered, with alkalinity values ranging from 33 to 120 mg/L as $CaCO_3$. TRC residuals (mostly chloramine) range between 0.1 and 4.5 mg/L, with an average of 3.0 mg/L. The free ammonia levels range between below detection and 0.6 mg/L, with an average of 0.3 mg/L. Since DCWASA uses a corrosion inhibitor, the average orthophosphate level in the distribution system is 3.2 mg/L. In the historical treated water, concentrations of calcium hardness ranged from 64 mg/L to 150 mg/L as $CaCO_3$. TDS concentration ranged from 37 mg/L to 231 mg/L, with an average level of 160 mg/L. The fluoride concentrations ranged from 0.6 mg/L to 1.1 mg/L.

Monitoring of NTDs

For this project, samples for NTDs were collected from two locations:

- Hydrant flushing, located at 900 F Street, and
- Fort Reno Reservoir (representative of overflow)

The hydrant sample was a composite of four grab samples taken at five minute intervals. The samples were analyzed for the various categories of contaminants, such as microbiological, inorganic, radionuclides, disinfectants, and other parameters. The DCWASA NTD sampling results are presented in Appendix H, Table H.4.

For the hydrant flush sample, antimony, beryllium, cadmium, lead, mercury, nitrite, and thallium were below their detection limits. Arsenic, barium, nitrate and selenium levels of 0.0003, 0.04, 1.5 and 0.0005 mg/L, respectively, were below their drinking water MCLs. Water pH and combined chlorine levels of 7.7 and 3.2 mg/L, respectively, are representative of DCWASA treated water. Total hardness of 122 mg/L as $CaCO_3$ is also representative of treated water. DCWASA purchases its treated water and the phosphate level (2.3 mg/L as PO4) in the hydrant flush water indicates use of an orthophosphate-based corrosion control chemical. Chloroform (49.4 µg/L) and bromdichloromethane (7.7 µg/L) represented majority if total THM level (57.8 µg/L). Most other organic contaminants were undetected. Other water constituents with secondary standards were below their respective regulatory limits. Data was not available for total coliform and *E. coli.*

Similar to hydrant flush sample, arsenic, barium, nitrate and selenium levels in the reservoir overflow water sample were 0.0004, 0.04, 1.9 and 0.0006 mg/L respectively. These data indicate a good comparison of water quality data from two separate sampling locations. Water pH, chloramine and phosphate levels were representative of DCWASA treated water at 7.7, 3.1 and 2.4 mg/L, respectively. THMs, represented by chloroform and dichlorobromomethane, at 50.4 µg/L were comparable with the hydrant flush sample. Other organic constituents were below their detection limits. Total coliform and *E. coli* were also undetected. Water constituents with secondary standards were below the regulatory limits and compared with the hydrant flush sample levels.

Both NTD samples represented treated water quality, and would require additional treatment prior to their discharge to receiving waters. The water would require dechlorination and potential mitigation for phosphate and THMs, if such surface WQS were present for these contaminants.

Contra Costa Water District

CCWD draws surface water from the Sacramento-San Joaquin Delta for 550,000 customers in Central and Eastern Contra Costa County, California. CCWD treats this water at two WTPs, the Randall Bold WTP and the Bollman WTP. The Bollman WTP provides water to the CCWD service area that includes Concord, Clayton, Clyde, Pacheco and parts of Walnut Creek, Pleasant Hill and Martinez. Port Costa is fed through a water wheeling agreement with the City of Martinez. The Randall-Bold WTP provides wholesale water specifically for Diablo Water District, the City of Antioch and the City of Brentwood. Untreated water is provided to the Cities of Antioch, Pittsburg and Martinez as well as Golden State Water–Bay Point.

The Bollman WTP (75 MGD capacity) employs alum coagulation (25–50 mg/L), flocculation, sedimentation, intermediate ozone disinfection (0.5–1.6 mg/L), biologically active granular activated carbon (GAC) filtration, fluoridation, and chloramination (2.7 mg/L TRC). The 40 MGD Randall Bold WTP employs pre-ozonation (1 mg/L), alum coagulation (25–45 mg/L), flocculation, direct filtration (GAC/sand), post-ozonation (0.9 mg/L), fluoridation, and chloramination (1.1–1.2 TRC). The treated water distribution system includes 750 miles of pipeline, 41 storage reservoirs, 31 pump stations, and 60,510 connections.

Discharge Permit Requirements and Receiving Stream Standards

For CCWD, NTDs are authorized under a State RWQCB, NPDES GP No. CAS000001, Special Condition D-1. These non-storm discharges include fire hydrant flushing; potable water source discharges related to the operations, maintenance, or testing of potable water systems; drinking water fountains; atmospheric condensate including refrigeration, air conditioning and compressor condensate; irrigation drainage; landscape watering; springs, groundwater, foundation or footage drainage; sea water infiltration; and discharge from fire fighting activities. For toxicity, the RWQCB has adopted EPA National Toxic Rules of 5 February 1993 and the California Toxics Rule (CTR) on 18 May 2000.

Numeric limitations for both BOD (at 20 deg. C) and TSS are 10 mg/L (monthly average), 15 mg/L (weekly average), and 30 mg/L (daily maximum). For settleable solids, the daily maximum permit limitation is 0.1 mL/L.

Discharges into a surface water body cannot contain chlorine in excess of 0.02 mg/L (instantaneous maximum). If the discharge contains chlorine in excess of 0.02 mg/L, the discharger must certify that chlorine will be reduced to a maximum of 0.02 mg/L before it enters the surface water. In addition, discharges into a surface water body must not have a pH less than 6.5 and greater than 8.5. Average dry weather (May through October) discharge flow must not exceed 0.25 MGD unless the discharge is four months or less in duration, in which case there are no flow limits.

In addition to discharge limits, these permits specify narrative standards for taste and odor, toxicity, color, algae, settleable solids, impacts on aquatic life, oil and grease, floating debris, foam, and scum, and compliance with aquifer water quality standards. Numeric limits for turbidity, temperature, and pH are also present, as measured by increases to ambient levels in the stream.

Historical Treated Water Quality

Water quality data for CCWD's treated water, as reported in annual water quality reports, are summarized in Appendix G, Table G.5. General water quality parameters in treated water showed a pH of 8.6, 0.50 mg/L of ammonia, total alkalinity of 72 mg/L as $CaCO_3$, total hardness of 96 mg/L as $CaCO_3$, and magnesium, potassium, sodium, bromide, and ammonia levels of 11.7, 55.4, 95.7, 0.1 0.5 mg/L respectively. Metals in treated water were detected well below their respective MCLs: aluminum 56 µg/L (MCL = 1 mg/L), barium 113 µg/L (1 mg/L), lead 2.57 µg/L (15 µg/L), copper 13 µg/L (1.3 mg/L). TRC in treated water averaged 2.68 mg/L, below the 4 mg/L maximum residual disinfectant level. Disinfection by-products were detected well below their MCLs.

NTD Monitoring Results

At CCWD, reservoir overflow and tank drain NTDs were monitored. Utility personnel collected samples from the top and drain of the Kirker Pass and Cowell Ranch reservoirs to simulate overflow and drain events. Appendix H, Table H.5 summarizes the results. In tank drain samples from the Kirker Pass facility, BOD measured 34 mg/L, slightly over the limit for discharges as specified in CCWD's GP NPDES. This is likely due to sediment accumulation in the drain water, and would therefore require dilution prior to discharge to natural waterways. Residual chlorine levels in drain waters from both facilities exceed the discharge limit, and would require dechlorination. All other water quality parameters were within permit limits. Metals were not detected. For VOCs, only THMs were detected.

In reservoir overflow samples, BOD levels were lower than drain samples and were within the permissible discharge range for both facilities. Chlorine levels were observed above the discharge limit for both facilities, and it would be necessary to demonstrate that overland flow would dissipate chlorine prior to reaching a natural waterway. Metals were not detected. The only VOCs detected were THMs, at levels well below the MCL at both facilities.

Golden State Water Company

The study area selected for this research project is GSWC's San Dimas System, which serves portions of the City of San Dimas, and portions of the cities of La Verne, Walnut, and

Covina in addition to the unincorporated areas of Los Angeles County. The Main San Gabriel groundwater basin underlies the San Gabriel Valley from Alhambra to La Verne, California.

The study area selected for this research project is the Foothills section of GSWC's service zones, which incorporates the City of San Dimas, California.

Discharge Permit Requirements and Receiving Stream Standards

For GSWC, NTDs are regulated under a GP NPDES issued by the RWQCB or an MS4 permit. Under this permit, discharges from potable water distribution system releases may be prohibited if they are determined to cause or threaten to cause degradation of water quality, violation of water quality objectives, cause a nuisance, and/or impair beneficial uses of receiving waters. Effluent limitations from non-process wastewater regulated under this permit are calculated assuming no dilution.

The permit includes several tables that list a variety of numerical standards for freshwater and saltwater bodies based on the contaminant type (general parameters, IOCs, hardness dependent metals and organic constituents). In addition to discharge limits, the permit specifies narrative standards for taste and odor; toxicity; bioaccumulation of toxics; color; algae; settleable solids; impacts on aquatic life and mosquitos; oil and grease; floating debris, pesticides, foam, and scum; and breeding of mosquitos and other pests. Numeric limits for turbidity, temperature, fecal coliform, *E. coli,* polychlorinated biphenyls (PCBs) and pH are also present, as measured by increases to ambient levels in the stream.

Historical Treated Water Quality

Historically, thousands of water samples have been collected and analyzed in order to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants in GSWC's drinking water. Appendix G, Table G.6 summarizes the water quality constituents observed in GSWC's treated water. The treated water meets all drinking water regulatory requirements. The highest turbidity level was 0.14 NTU. Although, arsenic and barium were observed in treated water, their levels were significantly lower than their MCLs. Similarly, average levels of fluoride (0.4 mg/L) and nitrate (10 mg/L) were below their respective MCLs. Chlorine levels in treated water ranged from below detection limits to 2 mg/L, with an average level of 1.6 mg/L. The maximum residual disinfectant level for chlorine in drinking water is 4 mg/L. THMs (39.8 µg/L) and HAA5 26.2 µg/L) were also below the MCL. The distributed water 90th percentile lead (3.1 µg/L) and copper (0.22 mg/L) levels were also below their regulatory action levels.

NTD Monitoring Results

At GSWC, disinfection water (sampled at a nearby hydrant after main replacement), hydrant flushing, and reservoir overflow NTDs were monitored, as summarized in Appendix H, Table H.6. For the disinfection water sample, arsenic, chromium, and lead were detected at concentrations of 0.0006, 0.0008, and 0.0002 mg/L, respectively. These levels were well below discharge limits as defined in GSWC's NPDES GP. *E. coli* and total coliform were not detected. Arsenic and lead levels were consistent with levels observed in treated water, and chromium detections were slightly higher than treated water levels. The water pH was 7.6, and the TDS level was 260 mg/L. Water hardness was 180 mg/L as $CaCO_3$. The TRC was 0.8 mg/L. THMs and other VOCs were not detected. Phosphorus, ammonia, zinc, cadmium, mercury, cyanide and sulfide were also not detected. DO was 9.8 mg/L, and COD was 11 mg/L. Oil and grease were below the detection limits.

In the hydrant flushing sample, a turbidity value of 2.4 NTU was observed. Hydrant flushes may be very turbid depending on the frequency of flushing and the potential for sediments and metals release. The pH of 7.6 is consistent with other water samples. Oil and grease were not detected. TOC was relatively low at 0.4 mg/L and is consistent with treated water quality. Hardness (180 mg/L as $CaCO_3$), TRC (0.8 mg/L), DO (9.7 mg/L), TDS (250 mg/L) and COD (13 mg/L) were consistent with other NTD samples. *E. coli* and total coliform were not detected. Most of the organic constituents were below their detection limits, and THMs were at 4 μg/L. Similar to disinfection NTD sample, ammonia, zinc, cadmium, mercury, cyanide and sulfide were not detected. Lead at 0.003 mg/L, arsenic at 0.001 mg/L and chromium at 0.001 mg/L were lower than their discharge standards.

Two reservoir overflow samples (Columbia and Mountain reservoirs) were collected at GSWC (Table H.6). The water quality parameters in the two samples were slightly different. The pH levels were 7.4 and 7.7 for the Columbia and Mountain reservoirs, respectively. Water hardness and TDS were 220 mg/L as $CaCO_3$ and 380 mg/L in the Columbia reservoir. The same constituents were 180 and 250 mg/L in the Mountain reservoir. TRC levels were 1.4 and 0.5 mg/L, respectively, in the Columbia and Mountain reservoirs. DO levels were 8.9 mg/L in the Columbia reservoir and 9.7 mg/L in the Mountain reservoir. Phosphorus, ammonia, *E. coli* and total coliform were not detected for both reservoirs. Most organic contaminants were not detected in both reservoir samples. THM levels were 2.2 and 5.2 μg/L in the Columbia and Mountain reservoir samples. Zinc, cadmium, lead, mercury, cyanide and sulfide were not detected for both reservoirs. Chromium levels of 0.0006 mg/L and arsenic levels of 0.0006 mg/L were detected in the Columbia reservoir sample. Chromium and arsenic levels were 0.0006 and 0.0009 mg/L, respectively, for the Mountain reservoir sample.

Arizona American Water Company

AAWC provides drinking water to customers in several communities in Arizona, including Sun City and Sun City West, the sites where NTD field samples were collected for this study. All of the water provided comes from groundwater from the West Salt River Valley aquifer. AAWC serves populations of 38,000 and 26,000 in Sun City and Sun City West, respectively. Currently there is no permit in place for regulating the discharges associated with NTDs; therefore, the field sampling results were compared to the regional surface WQS. Generally, NTDs in both communities are conveyed to storm sewers, which drain into the Agua Fria River, (an ephemeral stream) designated as *Waters of the U.S.* Since this waterbody is miles away from any potential NTD location within Sun City and Sun City West, it is highly unlikely that discharges would reach any *Waters of the U.S.* before evaporation or infiltration.

Historical Source and Treated Water Quality

In 2004, the Arizona Department of Environmental Quality (ADEQ) completed a source water assessment for the 18 wells used by AAWC supplying Sun City and the 10 wells supplying Sun City West. The Assessment reviewed the adjacent land uses that may pose a potential risk to the sources, including gas stations, landfills, dry cleaners, agriculture fields, wastewater treatment plants (WWTPs), and mining activities. Only three wells had adjacent land uses that posed any risk. The sources are currently protected by well construction and system O&M.

As part of drinking water compliance program, water samples have been collected and analyzed in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants in AAWC's drinking water. Appendix G, Table G.7 summarizes the contaminants that were detected in the water during 2003 or 2005 sampling events.

NTD Monitoring Results

For this project hydrant flush NTD samples were collected from two locations:

- Hydrant, located at 13402 Aleppo Drive, Sun City West, and
- Hydrant, 13623 111th Avenue, Sun City

Each hydrant sample was a composite of four grab samples taken at five minute intervals. The samples were analyzed for various categories of contaminants, such as microbiological, inorganic, radionuclides, disinfectants, and other parameters.

The microbial parameters *E. coli* and total coliform were not detected in samples collected from both hydrants. IOCs such as antimony, beryllium, cadmium, mercury, cyanide, thallium, silver, cobalt, chromium, bromide, copper, lead, manganese, total sulfide, phosphorus, potassium, aluminum, iron, zinc, vanadium and molybdenum were not detected in samples from either location.

TDS concentrations averaged 400 mg/L in the samples. Silica concentrations at both locations were similar at approximately 32 mg/L, and sodium levels of 93 mg/L were found at Sun City West, as compared to 27 mg/L at the Sun City location.

Appendix H, Table H.7 summarizes the concentrations of other parameters which were detected at one or both sampling locations. Arsenic was detected in both NTD samples, at concentrations consistent with the range detected in the treated waters, as were most other contaminants (i.e., barium, nickel, selenium, and THMs). Most of the metals and IOCs were found in trace concentrations. Oil and grease, strontium, and boron were present in at least one NTD sample, and were absent in the treated water historical data. Oil and grease were present in concentrations of 14.7 mg/L and 16.5 mg/L at Sun City West and Sun City respectively, and are traditionally not present in the well waters. All concentrations were found to be well under surface WQS.

TOXICITY TEST RESULTS

Toxicity testing was performed on NTD samples collected from CCWD, PWB, and COP. All tests resulted in no significant differences between the NTDs and controls for both acute and chronic toxicity test procedures. The laboratory tests were performed by AC&T, Inc. of Tempe, Arizona, on samples collected during March and April 2006. The full report is included in Appendix J, and is summarized below.

Grab samples were collected in the field and shipped to AC&T for testing. Acute and chronic toxicity evaluations were conducted according to referenced methods (USEPA, 1993; USEPA, 2002). Two 48-hour acute toxicity tests were performed for the invertebrate *Ceriodaphnia dubia*, and the vertebrate *Pimephales promelas* (a fathead minnow). These organisms were also used in 7-day chronic toxicity evaluations for survival and growth testing. In addition, a 96-hour growth test for chronic toxicity was performed using *Raphidocelis subcapitata* test organisms. For each acute toxicity test, the percent mortality in undiluted NTD sample waters and in control waters were determined from analysis of five replicated test vessels. For chronic toxicity tests, statistically significant differences between NTD samples and control samples with respect to survival, growth, or reproduction were determined using a statistical program (CETIS). All tests resulted in no significance differences between the NTDs and controls for both acute and chronic toxicity test procedures. A 100% survival rate of the test organisms was observed in all acute and chronic samples except one sample from COP where a survival rate of 96% was observed in the NTD sample as compared to a rate of 9% in the control. Based on these toxicity test results, NTDs do not appear to impact toxicity in receiving streams, and requirements for toxicity testing and sampling in NTD discharge permits are not warranted.

SUMMARY OF FINDINGS

This section summarizes the key water quality issues associated with each type of NTD that was sampled in this study, along with a comparison of the NTD water quality between various distribution systems.

Disinfection Water

The primary water quality issues associated with discharge of disinfection water appear to be pH, chlorine, THMs and trace VOCs. Mitigation techniques and BMPs for these contaminants should be implemented when required. Disinfection water samples were collected at GSWC and PWB. Turbidities of these samples ranged from 0.53 to 3.40 NTU, and the values were approximately 7.5, except at one location in PWB where it was recorded to be 11.50. TRC levels as high as 64 mg/L were observed, prior to dechlorination. Trace metals were found in very low concentrations from the GSWC samples and were not detected in PWB samples. Although total THMs were not detected in GSWC samples, total THMs were measured at 350 µg/L in the PWB sample. The samples collected in the PWB system also contained trace levels of other VOCs such as toluene, styrene and total xylenes, which were not present in the GSWC samples. A summary of these results is present in Appendix I, Table I.1.

Hydrant Flushing

The primary water quality issues associated with discharge of hydrant flush water appear to be chlorine, ammonia (chloraminating systems), trace metals (selenium and copper), and phosphorus (if the water system uses a phosphate-based corrosion inhibitor). The hydrant flushing samples were collected from GSWC, PWB, COP, AAWC, and DCWASA. The pH of the samples were similar, ranging from 7.5 to 7.7. TRC levels ranged from 0.78 to 3.1 mg/L, prior to dechlorination. The turbidity concentrations ranged from 0.05 to 2.70 NTU. TOC concentrations were also similar between the systems and ranged from 0.37 mg/L, recorded in the GSWC samples, to 0.83 mg/L in the PWB samples. *E. coli* and total coliform were not detected in any of these samples. Ammonia (as N) and TKN ranged from not detected to 1.11 mg/L. Very low to ND concentrations of metals such as arsenic, cadmium, chromium, lead, mercury, selenium, and zinc were present in most of the samples. Phosphorus levels ranged from below detection to 0.8 mg/L at DCWASA. THMs were detected in most hydrant samples, with total THM concentrations ranging from 57 to 80 µg/L in the DCWASA and COP samples, while relatively low concentrations of <4 µg/L were observed in the AAWC and GSWC hydrant flush samples. Oil and grease levels ranged from below detection limits to 16 mg/L (likely due to residue from appurtenances). A summary of these results is presented in Appendix I, Table I.2.

Reservoir/Tank Overflows

The primary water quality issues associated with discharge of reservoir/tank overflow NTDs appear to be chlorine, ammonia (chloraminating systems), and phosphorus (if the water system uses a phosphate-based corrosion inhibitor). Reservoir overflow samples were collected from the GSWC, MWD, DCWASA, PWB, COP, and CCWD systems. *E. coli* and total coliform were not detected in any of the samples, while TRC levels ranged from 0.11 mg/L to 2.5 mg/L. Ammonia levels ranged from below detection limits to 1 mg/L, while phosphorus levels ranged from below detection limits to 0.8 mg/L. The overflow samples had consistently low turbidity values ranging from <0.05 to 1 NTU. TSS levels were below detection limits in all samples. Metals were not present in significant levels in these samples. Total THM levels ranged from below detection limits to 58 µg/L. A summary of these results is presented in Appendix I, Table I.3.

Tank Drains

The primary water quality issues associated with discharge of tank drains appear to be chlorine, phosphorus (if the water system uses a phosphate-based corrosion inhibitor), and BOD. Tank drain samples were collected from the MWD and CCWD systems. *E. coli* and total coliform were not detected in any of the tank drain samples collected from these facilities. The pH of these samples ranged from 7.5 to 8.2, with consistently low turbidity values. Phosphorus was below detection limits in samples from CCWD and MWD. Total THMs, ranged from 21 to 46 µg/L between the two systems. TRC concentrations ranged from 0.06 to 2.5 mg/L. BOD_5 values ranged from 15 to 34, mg/L, potentially due to stagnant water and anaerobic conditions in drain piping. A summary of these results is present in Appendix I, Table I.4.

Well Pumpouts

Based on the sampling results of this study, no significant water quality issues appear to exist with routine well pumpouts. However, water quality issues associated with TSS, oil and grease, and metals may be present during well development and extended pumpout cycles (after long periods of shutdown). Well pumpout samples were taken from Well 36 in PWB and from Well 279 in COP. *E. coli* and total coliform were not detected in either sample. The highest turbidity level of 2.3 NTU was measured in the PWB sample. The TSS level was <1 mg/L in the PWB sample. Levels of all other conventional pollutants were acceptable. Trace metals were below detection limits or present in very low concentrations. THMs were not anticipated to be present in the well pumpouts as the water is not chlorinated. A summary of these results is present in Appendix I, Table I.5.

CHAPTER 5
BEST MANAGEMENT PRACTICES FOR NON-TREATMENT DISCHARGES

INTRODUCTION

Based on a review of the sampling data, survey results and available utility documents, the primary water quality parameters of concern related to NTDs are chlorine, ammonia (chloraminating systems), phosphorus (where a phosphate-based corrosion inhibitor is added), THMs, trace metals (selenium, copper, iron), elevated pH levels, and VOCs (pipe linings). The parameters will vary by type of NTD and specific location but this is a general list that can be used for planning and guidance purposes. Implementing BMPs can assist a utility in complying with these parameters of concern. Prevention and minimization of NTDs are integral parts of a well-developed BMP plan. Treatment BMPs are developed as needed for dechlorination, oil and grease, THMs, VOCs, and metals. Adoption and use of BMPs relaxes the monitoring requirements for NTDs. In this chapter, BMPs available for various aspects of NTDs are discussed. Based on the typical BMPs followed by water utilities, guidance BMPs were developed which can be adopted by a water utility after incorporating site specific modifications. Utilities may also choose to discharge NTDs to sanitary sewers (combined or separate), or to storm sewers due to convenience, proximity or reduced administrative or permitting burdens.

NTD PREVENTION AND MINIMIZATION BMPs

NTD prevention and minimization BMPs include maintenance and enhanced system operations and control strategies to limit the number and quantity of unplanned NTDs. Prevention BMPs may include maintenance and replacement of valves, installation and maintenance of altitude valves and level sensors in tanks and reservoirs to limit overflows, and coordination of reservoir operations during periods of low water demands. Other minimization BMPs include the development of asset management and maintenance systems to streamline regular maintenance, prioritization of unplanned NTDs based on their volume and vicinity to a receiving water, and design of new mains to include blowoffs that discharge through hydrants or directly to a sanitary or storm sewer system (WSSC, 2006).

TREATMENT BMPs

Generally, water utilities prefer to discharge NTDs to a sanitary or combined sewer or a storm drain which typically does not require any additional treatment. If these options are not available, then treatment BMPs such as control of free and TRC, pH adjustment, sediment and erosion control, and oils and grease removal are practiced by water utilities. For effective implementation of treatment BMPs, training of distribution system crews on new treatment techniques and chemical handling is an essential element. Each of the treatment related BMPs for NTDs are described below.

Dechlorination of NTDs

Early chlorination practices were developed for the purpose of disinfecting water supplies to protect public health. Chlorination processes are especially suitable for the inactivation of enteric viruses, oxidation of iron and manganese, taste and odor control, control of biological growth on filters, and for the elimination of existing bacteria and after-growth in the distribution system. Superchlorination was subsequently developed for the additional purpose of destroying objectionable taste and odor, producing substances often associated with chlorine-containing organic material. Superchlorination typically involves the addition of chlorine in dosages higher than 10 mg/L, and is often utilized in the maintenance and disinfection of water mains, WTPs, water storage facilities, and wells.

Disinfection through superchlorination of water storage facilities and water mains is necessary to assist water utilities in controlling coliform or pathogen proliferation, biofilm formation, and taste and odor problems. AWWA Standards for disinfection of storage tanks and water mains, C652 and C651 respectively, provide three different alternatives for disinfection by chlorination utilizing chlorine concentrations ranging from 2 to 200 mg/L. A chlorine residual ranging from 10 to 50 mg/L may remain in the water following required disinfection procedures. Chlorine residuals of this magnitude are outside of the range of acceptable water quality. Dechlorination of superchlorinated discharges requires special equipment and large amounts of chemicals when compared to NTDs with typical chlorine residuals (< 4 mg/L). Treatment BMPs for superchlorinated NTDs and normal NTDs (with chlorine levels < 4 mg/L) are discussed separately in the following sections (WSSC, 2006).

Dechlorination can be defined as the practice of partially or completely removing the residual chlorine present in a water through any chemical or physical treatment process. Dechlorination may be achieved through the use of a chemical reagent which reacts instantaneously with the excess chlorine present in the water. A variety of chemicals are commercially available: sulfur dioxide, sodium sulfite tablets, calcium thiosulfate, sodium bisulfite, sodium sulfite solutions, ascorbic acid, and sodium ascorbate. Each chemical has potential advantages and disadvantages associated with its transport, handling, application, and economics (Tikkanen et al., 2001).

Table 5.1 summarizes the chemistry and health and safety issues associated with commonly used dechlorination chemicals.

While the above described chemicals are effective for dechlorination, the majority of water utilities participating in this research project preferred the tablet form of dechlorination chemicals because of their ease of handling. At present, only two chemicals (sodium sulfite and ascorbic acid) are commercially available in tablet form.

Dechlorination of Superchlorinated NTDs

Alternatives for dechlorinating superchlorinated NTDs may include disposal to a sanitary sewer at a flow rate that will not adversely impact the treatment processes at the WWTP, storing in a pond or lagoon until chlorine dissipates, or using a portable trailer mounted dechlorination system. Dechlorination can also be accomplished within tanks and reservoirs by using a mixture of the required amount of dry chemicals (sodium bisulfite or sodium metabisulfite) based on stoichiometric reactions or by feeding sulfur dioxide gas with a pump. A water utility may also hire a private contractor (preferably approved by the local and/or state agencies) for dechlorinating superchlorinated water before it is discharged to the environment.

Table 5.1
Chemistry and health issues of common dechlorination chemicals
(Adapted from Tikkanen et al., 2001)

Dechlorination chemical	Parts required per part chlorine removed	Alkalinity consumed (as $CaCO_3$)	Chemical reaction	Health and safety issues
Sulfur dioxide, SO_2	0.9	2.8	$SO_2+Cl_2+2H_2O=$ $2HCl+H_2SO_4$	Toxic chemical, causes irritation to eyes, nose, throat and lungs, transportation issues
Sodium bisulfite, $NaHSO_3$	1.46	1.38	$NaHSO_3+Cl_2+H_2O=$ $NaHSO_4+2HCl$	Safe chemical, causes skin, eye and respiratory irritation, potential toxic to aquatic organisms at high doses
Sodium sulfite, Na_2SO_3	1.78	1.38	$Na_2SO_3+Cl_2+H_2O=$ Na_2SO_4+2HCl	Affects brain and respiratory system, causes skin, eye and respiratory irritation, may depress in receiving water pH
Sodium thiosulfate, $Na_2S_2O_3$	2.2 at pH 6.5 1.6 at pH 9.0	-	$2Na_2S_2O_3+Cl_2=$ $Na_2S_4O_6+2NaCl$	Causes skin, eye and respiratory irritation, may depress pH
Calcium thiosulfate, CaS_2O_3	1.3 at pH of 6.5 1.0 at pH 7.35 0.45 at pH 11	-	$CaS_2O_3+Cl_2+H_2O=$ $Ca(HSO_3)_2+4HCl$	May cause skin and eye irritation, may depress pH in receiving waters
Ascorbic acid, $C_5H_5O_5H_2OH$	2.48	-	$C_5H_5O_5H_2OH+HOCl=$ $C_5H_3O_5CH_2OH+HCL+H_2O$	May cause skin and eye irritation, may depress pH in receiving waters
Sodium ascorbate, $C_5H_5O_5H_2Na$	2.78	-	$C_5H_5O_5H_2Na+HOCl=$ $C_5H_3O_5CH_2OH+NaCL+H_2O$	May cause eye and respiratory irritation

Dechlorination of NTDs With Normal Levels of Disinfectant

Dechlorination of NTDs with total chlorine levels below 4 mg/L can be achieved with different chemicals using a number of commercial dechlorinating devices as well as using those developed independently by water utilities. Solutions of powdered dechlorinating chemicals can be fed with a pump, however, proper mixing of chemicals with chlorinated water must be ensured. Most commercial dechlorinating devices use the tablet form of dechlorination chemicals.

Dechlorination Devices

Water utilities may select from several commercially available dechlorinating devices. These include diffusers, hose diffusers, neutralizers, mats, and stripping units. In addition, a number of devices have been developed by water utilities (such as WSSC) which have been effectively used. Several devices and techniques are available for implementing dechlorination of NTDs at various water system locations. These include a portable trailer which can house specific dechlorination devices and be moved to various predetermined and unspecified locations within a distribution system. The COP uses such a trailer as shown in Figure 5.1. The design criteria and details of this trailer are included in Appendix K—Suggested BMPs for NTDs.

The type of dechlorination devices that are available include eductors, hose extensions, diffusers, tablet neutralizers, mats, stripping devices, vessel dechlorinators, and injectors. The details of these devices are presented in Appendix K. Diffusers, injectors and eductors are more suitable for

Figure 5.1 Trailer-mounted portable dechlorination system

mounting directly on a hydrant, blow off valve, or a portable trailer. The mats, stripping devices, and vessel dechlorinators are more suitable for open channel or overland flow applications.

Various types of tablets are available for use in these dechlorination devices. Sodium sulfite tablets vary between 81–92% purity, depending on the manufacturer. Ascorbic acid tablets and sodium ascorbate granules are also available, but these are almost triple the cost of sodium sulfite on a unit cost basis. Utilities can select the chemical based on the device that is used, impacts of any residual dechlorination chemical on the receiving stream, operator heath and safety issues, and cost for dechlorination purposes. Each of these devices are described in detail in Appendix K (WSSC, 2006).

SEDIMENT REMOVAL AND MANAGEMENT

Controlling erosion is important to maintain existing or desired water conveyance paths and to protect the *Waters of the U.S.* from sediment/erosion pollution. Examples of erosion control BMPs are (NCS, 2003):

Temporary	Permanent
Temporary diversion dike	Pipe slope drain
Straw bale barrier	Check dam
Silt fence	Erosion protection at structures
	Rock outlet protection
	Channel lining

Appendix K provides General Erosion Control Guidelines for Well Pumpout Discharges and Fire Hydrant Flushings. Both temporary and permanent measures are discussed.

Temporary Erosion Control BMPs

Temporary BMPs are used to control potential erosion caused by both planned and accidental events. For planned activities, the temporary BMPs should be in place before the activity begins. Examples of planned activities are extended well pumpouts, hydrant flushings, hydrostatic test water discharges following new water main construction, and discharges of highly chlorinated water following disinfection (highly chlorinated water must be dechlorinated prior to discharge). For accidental activities, the BMPs should be applied as soon as the erosion-causing event is observed. Temporary controls should be removed after the planned or unplanned discharge event is completed (ADOT, 1995).

Temporary erosion control BMPs include diversion dikes, straw bale barrier, and silt fences. These are further detailed in Appendix K.

Permanent Erosion Control BMPs

Permanent BMPs are constructed before an activity to prevent anticipated erosion. These BMPs are permanent and require regular maintenance to ensure their ability to function as desired during an erosion event.

If erosion has occurred in a minor area that is impacted by concentrated storm water runoff or well pumpouts and it is probable that future runoff events will continue to cause erosion damage, then permanent erosion control BMPs should be implemented. Permanent control measures must be regularly maintained throughout the life of the project.

Permanent erosion control BMPs include pipe slope drains, check dam, channel and culvert outlet protection, lining channels, and sediment traps (ADOT, 1995).

Comparison of Temporary and Permanent Erosion Protection Measures

Temporary erosion protection measures are best used on a 'one event' basis. When an area or a stream needs to be protected from erosive elements during a single event, then temporary erosion control measures should be employed. All temporary erosion protection measures must be in place before the event, must be maintained in proper working order throughout the time period of the event or series of events, and removed at the end of the event. Only remove the measure after the potential erosion event has past and the area is considered stabilized and safe from future storm events causing erosion damage. When erosion is observed and is actively delivering sediment to a natural wash, a temporary erosion protection measure should be employed immediately to minimize the erosive action.

When the recurrence of the activity is likely, then a permanent erosion control measure should be applied. Permanent erosion protection measures are used to prevent erosion over an extended period of time. The permanent erosion protection measures must be maintained throughout the life of the project (NCS, 2003).

Implement, Inspect, and Maintain Pollution Controls

Proper implementation, inspection, and maintenance of pollution control measures are essential to achieve the goals of erosion and sediment control. Site inspections before, during, and after rainstorms or planned or unplanned discharge events will help considerably in identifying necessary erosion controls. Repairs must be made as soon as possible after damaging discharge events.

Since many temporary controls can be easily damaged during construction activities, heavy rainstorms, or extended discharges, inspections should be conducted before the planned activity to identify damaged or potential problem areas. For example, a temporary diversion dike that has been inadvertently breached by construction equipment can result in concentrated storm water flowing down an embankment slope, producing more erosion than what would have occurred without the dike.

Based on the results of the annual inspection and review of the installed BMPs, it is recommended to refine or modify the generic and site-specific BMPs as necessary to reflect changed site conditions or technological improvements.

For each instance that a temporary or permanent BMP is utilized, document the situation and effectiveness of the utilized erosion control measure. Installed permanent control measures should be inspected annually to identify potential problems and to evaluate the long-term effectiveness of the BMP. Document all maintenance activities for each of the installed permanent erosion control measures. Maintain a central file, organized by year for each year of the project, that contains all of the event-specific documentation for each installed temporary and permanent erosion control measure. An annual review should be conducted on a site specific basis of all temporary and permanent BMPs utilized for the previous year. The effectiveness of each BMP will be evaluated during the annual review. Based on this annual review, the generic and site-specific BMPs will be refined to reflect changing site conditions and technological advancements (NCS, 2003).

Erosion Control BMPs for Non-Facility Specific Discharges

If the dechlorinated NTD water originates in a paved, curbed and guttered street section, the water should be discharged into the curb and gutter of the paved street. These flows will then follow the route of normal pavement drainage. If the dechlorinated NTD water originates within 100 feet of a paved, curbed and guttered street section, a hose should be used from the source water to the curb and gutter of paved street. These flows should be discharged into the curb and gutter of the street and will then follow the route of normal pavement drainage. If the dechlorinated NTD water originates in an area where discharging into the curb and gutter of a paved street is impractical, a fog nozzle should be used to disperse the water over a large area to eliminate the opportunity for concentrated flows to occur. These flows will then evaporate or infiltrate into the soil. If the fog nozzle clogs frequently (most likely during preliminary water main flushings prior to disinfection tests), remove the nozzle and apply alternate temporary erosion control at the point of discharge. For isolated sites, construct temporary washout areas with diversion dikes, temporary earthen berms, or excavated pits that will be later backfilled. Locate these wash out areas away from storm drains, open ditches, or *Waters of the U.S.* Make sure water leaves the site at non-erosive velocities (NCS, 2003).

Remedial Repair Measures for Eroded Areas

If there is evidence that an unplanned, unscheduled water discharge event has caused removal of the soil or vegetation at the location of the originating water or along its flow path, remediation needs to take place. If the erosion impacts a minor area that is not impacted by concentrated storm water runoff, the topsoil should be replaced and compacted to its original condition prior to the discharge event.

If the erosion is a minor area that is impacted by concentrated storm water runoff and it is probable that future runoff events will continue to cause erosion damage, then a permanent erosion control BMP should be implemented. If the erosion has impacted a major area, then an engineer should visit the site and propose appropriate erosion control measures (NCS, 2003).

WATER STORAGE TANK AND RESERVOIR BMPs

Incorporating NTD BMPs in the routine O&M of reservoirs and storage tanks will greatly assist in reducing the impact of planned and unplanned events and in complying with CWA provisions. These BMPs relate to pollution prevention, operating strategies, containment of potential waste streams, and monitoring of overflows.

These BMPs can be applied to overflow streams, drains, and periodic cleaning activities. Containing and segregating other streams such as site drainage, roof drainage, and chemical and oil spills from the reservoir/tank NTD discharge streams are also beneficial. If these streams combine with the NTD stream, pollutants will be carried along with the NTD stream that could lead to inappropriate conclusions about the NTD discharge quality. BMPs include containing chemical spills from chlorine and other chemicals and containing discharge of oil and/or grease from on-site mechanical equipment and leaking vehicles.

Overflow BMPs

For large tanks, using a locally controlled hard-wired valve with an actuator that is linked to a high level sensor can prevent overflows. This can also be done through a telemetry system, but the system is susceptible to failure during a power outage. Smaller tanks can use hydraulically actuated altitude valves on the fill line to automatically close the fill valve and prevent an overflow event. Also, using a pre-overflow water level sensor to warn the operations staff that the tank is about to overflow will allow the staff to take the necessary precautions. Redundant controls and alarm systems will also assist in preventing overflows.

Drainage and Maintenance BMPs

Some discharges from reservoirs can be planned and controlled. Draining of a reservoir is a necessary maintenance occurrence. Typically, the level is brought down to a low level by emptying the reservoir to the distribution system until the quality of the stream is not suitable for drinking purposes due to sediments (usually a few feet from the bottom). At this point, the tank drainage stream becomes an NTD, and BMPs should be implemented. Based on the anticipated quality and historical experience, the drain stream can be contained in a retention area, or a temporary bermed area to remove sediments prior to discharge, or a temporary filtration system (skid mounted) could be used if needed. Dechlorinaton should also be applied, if needed. The NTD can be dechlorinated at the outlet of the drain pipe for best results. Similar practices should be followed when cleaning activities are completed and the cleaning residual materials are being removed from the reservoir/tank.

When returning the facility to service, performing a highly chlorinated disinfection procedure is standard. This highly chlorinated water would need to be drained before the reservoir can be brought back on-line. For such procedures, a mobile dechlorination unit or similar device should be brought to the site to reduce the chlorine residual level in the discharge water to acceptable standards (refer to dechlorination BMPs discussed earlier).

Routine Inspections

Regular inspection and maintenance of all on-site equipment, valves, and piping should be conducted in accordance with individual manufacturers' O&M manuals. Equipment and valves should be inspected for proper operation. Piping should be inspected to ensure corrosion or other outside factors have not created cracks or breaks which may allow contamination from outside elements.

Measures should be taken to ensure proper operation of the chlorine system equipment, if such equipment is used at the facility. This practice will help prevent potential contamination of overflow by chlorinated water. In the event of a discharge of over-chlorinated water, a mobile dechlorination unit should be brought to the site to reduce the chlorine residual level in the discharge water to acceptable standards.

All concrete, paved and ground surfaces should be kept dry (weather permitting) and clean at all times. Also, tank level transmitters and floats should be inspected and maintained regularly in order to promote proper operation. This practice will help ensure operators are promptly notified if an overflow situation exists.

Where applicable, chemical deliveries should be avoided during a storm event. This practice will help prevent storm water contact with chemicals and reduce the likelihood of storm water transfer of chemicals to a detention basin and eventual discharge to the environment.

GENERAL WELL PUMPOUT BMPs

During routine operation, most wells are pumped to waste for a period of five minutes prior to each use. After a period of extended inactivity, a well must be "pumped-out" for a longer period of time before being returned to service. This procedure is intended to stabilize water quality within the well prior to pumping to the potable distribution system.

Preventive Maintenance

Each well site should have a preventive maintenance program which tracks the maintenance history of all major equipment and assists in forecasting and scheduling of preventive maintenance.

Individual equipment manufacturers' O&M manuals are available for all major equipment installed at the site. O&M manuals provide details regarding the specific O&M requirements for individual pieces of equipment.

It is not the intent of the BMP plan to describe specific O&M procedures which are included in the site preventive maintenance program or the individual equipment manufacturers' O&M manuals. Specific procedures related to the O&M of the site should be obtained from one of these other sources of available information.

General BMPs for Well Pumpouts

BMPs for well pumpouts are described in the following sections. In some cases, individual BMPs are provided for both "routine well pumpouts" as well as "extended well pumpout" procedures. Routine well pumpout BMPs address well pumpouts which occur on a regular basis as part of routine O&M, while "extended well pumpouts" occur after longer periods of well inactivity. Additional details are provided in the following sections.

Maximum Pumpout Duration

Testing should be conducted at each well site to determine the maximum pumpout time required for various periods of well inactivity. Based on the information obtained from these tests, protocols should be established to determine the maximum interval allowable between well pumpouts to maintain a pumpout time of less than five minutes. A five minute pumpout duration is considered necessary to bring well discharge to an acceptable quality before pumping water into the system for potable consumption. Timers should be installed on each pump to regulate well pumpout times during unattended pumpouts. Pollution potential monitoring should be performed per the discharge permit during selected routine pumpout procedures, but not less than once annually. Water quality parameters including TDS, conductivity, oil and grease concentrations, turbidity, TSS, initial nitrate flush, and temperature should be monitored as part of this process.

When possible, well pumpout time should be limited to five minutes in duration by restricting periods of well inactivity accordingly. If a well has been inactive for a period of time and requires a well pumpout time of greater than five minutes, the pumpout procedure should be monitored by on-site utility personnel. In order to minimize pumpout time, well pumpout discharge water quality should be monitored during the pumpout procedure to determine when water quality has stabilized or reached acceptable levels for discharge to the potable system. Water samples should be obtained and tested in the field (conductivity, turbidity and temperature) and laboratory (TDS, oil and grease concentration, nitrates and TSS) on an hourly basis during an extended pumpout procedure. Extended well pumpouts are assumed to occur only once per year (NCS, 2003).

Installation of Retention Basins and Dry Wells

Retention basins or dry wells should be installed at all well sites which do not ultimately discharge pumpout flow to a permitted storm drain system. Well pumpouts which ultimately discharge to permitted storm drain systems should continue to do so with no additional construction necessary (see site specific erosion control recommendations to address issues of direct discharge). Retention basins or dry wells will serve to prevent routine well pumpout flows from exiting the site uncontrolled.

By definition, a dry well must also receive discharges of storm water runoff in combination with potable water discharges to be classified as a dry well. A potable water injection well only receives discharges of potable water. Well pumpouts are considered a potable water discharge.

Routine Well Pumpouts. Retention basins should be sized with a capacity equal to the volume of two, five-minute well pumpouts. It is assumed that wells will start and stop a maximum of two times during the course of a 24-hour period. Depth and surface area of the retention basin should be determined based on site constraints including available land area and existing topography. However, all basins should be a minimum of 12 inches deep.

Dry wells should be installed to dewater retention basins within 36 hours of a routine pumpout event. Percolation tests and site soil evaluations should be conducted to determine appropriate values for maximum volume of drainage per dry well. All dry wells should be inspected regularly.

Sites may be equipped with a manhole/dry well system, in lieu of a retention basin. In this configuration, pumpout events are directed to discharge into a precast manhole that overflows into an associated dry well. The precast manhole is constructed in place of a retention basin. The precast manhole/dry well system is designed with a capacity equal to the volume of one, five minute well pumpout.

Extended Well Pumpouts. On-site retention basins and dry wells will not have sufficient capacity to handle the volume of discharge produced by an extended well pumpout procedure. As a result, discharge will likely overflow the on-site retention basin or precast manhole/dry well system. The following series of BMPs should be initiated in order to prevent permit limit exceedences for discharge of TDS, conductivity, temperature, turbidity, and oil and grease to the ultimate receiving body of water.

- Overflows from extended well pumpouts should be monitored in the field and laboratory on an hourly basis to identify and address potential contamination issues.
- To prevent additional contamination of pumpout water by on-site pollutants, overflow water should be piped directly from the retention basin or precast manhole/dry well system (or directly from the pumpout if a retention basin/dry well is not installed) to a discharge point which is determined to be hydraulically acceptable.
- If oils and/or greases are present in pumpout water in unacceptable concentrations, a temporary storm water oil/water separator should be installed and utilized to reduce contaminants to acceptable discharge levels.
- If possible, extended well pumpouts should be avoided during a storm event in an attempt to minimize the total volume of water to be handled in the off-site drainage system.
- If sediment levels present in the pumpout overflow reach concentrations which may negatively impact the receiving water body (i.e., cause sediment accumulation to occur), measures should be taken to reduce solids concentrations prior to discharge. Treatment options including silt fences, straw bale barriers, and sand bag barriers are ineffective in addressing sediment issues as they merely divert water without addressing water quality issues. Consequently, a temporary sedimentation tank should be installed to reduce solids to acceptable levels prior to discharge. Overflows should be pumped into the sedimentation tank and allowed sufficient detention time to promote adequate settling of solids. Sedimentation tank size should be based on well pumpout flow rate and detention time required to achieve necessary solids removal (NCS, 2003).

Minimizing Oil in Pumpout Water

Typically, a food grade oil is dripped down the well shaft enclosure tube to lubricate the line shaft of deeper system wells. Excess oil not consumed in the process may drip through a vent hole at the bottom of the shaft enclosure tube and collect on the surface of the water in the well. Over the course of several years, this floating layer of oil deposition could potentially build to as high as several feet. Should the water level in the well drop below original design intent, as a result of pumping rates beyond design levels, or by drawdown in the well during pumping which may exceed design levels, oil floating on the water surface in the well may be drawn into the pump suction and discharged in the well pumpout. Several procedures should be initiated to minimize the occurrence of line shaft lubrication oil in pumpout water:

- Regular monitoring should be performed to evaluate lubrication oil feed rates. In addition, scheduled maintenance of the lubrication feed system should be performed per manufacturers' specifications to ensure proper operation of the system and to minimize the amount of oil applied.
- A method of flow control should be installed on the pumpout discharge to maintain a flow rate similar to the flow rate into the distribution system. This configuration is designed to prevent pumping rates above normal operation (due to different discharge pressures) which may lead to increased drawdown of the water in the well and resultant intake of surface oil.
- Regular monitoring of the aquifer water surface level and pumping water level should be performed to verify that the well pump setting is adequate to prevent intake of surface oil and other contaminants. If these conditions are insufficient to prevent drawing oils into the pump suction, the pump should be lowered to restore proper operation.
- Floating oil on the surface of the water in the well should be manually removed (via bailing) during regularly scheduled pump maintenance (when the well pump is removed from the well). In addition, regular monitoring of oil levels in the well discharge should be performed. If the presence of oil is noted, the well pump should be moved to a lower setting and/or oil should be manually bailed from the water surface (NCS, 2003).

SUMMARY OF RECOMMENDED BMPs

Table 5.2 presents a summary of the recommended BMPs for each type of NTD, based on the findings of this project (adapted from Cal-Nevada Section AWWA, 2005).

SUMMARY OF REFERENCE DOCUMENTS

The following sections summarize the AWWA California–Nevada Section—Guidelines for the Development of BMPs *Manual for Drinking Water System Releases,* as well as a recent research report related to managing NTDs.

Guidance Manual for Disposal of Chlorinated Water

The primary objectives of this Awwa Research Foundation (AwwaRF) project were to evaluate current chlorinated potable water disposal practices and to prepare water release guidance for U.S. and Canadian utilities.

The research was conducted with the active participation of ten water utilities diverse in geographical location, type of disinfection agent used, population served, and source water characteristics. Field studies on dechlorination of planned water releases were conducted at three of the utilities. Other project tasks included a compilation of U.S. and Canadian regulations restricting the release of chlorinated water to the environment, identification of the various activities releasing

Table 5.2
NTD water quality concerns and recommended BMPs

Discharge type	Discharge activity	Potential water quality issues	Recommended BMPs
Potable water	Distribution system flushing	Chlorine, sediment, metals, ammonia,* chloramine,* phosphorus†	Discharge point selection and priorities (to sanitary sewer, storm sewer, etc.) dechlorination with commercially available equipment, erosion and sediment control, treatment for specific contaminants, notification, training
Potable water	Hydrostatic testing of new and repaired mains	Chlorine, sediment, metals	Discharge point selection and priorities, dechlorination, erosion and sediment control, treatment for specific contaminants, notification, training
Potable water	Disinfection of new or repaired mains	Chlorine, TDS, metals, pH, VOCs	Discharge priorities, dechlorination, erosion and sediment control, treatment for specific contaminants, notification, training
Potable water	Reservoir or tank drains	Chlorine, sediment, metals, THMs, BOD, VOCs, ammonia,* chloramine,* phosphorus†	Discharge priorities, dechlorination, erosion and sediment control, treatment and disposal of sediments, treatment for specific contaminants, routine inspections (e.g., chlorine equipment, site conditions), notification, training
Potable water	Disinfection and leak testing of reservoirs or tanks	Chlorine, metals	Discharge priorities, dechlorination, erosion and sediment control, treatment for specific contaminants, notification, training
Potable water	Tank/reservoir overflows	Chlorine, metals, ammonia,* chloramine,* phosphorus†	Level monitoring (e.g., alarms, actuator valves), routine inspections, dechlorination, erosion and sediment control, notification, training
Untreated groundwater	Well pumpouts	Sediment, metals, inorganic contaminants, organic contaminants, oil and grease, TDS, TSS	Discharge point selection, retention basins and dry wells, erosion and sediment control, treatment for specific contaminants, maximum pumpout duration, leak and stormwater containment, minimum lubricant oil use (e.g., flow control, monitoring feed rate), notification, training
Untreated/treated groundwater	Well maintenance	Chlorine, sediment, metals, inorganic contaminants, organic contaminants, oil and grease, TDS, TSS	Discharge point selection, detention basins and dry wells, dechlorination, erosion and sediment control, treatment for specific contaminants, maintenance scheduling, notification, training
Potable water	Unplanned events (e.g., main breaks)	Chlorine	Asset management, priority locations (e.g., near receiving waters), public safety, site restoration, infrastructure design, notification, training

* Ammonia and chloramines are a concern to chloraminating systems only.
† Phosphorus is a concern to systems that add a phosphate-based corrosion inhibitor.

chlorinated waters, documentation of current dechlorination techniques, and a review of new dechlorination technologies. Planned, unplanned, and emergency releases were classified in terms of flow and chlorine concentration.

U.S. Federal regulations were discussed from two perspectives: technology based effluent limits and water quality-based discharge limits. Information on state regulations included residual chlorine limitations for all 50 states, and a summary of chlorine restrictions defined through permit programs for 36 states. Also discussed were associated regulations impacting dechlorination including rules on ammonia, DO, pH, and water quality limited receiving streams. The Canadian regulatory environment, with respect to chlorinated water discharges, was presented along with water quality guidelines and water quality criterion for each provincial agency.

Chemical and nonchemical methods for dechlorination and chlorine measurement techniques were discussed. Chemical dechlorination could be achieved with sulfur dioxide, sodium bisulfite, sodium metabisulfite, sodium sulfite, sodium thiosulfate, calcium thiosulfate, ascorbic acid, and sodium ascorbate. Passive, nonchemical dechlorination methods include retention in holding ponds, land application of chlorinated water, discharge of chlorinated water for groundwater discharge, discharge through hay bales and other natural obstructions, and discharge to sanitary sewers. Advantages of these methods included the elimination of chemical addition, which in turn eliminates the effects of neutralizing chemicals in receiving streams, and alleviates the cost and health/safety concerns related to the storage, transportation, and handling of chemicals. Field measurement of residual chlorine is necessary in order to assess both the need for dechlorination and the effectiveness of dechlorination operations. Evaluation criteria in selecting the appropriate method should include ease of use, detection limit, precision, accuracy, and cost.

Discharging directly to a storm sewer is a potentially effective method of dechlorinating using the chlorine demand of organic and inorganic material in storm waters. There are risks, including low chlorine demand in the system, long travel times required for complete neutralization, and the potential for chlorinated water to reach receiving streams prior to sufficient neutralization.

Aspects of common chemicals used for dechlorination are as follows:

- The most frequently used chemicals for dechlorination are sodium bisulfite, sodium sulfite, and sodium thiosulfate.
- Sodium bisulfite has a low cost and high rate of dechlorination, however it is corrosive, can scavenge oxygen from water, is highly acidic, and has toxic effects to aquatic species. It may crystallize at room temperature, which can clog taps and pipes in the delivery system.
- Sodium sulfite is available in tablet form and is not rated as a hazardous chemical, produces less dust, and dissolves more gradually than powders and crystals. However, sodium sulfite scavenges oxygen in receiving streams, it is often difficult to control feed rates, and may off-gas hazardous sulfur dioxide under heat.
- Sulfur dioxide gas, widely used in WWTPs, is not recommended for dechlorinating potable discharges as it is rated as a hazardous and toxic chemical, requires reporting under Superfund Amendments and Reauthorization Act (SARA), Title III, Section 313 regulations, and great caution must be exercised when transporting cylinders.
- Sodium and calcium thiosulfate are available in powder/crystalline forms, not rated as hazardous substances, not toxic to aquatic species, scavenge less oxygen than other dechlorinating chemicals, and their feed rate can be better controlled. Calcium thiosulfate is not corrosive and does not produce sulfur dioxide off-gas. Disadvantages

include they have to be used in solution form, chemical costs and metering pumps for controlled delivery are expensive, and over dosing may promote thiobacillus and other bacterial growth in receiving waters.

- Ascorbic acid and sodium ascorbate do not deplete DO significantly. Ascorbic acid may decrease the pH by 2 to 3 standard units in some cases, however sodium ascorbate does not. Sodium ascorbate is more expensive.

Guidelines for Development of BMP Manual for Drinking Water System Releases

This publication was developed by representatives from California and Nevada water utilities (California-Nevada AWWA Environmental Compliance Committee, 2005), and provides general guidance for water utilities in implementing BMPs that will reduce or eliminate the release of potential pollutants in discharges from drinking water production, treatment, and distribution systems. The manual recommends that each water utility develop its own BMP manual specific for their operations.

The manual provides examples of procedures used by the drinking water industry to better manage potable water releases and remain in compliance with regulatory requirements.

The manual summarizes drinking water system releases and potential pollutants of concern and applicable BMPs associated with each release category:

- Potable water
- Raw water
- Groundwater
- Potential low volume releases

The manual describes the different types of administrative BMPs that may be implemented as additional measures in the overall effort to reduce the potential water quality impacts of pollutants during drinking water system releases. Administrative BMPs are nonstructural BMPs, such as managerial practices, O&M procedures, or other measures designed to reduce or prevent potential pollutants from being discharged during drinking water system releases. Such administrative BMPs can be applied before, during, and/or after water release activities. Examples of administrative BMPs are presented below include conservation and reuse of water, training and education of employees in managing unplanned releases, planning, scheduling, and establishing standard operating procedures (SOPs), proper storage and use of materials and wastes, and proper documentation to handle planned and unplanned releases.

The manual describes BMPs to minimize erosion and the transport of sediment to storm drains or receiving waters during drinking water system releases.

The manual also describes BMPs for dechlorination or dechloramination of drinking water system releases to the storm drains or receiving waters.

The onsite treatment BMPs apply to raw water, potable water, and groundwater releases, BOD reduction, pH adjustment, oil separation/removal, metals precipitation and removal, VOC removal, semi-volatile VOC removal, and sedimentation/filtration using portable tanks.

Specific BMP procedures are described in the manual and include details for measuring chlorine residual, dechlorinating releases from a main break, dechlorinating hydrant releases using tablet reagents, dechlorinating hydrant releases using liquid reagents, disposal of dechlorination waste, erosion and sediment control during pipeline and hydrant flushing, erosion and sediment control during unplanned discharges, and erosion and sediment control during high flow rate activities (e.g., aquifer testing and well development).

Additional Publications

In addition to the above reviewed documents, BMP information was obtained from the participating case study utilities. Discussions held during the workshops were also used to enhance the BMP guidance. The following documents, although not peer reviewed, were utilized in summarizing BMPs and developing guidance for water utilities:

- PPP for Potable Water Discharges, WSSC, 2006.
- Potable Water NPDES Permit Applications Implementation Manual, COP Report, June 2003.
- Various BMPs, PWB, 2006.
- Potable Water Dechlorination Procedure, Philadelphia Water Department, 2006.

CHAPTER 6
GUIDANCE FOR UTILITIES AND REGULATORY AGENCIES

INTRODUCTION

This chapter provides guidelines and decision analysis tools to assist system operators and regulators with appropriate methods for disposing of NTDs from water systems. The findings presented in the previous chapters from the literature review, regulatory and utility surveys, field monitoring activities, and BMP development tasks have been integrated into an overall planning tool. The guidance is presented by type of NTD, and a list of disposal issues and considerations has been developed for each type of discharge. Key regional issues are also identified to assist utilities in developing and complying with multi-source or general NPDES permits.

This chapter also discusses the potential environmental impacts of these discharges based on the results of this research project. The impacts on NPDES compliance, WQS, and aquatic toxicity are also discussed. A table of recommended monitoring parameters and frequencies as a function of the type of discharge is also provided.

ENVIRONMENTAL IMPACTS OF NTDs

The field sampling results and a review of historical data from case study water systems suggest that the potential constituents of concern in NTDs include chlorine, ammonia (chloraminating systems), phosphorus (where a phosphate-based corrosion inhibitor is added), THMs, trace metals (selenium, copper, iron), elevated pH levels, and VOCs (pipe linings). The levels of these constituents may not meet surface WQS, based on site specific factors. Where fish consumption or aquatic life designated uses exist in the receiving stream, levels of aldrin, anthracene, benzo(a)pyrene, carbon tetrachloride, chlordane, endrin, heptachlor, heptachlor epoxide, mercury, polychlorinated bi-phenyls, toxaphene, mercury, selenium, and 1,2-dichlorobenzene are a concern. This is because the surface WQS for these contaminants are lower than the drinking water MCL, and this may pose CWA compliance issues for drinking water NTDs.

Minimizing impacts of erosion on the receiving stream and the aquatic life are also primary concerns with NTDs. If these concerns are mitigated by BMPs, representative sample collection and monitoring, dilution, or simple chemical treatment prior to discharge, the environmental impacts to receiving stream quality, TMDL mass loadings, and aquatic life are not significant.

DEVELOPMENT OF AN OVERALL PERMITTING STRATEGY

For successful management of an NTD program, it is recommended that medium (>10,000 to 100,000 customers) and large (>100,000 customers) sized utilities develop a permitting strategy in advance to prepare for unplanned and planned NTD events. It may be beneficial for small systems also to do such, but the frequency and nature of the discharges may be minor and these events may best be handled on a case-by-case basis. The strategy should include consultation with local, state and Federal (if needed) NPDES agencies and the local storm water utility, sewer agency, and flood control agency. If flushing activities are performed by a separate fire department, the fire department should also be consulted. After these consultations, the appropriate permit (or agency approval) requirements should be identified and an inventory of discharge locations (e.g., *Waters of the U.S.,* storm drain, sewer, and retention area) for facility specific discharges (e.g., tank drains, overflows, pipeline construction, well pumpouts, and relief valves) should be determined. For each discharge point, appropriate BMPs, sampling locations, potential pollutant issues, flooding concerns, and remedial measures should be identified.

For non facility-specific discharges such as flushing activities, main breaks and pipeline repair and contaminated water discharges, area drainage and topographic maps can be used to determine general areas where the discharges occur to determine what agencies have jurisdiction. Generic BMPs, erosion control, notification, and dechlorination strategies can be developed for these non facility-specific strategies, and coordination and notification activities can be planned with the appropriate agencies. Appropriate permit and agency approval criteria can then be determined. In many instances, formal permits may not be needed, but agreements and approvals from agencies can be obtained.

Once the permitting strategy is identified, the water system is in a position to comply with CWA regulations and can respond to unplanned and planned events in an organized manner.

DISPOSAL PRIORITY FOR NTDs

As part of the NTD planning process, water systems should develop disposal priorities for each type of discharge (i.e., preferred discharge location) to minimize regulatory issues, water quality concerns, and agency coordination activities. The disposal priority will vary by type of discharge, the relationship between the water system and storm water and sewer agencies, the NPDES permit requirements and the potential environmental impacts of the discharge. The considerations in establishing a disposal priority for an NTD program are listed below.

Discharge Priority

Disposal Priority is the preferred order of discharge, where there is a choice regarding whether such discharge can be directed to a sanitary sewer, storm sewer or to *Waters of the U.S.* Preference to discharge to the sanitary sewer or the storm drain/receiving water will be dependent upon whether or not the discharger believes or has demonstrated that the NTD does not meet the water quality standards or required effluent limits and treatment to meet these standards or limits would be too extensive. If a discharge to the sanitary sewer is needed, in most cases, authorization is required by the local wastewater authority. The order of preference should also consider notification requirements, any fees that the wastewater or stormwater authority may apply, and potential liabilities that may exist (potential for compliance penalties or citizen lawsuits).

Sanitary Sewer

Given that the water in the sewer is not of a quality that can be discharged to *Waters of the U.S.* without treatment, the potential impact to the water quality from NTDs is minimal. The quality of the water discharged in these situations is either compatible with or, with dilution, will be compatible with the water quality of the raw sewage. Care must be taken, however, to not overburden the discharge to the sewer with unacceptable contaminants (e.g., high concentrations of chlorine or other chemicals or sediments introduced directly or indirectly in the routing of the discharge). It is important to notify the appropriate person in the utility's wastewater department after an unplanned discharge (e.g., water main break) or before a planned discharge event (e.g., during testing or repairs). Notification should include as much detail as possible about the event including the source, location, time, duration, volume, water quality, and whether any samples were or will be taken.

Storm Sewer

Municipal storm water flow has the characteristics of a non-point source in that the sources of flow are diffuse in nature, occurring primarily as runoff from paved or landscaped surfaces within an urban area. These flows are typically routed to discharge to *Waters of the U.S.* without any treatment, and usually result in containment within a conveyance prior to discharge. For this reason, such discharges require a permit under the municipal storm water program administered by USEPA. A storm sewer system can have many expressions, from a dedicated pipe conveyance to a gutter along the side of a street to a grassy or rock-armored channel. NTDs can be routed to the storm water system as long as the municipal storm water permit allows the practice and the appropriate authorizations are obtained. The storm water permit may prescribe monitoring and management procedures for these discharges. It is important to take care during such discharges, where possible, to minimize the introduction of other pollutants through incidental contact or erosion during the routing of flows. Notification of appropriate personnel is important because discharges to the system must be reported in accordance with storm water permit provisions. As with discharges to sanitary sewers, notification should include as much detail as possible about the event including the source, location, time, duration, volume, water quality, and whether any samples were or will be taken. Depending on the NPDES primacy agency and specific state regulations, discharges to the storm sewer may also require a separate NPDES permit. Water systems should consult with the primacy agency to confirm what requirements exactly apply.

Waters of the U.S.

In general, any discharge that does not go to a sanitary sewer, storm sewer, or into the ground is a discharge to *Waters of the U.S*. Such discharges are regulated under the Federal CWA. NTDs to *Waters of the U.S.* can be authorized under Individual or General NPDES Permits, or by policy without a permit if the primacy agency elects to do so. Care must be taken with these discharges to minimize impacts to the *Waters of the U.S.* Impacts are minimized through treatment prior to disposal and erosion control during discharge, and application of remedial measures, where needed, following discharge. As with the above situations, the appropriate personnel should be notified of the discharge in accordance with applicable SOPs, and that notification should include as much detail as possible about the event including the source, location, time, duration, volume, water quality, and whether any samples were or will be taken.

REGIONAL ISSUES

It was apparent that water quality issues and regulatory considerations vary by region. Factors such as climate, geography, agricultural activities, regulatory priorities, and receiving stream aquatic conditions will determine the water quality issues that a region has to deal with. Figure 6.1 presents key water quality issues associated with NTDs and impairment issues in receiving streams. The information demonstrates the variety of regional water quality conditions that exist. States in the Pacific Northwest region of the U.S. (e.g., Oregon) generally have a high

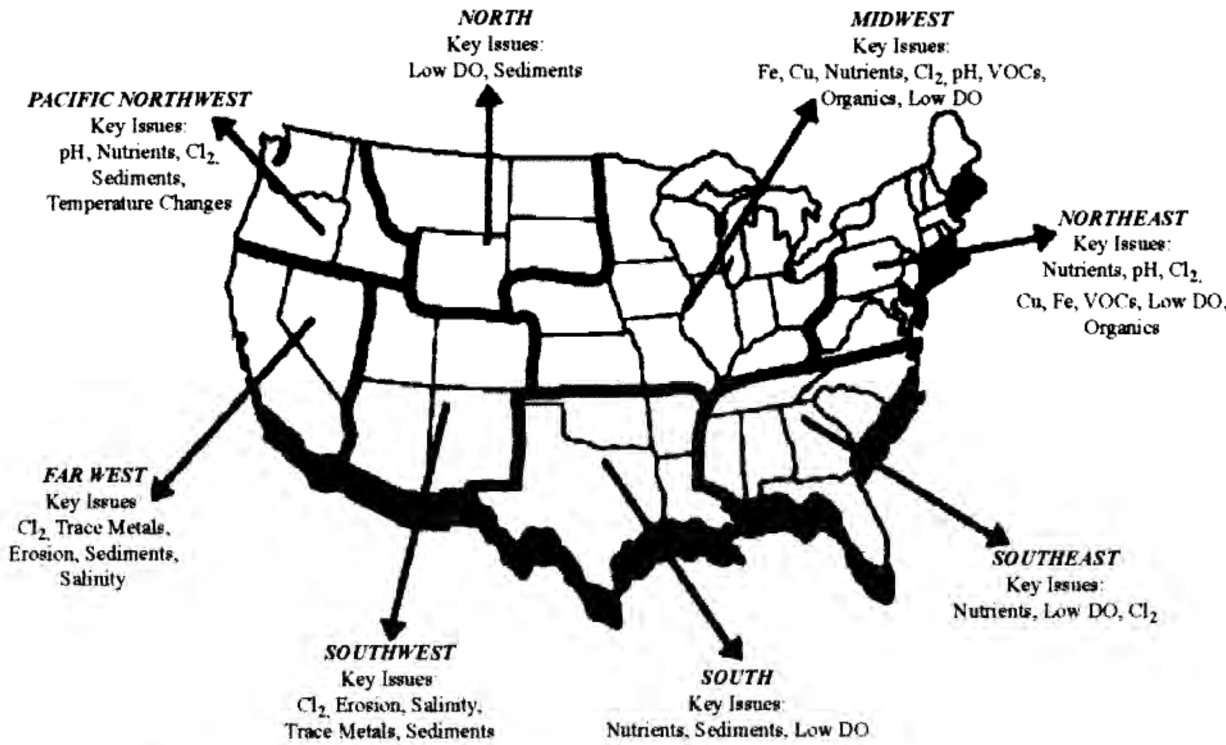

Figure 6.1 Summary of regional water quality issues

annual rainfall, and receiving waters are frequently impacted by temperature and pH changes and nutrient loadings. Chlorine and sediments are also a concern in the Pacific Northwest. Utilities in the Southeastern states (e.g., Florida), with a warm and often rainy climate, may face issues with nutrients, low oxygen availability, and chlorine levels in their receiving waters (although state agencies did not express these concerns during this study). Regions such as the Midwest and Northeast, with a large amount of agriculture also face issues with nutrients and organic enrichment or DO, pH, nutrients, metals (iron and copper), and VOCs (from pipe linings). Key issues in the Southwest and Far West include salinity, erosion, chlorine, sediments, and trace metals. These water quality issues can impact the amount, frequency, and quality of water that a utility can discharge, and thus, determine the approach that a utility will use to manage NTDs. The type of BMPs and treatment required for NTDs will also vary by region, as shown in Figure 6.1.

DISCHARGE MANAGEMENT PROCEDURES FOR FLUSHING ACTIVITIES

Planning

Water main or hydrant flushing is generally a planned activity that offers an opportunity to lay out procedures for future discharges and notification in advance. At the planning stage it is important to identify the schedule of events surrounding the flushing activities, whether part of a program or a location-specific event, and to estimate the quantities and characteristics of the discharge and identify the ultimate disposition of the discharge. Erosion control BMPs and potential required remedial measures can also be identified at this stage. It is recognized that under some emergency conditions, unplanned flushing is required to maintain the integrity and water quality within the distribution system. Under these circumstances, system operators should proceed in a diligent manner that is consistent with typical BMPs and standard industry practices.

It is important that necessary permitting activities of such discharges take place prior to the discharge events. This may involve coordination with one or more of the following groups or outside agencies, depending on the location of the discharge point: local storm water agencies, the sewer authority, local water resource or flood control agencies, and state or EPA Regional NPDES permitting agencies. Planning should include estimated quantities and an assessment of water quality to verify compliance with surface WQS. These agency coordination and permitting activities can be done on an aggregate basis for all anticipated flushing activities or on an individual discharge basis (i.e., if the discharge is occasional).

Notification

Notification will be required depending on the ultimate disposition of the water discharged during flushing. If the water was contained on site and allowed to infiltrate into the ground (retention), notification may only be necessary to those persons that are responsible for mitigation. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.* The disposition of the discharge can be assessed through a review of regional topographic maps that show the receiving waters. For planned flushing discharges, these can be made at least 24 hours prior to the event, or a longer prescribed duration determined by the agency. For unplanned or emergency flushings, these notifications should be made as soon as possible, but always within 24 hours after the event (consistent with CWA requirements).

Flushing Procedures

Flushing procedures should be developed for different circumstances that necessitate such activities (e.g., responding to reported contamination or as part of a normal hydrant flushing program). Further low velocity and high velocity flushings are performed to meet verifying objectives. The utility should utilize their specific SOPs for the appropriate flushing technique and for the type and situation. The impact of the specific flushing technique on the receiving stream should be considered (velocity, water quality, scouring, etc.) to assess if any BMPs are needed.

Discharge Management

During the flushing activity, it may be necessary to apply one or more of the management practices described below with respect to discharge events.

Discharge Priority

When possible, the discharge should be routed in accordance with the discharge priority. The priority will depend on permitted discharge locations, approval from the associated agencies, proximity of the discharge location, need for temporary piping and hose, erosion, and flooding concerns at the flushing location. The discharge priority should be established in advance of the event after considering all these factors.

Pollution Prevention

The flow path of the stream should be examined for potential pollutant sources such as surface contamination/debris, oil and grease, and chemical spills, prior to the flushing event. These pollutants could be carried by the flush water into the receiving stream and result in water quality issues. Remedial measures to remove these potential pollutant sources (if present) should be performed. Dry methods for cleaning should be used to minimize the potential for spreading the potential pollutants.

Confirm Water Quality

Prior to the flushing activity, the anticipated water quality of the flush should be estimated (either from experience, historical data, or sample results). The parameters of concern include TRC, TSS, oil and grease, trace metals, or organics (pipe coatings and linings) or any other known sources of contamination. If the levels are above permitted standards or could impact receiving stream water quality, appropriate remedial measures should be taken (e.g., dechlorination, sediment removal, oil and grease, removal, physical filtration, etc.).

Erosion Control

Care must be taken to minimize the erosion that can be created due to the force of the discharged water leaving the main. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in Chapter 5. Assessments of the impacts of prior discharges and soil conditions should be conducted, and the appropriate remedial measure BMPs should be implemented as needed. Directing flow to paved surfaces using a hose or spray diffuser mechanism should be implemented.

Sampling

It may be necessary to collect a grab sample of the discharged water where possible, depending on the permitting requirements and the frequency of discharge. Some agencies may allow periodic representative samples instead of sampling each flushing event.

Remediation

After the event, it may be necessary in some cases to repair damage that is caused by the force of the water discharged during flushing activities. Such damage can include pavement or pad washouts, gullies in landscaped areas, or sediment deposition in a storm drainage or *Waters of the U.S.* A follow-up inspection should be conducted after the discharge event to document any damage to receiving streams and perform remedial activities, if needed.

Follow-up and Reporting

Following completion of the above steps, it may be necessary to document the circumstances surrounding the activity. Such documentation should include a description of the management actions applied during the activity, if any. Final closure of the flushing activity will involve additional communication to appropriate individuals and regulatory agencies regarding the discharge events, remedial activities and sample results.

DISCHARGE MANAGEMENT PROCEDURES FOR WATER MAIN BREAKS

Incident Log

Water main breaks are unplanned activities that do not provide an ideal opportunity to develop a suitable incident management plan in advance. For that reason, appropriate response to a water main break is most important. The first step in responding to a water main break is ensuring that all of the information regarding the break is available that will allow effective movement toward a plan of action. Important information to record in an incident log includes, at a minimum:

- BMPs implemented and effectiveness
- Name and contact information of the person reporting the break
- Date and time that the break occurred
- Source and location of the break
- Duration of time that discharge occurred
- Approximate quantity of water discharged
- Ultimate disposition and flow path of discharge (e.g., ground, sanitary sewer, storm sewer, *Waters of the U.S.*)
- Quality of water discharged and time of visual inspection or assessment
- Erosion/damage due to break
- Potential pollutant contamination of discharge to *Waters of the U.S.* (e.g., was discharge near landfill, chemical storage, gas station, or hazardous material [HAZMAT] area).

Some of the above information may have to be assembled following the original recording of the break and after an on-site assessment can be made. However, all of the information will be necessary to complete notification obligations.

Notification

Immediate notification is required of all persons responsible for cessation of flow from the break, management of the incident, and repair. Established communication protocols should be followed in this regard. If required by the NPDES primacy agency, regulatory notifications should also be made at the prescribed frequency. This may vary depending on the quantity of flow and the discharge location. Notifications to other local agencies (e.g., storm water, flood control, etc.) should also be made.

Subsequent notification will be required depending on the ultimate disposition of the water discharged. If the water was contained on site and allowed to infiltrate into the ground, notification may only be to those persons that are responsible for mitigation, as required. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.*

Discharge Management

Given the opportunity, depending on the nature of circumstances surrounding the break, it may be possible to apply one or more of the management practices described below.

Containment

If the response is timely and field conditions permit, certain smaller quantity discharges could possibly be contained and allowed to infiltrate or evaporate. To the extent that this practice will not interfere with repair or remedial efforts or create other logistical problems (i.e., traffic blockage, etc.), this is an ideal strategy.

Discharge Priority

When possible, the discharge from a line break should be routed in accordance with the discharge priority. The discharge priority should be established after considering the key factors discussed earlier. For a main break, this most likely means diverting flow using sand bags or other similar temporary means.

Erosion Control

Care must be taken to minimize the erosion that can be created due to the force of the discharged water leaving the main. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in Chapter 5.

Dechlorination

If the flow enters *Waters of the U.S.*, particularly a flowing stream, it may be necessary to dechlorinate the water that has been discharged. To make this determination the accumulation of ponded water at or near the receiving stream should be tested for chlorine residual. If the reading is greater than permitted limits, spreading dechlorination tablets or granules in the discharge stream may assist in complying with surface WQS. Care must be taken when applying dechlorination tablets into a flowing stream from a main break, so that overdosing does not occur. Applying the tablets using a wire mesh basket will assist in regulating how fast the tablets dissolve.

Remediation

It may be necessary in some cases to repair damage that is caused by the force of the water discharged from line breaks. Such damage can include pavement or pad washouts, gullies in landscaped areas, loss of vegetation, or sediment deposition in a storm drainage or *Waters of the U.S.* Following assessment of the damage, appropriate remedial repair measures can be applied as described in Chapter 5.

Incident Follow-up (Closure)

Following completion of the above steps, it will be necessary to document the nature of the response to the main break. Such documentation should include a description of the management practices applied during the break, if any. Final closure of the incident will likely involve additional communication to appropriate individuals regarding remedial activities.

DISCHARGE MANAGEMENT PROCEDURES FOR WATER MAIN REPAIRS

Repair Planning

Scheduled line repair activities offer an opportunity to properly plan for future discharges and notifications. Other repair activities, such as those after main breaks or during emergencies, may not offer such opportunities for a notification. At this stage it is important, with the cooperation of the person responsible for repairing the break, to identify the schedule of events surrounding the repair and estimate the quantities and characteristics of discharge and the ultimate disposition of the discharge. Erosion control BMPs and potential required remedial measures can also be identified at this stage.

Notification

Notification will be required depending on the ultimate disposition of the water discharged. If the water was contained on site and allowed to infiltrate into the ground, notification may only be to those persons that are responsible for mitigation, as required. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.*

Repair Procedures

The amount of water discharged will depend on the type of repair and the nature of the break and the type of materials involved. The utility should utilize their specific SOPs for the appropriate repair technique and for the type and situation. Many repairs are conducted by isolating the pipe segment and installing a repair clamp or other device and applying disinfectant on the affected pipe sections (swabbing). Under these conditions, minimal flushing and test waters are used and the discharge quantity is minimal. The impact of the specific repair technique on the receiving stream should be considered to assess if any additional BMPs are needed.

Repair Testing

Following the repair, it may be necessary to test the repaired section of pipe using a pressure test or similar procedure. The system's appropriate SOPs should be consulted for the material being repaired for required testing protocols.

In the event of a test failure that results in a discharge, the system's SOP for water main breaks should be followed. Because the testing following repair is a planned activity there is the luxury of being able to anticipate what will need to be done in the event of failure. It is safe to assume in most cases that the impacts will be similar to those that occurred during the original break and to plan accordingly.

Following testing, it may be necessary to discharge the test water and flush the line prior to disinfection. Discharge of test water should follow the same protocol as any other flushing discharge with respect to selection of the disposal option, notification, and discharge management. If the line is 12 inches or smaller, it must be flushed thoroughly to remove solids. If heavy or foreign material is thought to be present in a new main, then every hydrant on line must be flushed thoroughly.

Disinfection

After the pipe section has been repaired and tested, it may be necessary to disinfect the line to kill any bacteria that may have been introduced during repair operations. The type of disinfection for the situation should be selected after consultation with applicable disinfection SOPs. Prior to discharge to a storm sewer system or *Waters of the U.S.*, the disinfection water will likely need to be dechlorinated using a portable dechlorination system.

Discharge Management

During the repair of a main break, it may be necessary to apply one or more of the procedures described below with respect to discharge events.

Containment

Low flow/low volume discharges could be contained and allowed to infiltrate or evaporate. To the extent that this practice will not interfere with repair or remedial efforts or create other logistical problems (e.g., traffic blockage, etc.), this is an ideal strategy.

Discharge Priority

When possible, the discharge from a line repair activity should be routed in accordance with the discharge priority. The discharge priority should be established after considering the key factors discussed earlier.

Erosion Control

Care must be taken to minimize the erosion that can be created due to the force of the discharged water leaving the main. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in Chapter 5.

Sampling

It may be necessary to collect a grab sample of the discharged water where possible, depending on the permitting requirements for a water system. This is especially important, and required, when the discharge enters either a storm sewer system or *Waters of the U.S.*

Remediation

It may be necessary in some cases to repair damage that is caused by the force of the water discharged from line breaks. Such damage can include pavement or pad washouts, gullies in landscaped areas, or sediment deposition in a storm drainage or *Waters of the U.S.* Following assessment of the damage, appropriate remedial repair measures should be applied.

Follow-up

Following completion of the above steps, it will be necessary to document the circumstances surrounding the repair. Such documentation should include a description of the management activities applied during the repair, if any. Final closure of the repair project will involve additional communication to appropriate individuals regarding the discharge events, remedial activities, and sample results.

DISCHARGE MANAGEMENT PROCEDURES FOR WELL PUMPOUTS AND MAINTENANCE ACTIVITIES

Planning

Well pumpouts and maintenance are planned activities that offer opportunities to lay out procedures for future discharges and notifications in advance. At the planning stage, it is vital that the discharge location be confirmed and an estimate of the quantities and characteristics of the discharge be made. Erosion control BMPs and potential required remedial measures can also be identified at this stage to ensure proper management of the discharge.

It is important that necessary permitting activities of such discharges take place prior to the discharge events. This may involve coordination with one or more groups or outside agencies, depending on the location of the discharge point. Planning should include estimated quantities and an assessment of water quality to verify compliance with surface WQS. These agency coordination and permitting activities are generally done for well development activities on an individual discharge basis.

Notification

Notification will be required depending on the ultimate discharge location of the water. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.* For planned events, these can be made at least 24 hours prior to the event, or a longer prescribed duration determined by the agency.

Discharge Procedures

More restrictive discharge procedures must be followed for well pumpouts and maintenance activities in comparison to other NTDs, given the potential for increased level of contaminants and TSS in the discharge stream. It is important that a water system have a clear understanding of the water quality issues associated with routine pumpouts, extended well pumpouts, and discharges from other well maintenance and cleaning activities. Generally, well pumpouts are not disinfected and dechlorination is not needed. Discharges from well maintenance activities may contain chlorine, particularly if well cleaning is performed.

Routine pumpouts may be performed prior to each well operating cycle for a few minutes. This stream may contain elevated levels of oil and TSS that may be need to pass through a small retention area prior to discharge.

In addition to oil and TSS, extended pumpouts may contain levels of inorganic contaminants (e.g., arsenic, chromium, nitrate, fluoride, iron, manganese, etc.) until the discharge quality stabilizes prior to pumping into the distribution system. If these conditions exist, the levels of these contaminants should be compared against the standards of the receiving stream, sewer, or storm drain to ensure compliance. If levels are in excess of such standards, this may be problematic and temporary treatment (or blending with another water source that is lower in contaminants) may be needed to carry out the discharge practice.

In addition to oil, grease, TSS, and inorganic contaminants, well maintenance activities may contain elevated levels of organic cleaning agents, chlorine, and microbial contaminants. If historical data is not available, the discharge should be tested to verify the presence of these constituents and any other contaminants of concern (e.g., during a test run). The levels of these contaminants should be compared against the standards of the receiving stream, sewer, or storm drain to ensure compliance. As with inorganic contaminants, if levels are in excess of the standards, this may be problematic and temporary treatment (or blending with another water source that is lower in contaminants) may be needed to carry out the discharge practice. Use of dechlorinating agents, oil and grease separators, sediment traps may be needed to reduce the quantity of pollutants.

The utility should utilize their specific SOPs for the appropriate well pumpout and maintenance techniques for each site specific application. The impact of the specific discharge technique and water quality concerns on the receiving stream should be considered to assess if any additional BMPs are needed.

Discharge Management

During well pumpouts and maintenance activities, it may be necessary to apply one or more of the management practices described below with respect to discharge events.

Discharge Priority

When possible, the discharge should be routed in accordance with the discharge priority. This means that the routing should follow the priority of, from most to least desirable. The priority will depend on permitted discharge locations, water quality issues, approval from the associated agencies, proximity of the discharge location, need for temporary piping and hose, and erosion and flooding concerns at the flushing location. The discharge priority should be established in advance of the event after considering all these factors.

Pollution Prevention

The flow path of the stream should be examined for potential pollutant sources such as surface contamination/debris, oil and grease, and chemical spills, prior to the flushing event. These pollutants could be carried by the flush water into the receiving stream and result in water quality issues. Remedial measures to remove or clean up these potential pollutant sources (if present) should be performed. Dry methods for cleaning should be used to minimize the potential for spreading the potential pollutants.

Confirm Water Quality

Prior to the flushing activity, the anticipated water quality of the discharge should be estimated (either from experience, historical data, or sample results). These include chlorine residual, TSS, oil and grease, trace metals, organics (e.g., cleaning agents), or any other known sources of contamination. If the levels are above permitted standards or could impact receiving stream water quality, appropriate remedial measures should be taken.

Erosion Control

As with other types of discharges, care must be taken to minimize the erosion that can be created due to the force of the water that is discharged. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in Chapter 5. It is also important to assess the impacts of prior discharges and soil conditions, and use remedial measures and BMPs as needed.

Sampling

It may be necessary to collect a grab sample of the discharged water where possible, depending on the permitting requirements and the frequency of discharge. Some agencies may allow periodic representative samples instead of sampling each flushing event. This is generally not required for routine pumpouts since they occur frequently.

Remediation

After an extended pumpout or well maintenance event, it may be necessary in some cases to repair damage that is caused by the force of the water discharged during the flushing activities. Such damage can include pavement or pad washouts, gullies in landscaped areas, or sediment deposition in a storm drainage or *Waters of the U.S.* A follow up inspection should be conducted after the discharge event to document any damage to receiving streams and perform remedial activities, if needed.

Follow-up and Reporting

Following completion of the above steps, it may be necessary to document the circumstances surrounding the activity. Such documentation should include a description of the management procedures applied during the activity, if any. Final closure of the flushing activity will involve additional communication to appropriate individuals and regulatory agencies regarding the discharge events, remedial activities, and sample results.

DISCHARGE MANAGEMENT PROCEDURES FOR RESERVOIR/TANK DRAINS AND MAINTENANCE ACTIVITIES

Planning

Reservoir/tank drains and maintenance functions (disinfection and cleaning) are planned activities that offer an opportunity to lay out procedures for future discharges and notifications in advance. Similar to other planned discharges, the discharge location can be confirmed and an estimate of the quantities and characteristics of the discharge can be made prior to the event. Erosion control BMPs and potential required remedial measures can also be identified at this stage to ensure the quality of the discharge.

It is important that necessary permitting activities of such discharges take place prior to the discharge events. This may involve coordination with one or more of the previously mentioned groups or outside agencies, depending on the location of the discharge point. Planning should include estimated quantities and an assessment of water quality to verify compliance with surface WQS. These agency coordination and permitting activities are generally done on an individual discharge basis for reservoir/tank drains and maintenance activities.

These discharge procedures can also be applied to tank disinfection water (or over chlorinated water in a tank/reservoir) if needed. Disinfection water can generally be diluted down to a chlorine level of <2 mg/L and can be sent to the distribution system. If higher chlorine residuals are present in tank disinfection water, it can be discharged as an NTD, following the procedures listed below for tank drains. Dechlorination may be required under these conditions. Similarly, many tanks and reservoirs are equipped with automatic chlorine feed and recirculation systems to maintain a minimum level of disinfection. However, control system and equipment errors can cause overdosing, which may result in an elevated chlorine residual within the tank and reservoir. If this occurs, the contents of the reservoir/tank can be discharged as an NTD, following the procedures listed below for tank drains. Dechlorination may also be required under these conditions.

Notification

Notification will be required depending on the ultimate discharge location of the water. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.* For planned events, these can be made at least 24 hours prior to the event, or a longer prescribed duration determined by the agency.

Discharge Procedures

More restrictive discharge procedures must be followed for drains and maintenance discharges in comparison to other NTDs such as an overflow event, given the potential for increased level of contaminants and suspended solids in the discharge stream. It is important that a water system have a clear understanding of the water quality issues associated with drains and maintenance activities. Discharges from tank drains and maintenance activities may contain chlorine, sediments, oil, and trace metals (from leaching or post precipitation of aluminum and iron compounds). Either historical data or a special sampling event should be used to verify the quality of the drain or maintenance discharge.

The levels of these contaminants should be compared against the standards of the receiving stream, sewer, or storm drain to ensure compliance. If levels are in excess of such standards, this may be problematic and on-site mitigation may be needed to carry out the discharge practice. This may involve separating the sediments and oils on-site prior to discharge, dechlorination, or using a temporary filtration system (skid mounted or portable unit). The utility should utilize their specific SOPs for the appropriate tank drain and maintenance techniques for site specific applications. The impact of the specific discharge technique and water quality concerns on the receiving stream should be considered to assess if any additional BMPs or mitigation activities are needed.

Discharge Management

Due to the potential for pollutants during a reservoir/tank drain or maintenance activity, it may be necessary to apply one or more of the management practices described below with respect to discharge events.

Discharge Priority

When possible, the discharge should be routed in accordance with the discharge priority. The priority will depend on permitted discharge locations, water quality issues, approval from the associated agencies, proximity of the discharge location, need for temporary piping and hose, and erosion and flooding concerns at the facility. The discharge priority should be established in advance of the event after considering all these factors.

Pollution Prevention

The flow path of the stream should be examined for potential pollutant sources such as surface contamination/debris, oil and grease, and chemical spills, prior to the flushing event. These pollutants could be carried by the drain water into the receiving stream and result in water quality issues. Remedial measures to remove or clean up these potential pollutant sources (if present) should be performed. Dry methods for cleaning should be used to minimize the potential for spreading the potential pollutants.

Confirm Water Quality

Prior to the discharge activity, the anticipated water quality of the drainage should be estimated (either from experience, historical data, or sample results). These include chlorine residual, TSS, oil and grease, and trace metals. If the levels are above permitted standards or could impact receiving stream water quality, appropriate remedial measures should be taken.

Erosion Control

As with other types of discharges, care must be taken to minimize the erosion that can be created due to the force of the discharged water leaving the facility. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in

Chapter 5. It is also important to assess the impacts of prior discharges and soil conditions, and use remedial measures and BMPs as needed.

Water Quality Mitigation

If needed, mitigation of contaminants in the drain and maintenance streams must be performed prior to discharge. For elevated chlorine residuals, an appropriate dechlorination technique, discussed in Chapter 5, should be utilized. For sediments and trace metals removal, use of temporary on-site sedimentation ponds, sediment traps, sand bags, portable filtration system, or straw bales barriers should be considered. For oil and grease, use of a portable skid or other removal system should be considered.

Sampling

It may be necessary to collect a grab or composite sample of the discharged water where possible, depending on the permitting requirements and the frequency of discharge. Some agencies may allow periodic representative samples instead of sampling each drain and maintenance event.

Remediation

After a drain and maintenance discharge event, it may be necessary in some cases to repair damage that is caused by the force of the water discharged during the activities, as discussed earlier. A follow up inspection should be conducted after the discharge event to document any damage to receiving streams and perform remedial activities, if needed.

Follow-up and Reporting

Following completion of the above steps, it may be necessary to document the circumstances surrounding the activity. Such documentation should include a description of the management procedures applied during the activity, if any. Final closure of the drain and maintenance activities will involve additional communication to appropriate individuals and regulatory agencies regarding the discharge events, remedial activities, and sample results.

DISCHARGE MANAGEMENT PROCEDURES FOR TANK OVERFLOWS AND RELIEF VALVE RELEASES

Planning

Occasional reservoir/tank overflow events and occasional releases from pressure relief valves (or blow off pipes) are unplanned activities that must be anticipated in order to develop a suitable incident management plan. Since these are unplanned and are not easy to control, water quality mitigation measures (such as dechlorination) are difficult to implement, unless an automated system is in place at each site (which is generally impractical and not cost effective). Generally, these discharges are of potable water quality and would require no specific water quality mitigation prior to discharge. If necessary and/or required by permits, dechlorination can be performed in response to such an event after the event has occurred, using portable systems.

However, the locations of potential discharges are known and potential discharge events can be planned for. Similar to other planned discharges, the discharge location can be confirmed and an estimate of the quantities and characteristics of the discharge can be made prior to an event. Erosion control BMPs and potential required remedial measures can also be identified at this stage to ensure the quality of the discharge.

It is important that necessary permitting activities of such discharges take place prior to a discharge event. This may involve coordination with one or more groups or outside agencies, depending on the location of the discharge point. Planning should include estimated quantities and an assessment of water quality to verify compliance with surface WQS. These agency coordination and permitting activities are generally done on an individual discharge location basis.

Incident Log

Important information to record in an incident log includes, at a minimum:

- BMPs implemented and effectiveness
- Location of the incident
- Name and contact information of the person reporting the overflow or release
- Date and time of the incident
- Duration of time that discharge occurred
- Approximate quantity of water discharged
- Ultimate disposition and flow path of discharge (ground, sanitary sewer, storm sewer, *Waters of the U.S.*)
- Quality of water discharged and time of visual inspection or sampling
- Erosion/damage due to overflow
- Potential pollutant contamination of discharge to *Waters of the U.S,* (e.g., was discharge near landfill, chemical storage, gas station, or HAZMAT area).

Much of this information can be assembled prior to an event during the planning and permitting phase, as all the facilities are being inventoried. The remaining information can be obtained after an incident to complete notification obligations.

Notification

Immediate notification is required of all persons responsible for water system operation, management of the incident, and discharge inspections. Established communication protocols should be followed in this regard. If required by the NPDES primacy agency, regulatory notifications should also be made at the prescribed frequency. This may vary depending on the quantity of flow and the discharge location. Notifications to other local agencies (e.g., storm water, flood control, etc.) should also be made.

Subsequent notification will be required depending on the ultimate disposition of the water discharged. If the water was contained on site and allowed to infiltrate into the ground, notification may only be to those persons that are responsible for mitigation, as required. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.*

Discharge Management

Given the opportunity and depending on the nature of circumstances surrounding the overflow or relief valve release incident, it may be possible to apply one or more of the management practices described below.

Containment

If the response is timely and field conditions permit, certain smaller quantity discharges could possibly be contained and allowed to infiltrate or evaporate. It is preferred to construct containment structures or devices in advance, if possible, since the locations of these potential discharges are known. To the extent that this practice will not interfere with operations or create other logistical problems (i.e., traffic blockage, etc.), this is a preferred strategy.

Discharge Priority

When possible, overflow or relief valve discharges should be routed in accordance with the discharge priority. Piping or open flow channels should be constructed in advance in anticipation of the event. The routing should follow the priority of, from most to least desirable. The discharge priority should be established after considering the key factors discussed earlier.

Erosion Control

Care must be taken to minimize the erosion that can be created due to the flow of the discharged water. For overflows and relief valve releases, permanent erosion control measures should be utilized, as discussed in Chapter 5. These include paved or lined surfaces/channels, energy dissipating structures, rip-rap rock, mats, sedimentation basins, or pipes.

Dechlorination

If the flow enters *Waters of the U.S.*, particularly a flowing steam, it may be necessary to dechlorinate the water that has been discharged. This can be done using portable units in response to the event. If the chlorine reading is greater than permitted limits, using dechlorination tablets or liquids and injecting into the discharge stream may assist in complying with surface WQS. Care must be taken when applying dechlorination tablets, so that overdosing does not occur. Potential dechlorination methods include a portable trailer that injects solution into the discharge pipe or tablets enclosed in wire baskets. Permanent connections that accept the tubing or piping from the dechlorination trailer to the overflow or relief valve piping should be implemented.

Remediation

It may be necessary in some cases to repair damage that is caused by the flow of the water discharged from overflows and relief valve releases. Such damage can include pavement or pad washouts, gullies in landscaped areas, loss of vegetation, or sediment deposition in a storm drainage or *Waters of the U.S.* Following assessment of the damage, appropriate remedial repair measures can be applied as described in Chapter 5.

Incident Follow-up (Closure)

Following completion of the above steps, it will be necessary to document the nature of the response to the NTD. Such documentation should include a description of the management activities applied during the incident, if any. Final closure of the incident will likely involve additional communication to appropriate individuals regarding remedial activities.

DISCHARGE MANAGEMENT PROCEDURES FOR HYDROSTATIC TESTING AND DISINFECTION WATERS

Planning

Hydrostatic Testing and pipeline disinfection are generally planned activities that offer opportunities to lay out procedures for future discharges and notification in advance. At the planning stage, it is important to identify the schedule of events surrounding the testing activities, whether part of a program or a location-specific event, and to estimate the quantities and characteristics of the discharge and identify the ultimate disposition of the discharge. Erosion control BMPs and potential required remedial measures can also be identified at this stage.

It is important that necessary permitting activities of such discharges take place prior to the discharge events. This may involve coordination with one or more groups or outside agencies, depending on the location of the discharge point. Planning should include estimating quantities and an assessment of water quality to verify compliance with surface WQS. These agency coordination and permitting activities can be done on an aggregate basis for all anticipated hydrostatic testing activities or on an individual discharge basis (i.e., if the discharge is occasional).

Notification

Notification will be required depending on the ultimate disposition of the water discharged during hydrostatic testing and disinfection. If the water was contained on site and allowed to infiltrate into the ground (retention), notification may only be to those persons that are responsible for mitigation. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.* For planned hydrostatic test discharges, these can be made at least 24 hours prior to the event, or a longer prescribed duration determined by the agency.

Hydrostatic Testing and Disinfection Procedures

Standard hydrostatic testing procedures are generally available for use by contractors and water system operators. These generally include filling the pipeline with water and using an air compressor to control the required test pressure (generally a minimum of 150 pounds per square inch [psi]). The impact of the specific discharge methods on the receiving stream should be considered (velocity, water quality, scouring, etc.) to assess if any additional BMPs are needed.

The water industry uses several standard procedures developed by AWWA for pipeline disinfection. After hydrostatic testing (or some times concurrently) chlorinated water is held for between two and 24 hours using a minimum chlorine residual of 2 mg/L (i.e., for a 24-hour test). For a two-hour test, a higher minimum residual is required. During this period, the microbial activity in the pipeline is diminished, making the pipeline ready for potable water conveyance. After the disinfection period, the highly chlorinated water is discharged as an NTD to a receiving stream or sewer. Since the disinfection water can contain well over 100 mg/L of chlorine, it is generally dechlorinated prior to discharging.

Discharge Management

During the testing and disinfection activities, it may be necessary to apply one or more of the management practices described below with respect to discharge events.

Discharge Priority

When possible, the discharge should be routed in accordance with the discharge priority. The priority will depend on permitted discharge location, approval from the associated agencies, need for dechlorination, proximity of the discharge location, need for temporary piping and hose, and erosion and flooding concerns at the discharge location. The discharge priority should be established in advance of the event after considering all these factors.

Pollution Prevention

The flow path of the discharge stream should be examined for potential pollutant sources such as surface contamination/debris, oil and grease, and chemical spills, prior to the testing and disinfection event. These pollutants could be carried by the discharged water into the receiving stream and result in water quality issues. Remedial measures to remove or clean up these potential pollutant sources (if present) should be performed. Dry methods for cleaning should be used to minimize the potential for spreading the potential pollutants.

Confirm Water Quality

Prior to the test activity, the anticipated water quality of the discharge should be estimated (either from experience, historical data, or sample results). The contaminants of concern include TSS, chlorine, trace metals, elevated pH, organics (pipe coatings and linings), or any other known sources of contamination. If the levels are above permitted standards or could impact receiving stream water quality, appropriate remedial measures should be taken (e.g., pH adjustment, dechlorination, sediment removal, physical filtration, etc.).

Erosion Control

Care must be taken to minimize the erosion that can be created due to the force of the discharged water leaving the vicinity. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in Chapter 5. The impacts of prior discharge and soil conditions should be assessed to determine if remedial measures or BMPs are needed. Directing flow to paved surfaces using a hose or a spray diffuser mechanism should be performed, if possible.

Sampling

It may be necessary to collect a grab sample of the discharged water where possible, depending on the permitting requirements and the frequency of discharge. For water systems with multiple or ongoing projects, some agencies may allow periodic representative samples instead of sampling each test event.

Remediation

After the event, it may be necessary in some cases to repair damage that is caused by the force of the water discharged during testing and disinfection activities. Such damage can include pavement or pad washouts, gullies in landscaped areas, or sediment deposition in a storm drainage or *Waters of the U.S.* A follow up inspection should be conducted after the discharge event to document any damage to receiving streams and perform remedial activities, if needed.

Follow-up and Reporting

Following completion of the above steps, it may be necessary to document the circumstances surrounding the activity. Such documentation should include a description of the management procedures applied during the activity, if any. Final closure of the hydrostatic test activity will involve additional communication to appropriate individuals and regulatory agencies regarding the discharge events, remedial activities, and sample results.

DISCHARGE MANAGEMENT PROCEDURES FOR CONTAMINATED WATER DISPOSAL

During emergencies or crisis situations where a portion of the water distribution is potentially contaminated with turbidity, microbiological contaminants, chlorine, or potentially fugitive agents, it becomes essential to dispose of this water to protect public health. Disposal of contaminated water from a distribution system is an unplanned activity that does not provide an ideal opportunity to develop a suitable incident management plan in advance (since the location is unknown). Some prudent planning activities can be performed in anticipation of such an emergency, however. These planning tasks generally involve public health protection, notification, problem resolution and mitigation, and identification of safe drinking water supplies. It would also be prudent to develop a general disposal strategy and priority for these discharges, and share this information with the local agencies and receiving stream operators/owners in preparation for a potential emergency.

Given the emergency nature of a contamination event, the nature and timeliness of a response is most important. The first step in responding to a contaminated water disposal event is ensuring that all of the information regarding the event is available that will allow a system operator to move effectively toward a plan of action. Important information to record in an incident log includes, at a minimum:

- Type of contaminants in the discharge and potential impact on the environment
- BMPs implemented and effectiveness
- Name and contact information for the incident
- Date and time of the event
- Duration of time that discharge occurred
- Approximate quantity of water discharged
- Ultimate disposition and flow path of the discharge (e.g., ground, sanitary sewer, storm sewer, *Waters of the U.S.*)
- Quality of water discharged
- Time of visual inspection or assessment
- Erosion/damage incurred due to the event
- Potential pollutant contamination of discharge to *Waters of the U*.S., (e.g., was discharge near landfill, chemical storage, gas station, or HAZMAT area).

Notification

Immediate notification is required of all persons responsible for cessation of an NTD flow, management of the incident, and repair activities. Established communication protocols should be followed in this regard. If required by the NPDES primacy agency, regulatory notifications should also be made at the prescribed frequency. This may vary depending on the quantity of flow and the discharge location. If the water was contained on site and allowed to infiltrate into the ground, notification may only be to those persons that are responsible for mitigation, as required. Appropriate authorities must be notified in the event of discharge to a sanitary sewer, storm sewer, or *Waters of the U.S.*

Discharge Management

Given the opportunity, depending on the nature of circumstances surrounding the contamination event, it may be possible to apply one or more of the management practices described below.

Containment

If the response is timely and field conditions permit, certain smaller quantity discharges could possibly be contained and allowed to infiltrate or evaporate. To the extent that this practice will not interfere with repair or remedial efforts or create other logistical problems (i.e., traffic blockage, etc.), this is an ideal strategy. The flow should be directed away from areas with public contact.

Discharge Priority

When possible, the discharge from a contamination event should be routed in accordance with the discharge priority. The priority will depend on permitted discharge locations, approval from the associated agencies, proximity of the discharge location, need for temporary piping and hose, erosion, and flooding concerns at the flushing location. The discharge priority should be established in advance of the event after considering all these factors.

Erosion Control

Care must be taken to minimize the erosion that can be created due to the flow of the discharged water. There are numerous options available that are intended to minimize contact with loose soil or other contaminants or dissipate the energy of the flow. Effective erosion control BMPs for different situations are described in Chapter 5.

Dechlorination

If the flow enters *Waters of the U.S.*, particularly a flowing stream, it may be necessary to dechlorinate the water that has been discharged. To make this determination, the accumulated of ponded water in the receiving stream should be tested for chlorine residual. If the reading is greater than permitted limits, spreading dechlorination tablets or granules in the discharge stream may assist in complying with surface WQS. Applying the tablets using a wire mesh basket will assist in regulating how fast the tablets dissolve. Potential dechlorination methods also include a portable trailer that injects solution into the discharge pipe.

Remediation

It may be necessary in some cases to repair damage that is caused by the force of the water discharged. Such damage can include pavement or pad washouts, gullies in landscaped areas, loss of vegetation, or sediment deposition in a storm drainage or *Waters of the U.S.* Following the assessment of the damage, appropriate remedial repair measures can be applied as described in Chapter 5.

Incident Follow-up (Closure)

Following completion of the above steps, it will be necessary to document the nature of the response to the contamination event. Such documentation should include a description of the management activities applied during the event, if any. Final closure of the incident will likely involve additional communication to appropriate individuals regarding remedial activities.

RECOMMENDATIONS FOR MONITORING AND REPORTING

Monitoring and reporting requirements vary by discharge type, NPDES primacy agency, and region. Some states require monitoring every event while others accept a prescribed routine monitoring program for unplanned discharges that eliminates the requirement to monitor each individual discharge. Clearly, a routine monitoring program that eliminates the rigorous sampling during each event should be considered by agencies and proposed by water systems during the permitting of NTDs. Further, many parameters are stable in drinking water systems and NTDs and historical or periodic monitoring should be sufficient to demonstrate compliance with surface WQS. Based on these factors and the findings of this project, a summary of recommended monitoring frequencies for various contaminant groups, based on the discharge type, has been prepared, as shown in Table 6.1. It is also recommended that all sampling be representative of the NTD source, prior to mixing with pollutants in overland flow.

Table 6.1
Recommended monitoring frequencies for NTDs

NTD type	pH, Cl_2, TSS, temp.	Trace metals of concern (Se, Fe, Cu, Zn, Pb, etc.)	All other inorganics and metals	VOCs	SOCs	Radio-nuclides, toxicity tests
	Parameter and recommended monitoring frequencies*					
Flushing (representative sampling events)	1–3 events/quarter	Annual	Each permit renewal	Annual	Each permit renewal	None
Main breaks (representative sampling events)	1–3 events/year	None	None	None	None	None
Main repairs (representative sampling events)	1–3 events/year	1–3 events/year	None	None	None	None
Well pumpout/well maintenance (sample at each discharge point)	Annual	Annual	Each permit renewal	Annual	Each permit renewal	None
Reservoir/tank drains & tank maintenance (sample at each discharge point)	Annual	Annual	Each permit renewal	Annual	Each permit renewal	None
Reservoir/tank overflows and relief valves (representative sampling events)	1–3 events/year	1–3 events/year.	1–3 samples for each permit renewal	Annual	1–3 samples for each permit renewal	None
Hydrostatic test and disinfection waters (representative sampling events)	1–3 events/quarter	1–3 events/year	1–3 samples for each permit renewal	1–3 events/year	1–3 samples for each permit renewal	None
Contaminated water	Each event	Each event	None	None	None	None

*Smaller systems may collect samples infrequently (lower end of range shown) while larger systems are recommended to collect more samples to adequately represent the system.

RECOMMENDED TRAINING PROGRAMS

It is imperative that all appropriate personnel be trained in how they personally fit into the overall utility strategy to meet permit requirements, mitigate releases from the distribution system, follow BMPs, and implement SOPs for the various situations that arise in the operation of a drinking water system with respect to NTDs. Depending on the size and complexity of a utility, the definition of "appropriate personnel" can include many individuals in various divisions within the organization. It includes the operations personnel conducting planned NTD operations, first responders to emergency or unplanned NTDs, field samplers and laboratory managers, and the notification and compliance groups that ensure all permit requirements are met.

An internal notification procedure should be devised, implemented, and included in the agenda of staff training sessions. In the event of an NTD, personnel need to know what BMPs and SOPs are appropriate given the circumstances. Proper discharge management needs to consider and include assessing potential stream impacts, implementing containment (if possible), assessing discharge priorities (e.g., where should the flow be routed), preventing erosion, implementing dechlorination, collecting and handling samples, assessing and controlling damage, implementing remediation actions, documenting the NTD event causes and procedures followed, and assessing the effectiveness of the procedures used. All of these actions require effective communication between staff and with affected outside agencies.

As a minimum, training programs should incorporate the following aspects of NTD management:

- Intent of the CWA, NPDES, and the Safe Drinking Water Act (SDWA)
- Types of NTDs and the permit requirements for each type
- Regulatory requirements
  - WQS compliance and compliance monitoring
  - Reporting and record keeping
  - Special conditions
- Management approaches
  - BMPs
  - SOPs
- Staff and interagency communications
- NTD follow-up actions

Effective training is not static, and regular assessments of the effectiveness of the program should be conducted. Yearly refresher sessions should be held for all appropriate personnel, and the sessions address items such as existing permit modifications or renewal and new permit applications.

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ABBREVIATIONS

AAC	Arizona Administrative Code
AAWC	Arizona American Water Company
AC&T	Aquatic Consulting and Testing
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
AF	acre-feet
AgI	agricultural irrigation
AgL	agricultural livestock irrigation
AL	aquatic life
APP	Aquifer Protection Program
ASR	aquifer storage and recovery
A&W	aquatic & wildlife
A&Wc	aquatic & wildlife cold water
A&We	aquatic & wildlife ephemeral
A&Wedw	aquatic & wildlife effluent dependent water
A&Ww	aquatic & wildlife warm water
AWWA	American Water Works Association
AwwaRF	Awwa Research Foundation
AZPDES	Arizona Pollutant Discharge Elimination System
BMP	best management practices
BMPP	best management practices plan
BOD	biochemical oxygen demand
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCWD	Contra Costa Water District
CDH	Colorado Department of Health
CDPS	Colorado Discharge Permit System
CFR	Code of Federal Regulations
cfs	cubic feet per second
CFU	colony forming units
COD	chemical oxygen demand
COM	City of Mesa (Ariz.)
COP	City of Phoenix (Ariz.)
CSO	combined sewer overflow
CTR	California Toxics Rule
CVRWQB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DCWASA	District of Columbia Water and Sewer Authority
DEM	Department of Environmental Management
DEQ	Department of Environmental Quality
DGP	DeMinimus General Permit (Arizona)

DMR	discharge monitoring report
DO	dissolved oxygen
DPD	N,N-diethyl-p-phenylenediamine
DWS	domestic water source
DWWM	Division of Water and Waste Management
EBMUD	East Bay Municipal Utilities District
EPA-NE	Environmental Protection Agency–Northeast
FBC	full body contact
FC	fish consumption
FDMR	final discharge and monitoring report
FESA	Federal Endangered Species Act
FW	fresh water
GAC	granular activated carbon
GP	general permit
gpd	gallons per day
GSWC	Golden State Water Company
HAA	haloacetic acids
HAA5	sum of five haloacetic acids
HAZMAT	hazardous material
HPC	heterotrophic plate count
IAC	Indiana Administrative Code
IOC	inorganic contaminant
IP	individual permit
KDEP	Kentucky Department for Environmental Protections
KDHE	Kansas Department of Health and Environment
LADRWQCB	Los Angles District Regional Water Quality Control Board
LPDES	Louisiana Pollutant Discharge Elimination System
MCL	maximum contaminate level
MDEQ	Mississippi Department of Environmental Quality
MIDEQ	Michigan Department of Environmental Quality
MG	million gallons
MGD	million gallons per day
MHSF	moderately hard synthetic freshwater
MPN	most probable number
MRDL	maximum residual disinfection level
MS4	municipal separate storm sewer system
MSGP	Multi-Sector General Permit
MTBE	methyl-tert-butyl-ether

MUN	Municipal and Domestic Supply
MWD	Metropolitan Water District of Southern California
ND	not detected
NDEQ	Nebraska Department of Environmental Quality
NJPDES	New Jersey Pollutant Elimination Discharge System
NOD	Notice of Disposal
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NS	no standard
NSF	National Science Foundation
NTD	non-treatment discharge
NTU	nephelometric turbidity unit
O&M	operation and maintenance
OPC	Office of Pollution Control
ORP	oxidation reduction potential
PAC	Project Advisory Committee
PAH	polynuclear aromatic hydrocarbons
PBC	partial body contact
PCB	polychlorinated biphenyls
piC/L	picocuries per liter
PMP	Preventive Maintenance Plan
PPP	Pollution Prevention Plan
psi	pounds per square inch
P2	Pollution Prevention
PWB	Portland Water Bureau
PWD	Philadelphia Water Department
PWS	public water system
RMP	Residuals Management Plan
RP	reasonable potential
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SCADA	Supervisory Control and Data Acquisition
s.d.	standard deviation
SDDENR	South Dakota Department of Environment and Natural Resources
SDWA	Safe Drinking Water Act
SECP	Sediment and Erosion Control Plan
SOC	synthetic organic chemical
SOP	standard operating procedure
SPAWN	spawning and early fish development
S.U.	standard units

SW	salt water
SWCB	State Water Control Board
SWD	surface water discharge
SWMP	storm water management plan
SWPPP	surface water pollution prevention plan
TAH	total aromatic hydrocarbons
TAqH	total aqueous hydrocarbons
TCEQ	Texas Commission on Environmental Quality
TDS	total dissolved solids
THM	trihalomethane
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TOC	total organic carbon
TPDES	Texas Pollutant Discharge Elimination System
TPH	total petroleum hydrocarbons
TRC	total residual chlorine
TSD	technical support document
TSS	total suspended solids
TWMP	treated water management plan
UAC	Utah Administrative Code
UIC	underground injection control
UPDES	Utah Pollutant Elimination Discharge System
U.S.	United States
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UV	ultraviolet
VOC	volatile organic compounds
VPDES	Virginia Pollution Discharge Elimination System
WDEQ	Wyoming Department of Environmental Quality
WDS	water distribution system
WET	whole effluent toxicity
WPDES	Wisconsin Pollutant Discharge Elimination System
WQS	water quality standards
WSSC	Washington Suburban Sanitary Commission
WTP	water treatment plant
WWTP	waste water treatment plant

APPENDIX A
STATE AND REGIONAL NTD PERMITTING CRITERIA AND AGENCY CONTACT LIST

This appendix provides information that was obtained from state agency Web sites and the regulatory survey during the course of this project. It provides an indication of the types of regulations that exist at the time this report was published. Water systems are encouraged to obtain current information from the state agency to confirm all regulatory requirements. An agency contact list is provided at the end of this appendix.

SOUTHWEST REGION REGULATORY SUMMARY

NTD regulatory information was obtained for four states in the Southwest region - Arizona, Colorado, New Mexico and Utah. As summarized in Table A.1, NTDs are regulated in Arizona and Utah with either a GP, or a water utility can request an IP. In Colorado, NTDs are regulated by a GP. The types of NTDs regulated by each state GP also varied. In Colorado and Utah, hydrostatic testing and disinfection water NTDs from pipelines and other vessels are included in the GPs. Generally, an NOI describing the NTDs and a BMP plan to minimize the impacts of the NTDs are required for all GPs. Dechlorination, and erosion and sediment control are recommended by all GPs. Within the GPs, NTD monitoring requirements vary from state to state. In Arizona and Colorado, a utility is required to propose monitoring of expected pollutants in NTDs, while NTD characteristics such as flow, pH, TSS, TRC, and oil and grease and their monitoring frequencies are specified in Utah.

Table A.1
Summary of Southwest region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Arizona	GP	Potable water discharges, subterranean dewatering, hydrostatic testing of tanks and pipes, well development, reclaimed water systems	NOI, BMP plan, erosion and sediment control, dechlorination	NOI and BMP plan should include expected pollutants and strategies to minimize their impact	Low frequency, low flow NTDs for less than 30 days
	IP	Applicable under AZPDES, NTDs are included as per request	As per permit	As per permit	
Colorado	GP	Reservoir dewatering and cleaning, pipeline repair and dewatering, pipeline flushing, hydrant flushing, superchlorination water from pipelines and tanks, other NTDs from distribution systems	Treated Water Management Plan (TWMP) including, map of distribution system, identification of pollutants, sampling protocols, BMP plan, Dechlorination, erosion and sediment control, employee training	As per TWMP	
New Mexico	Information was not available on Web site and phone calls were not returned. A utility survey by the City of Grants, NM indicated that most of the NTDs are not regulated.				

(continued)

Table A.1 (Continued)
Summary of Southwest region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Utah	GP	Hydrostatic testing of pipelines and other vessels, disinfection water for drinking water vessels	Approved NOI, dechlorination, erosion control, BMPs for surface runoff control	Flow, oil and grease, TSS, TRC, pH with specified monitoring frequency	An IP can also be obtained upon request

Arizona

The State of Arizona issues a DeMinimus GP (DGP) that regulates NTDs which are not expected to have significant impact on the environment. The permit requires proper management and BMPs for NTDs. A DGP regulates low flow discharges that occur at low frequency and last less than 30 days. These discharges have low potential of pollutants which can be further controlled with appropriate BMPs. A DGP permits potable water discharges, subterranean dewatering, hydrostatic testing of pipes and tanks, well development and some reclaimed water systems. A DGP covers either a single source discharge or an areawide authorization (e.g., municipalities, utilities, reclaimed water providers). A water utility is required to submit an NOI and BMP plan, which includes expected pollutants and strategies to minimize their impact, to the ADEQ. A DGP also requires erosion and sediment control and dechlorination prior to disposal of NTDs. Discharge limits have been established for a number of pollutants. Discharge dependent monitoring requirements have also been established.

A water utility can also apply for an IP. An example of an IP is Permit No. AZ0024961 issued to the COP. As part of the IP, the COP is authorized to discharge potable water from its water distribution system (WDS) at various locations under the AZPDES. The NPDES permit does not account for the COP storm water system which is operated under a separate MS4 permit. The designated uses aquatic & wildlife (A&W) and partial body contact (PBC) were applied to set the water quantity and WQS.

Non-treatment water can be classified as either a point source or an unspecified location source. Point source discharges include reservoir/tank overflows, tank drainage, construction water, well pumpouts (extended and routine), and discharges which are classified as an unspecified location include water main breaks and repairs, hydrant flushing, hydrostatic water testing, and disinfection water (e.g., from water main construction and repairs).

Sampling and Monitoring Requirements Under COP IP

As specified in COP's IP, samples should be an accurate representation of the water quality of the discharges and should be collected annually at each site from the top one foot of the water in the tanks/reservoirs. Table A.2 lists all the monitoring parameters and discharge limitations for COP's NTDs. Table A.3 lists the monitoring parameters for unspecified outfalls. To compare WQS with effluent discharges, the process of "reasonable potential" (RP) was used. The procedures used to determine RP are outlined in the Technical Support Document (TSD) for Water Quality-Based Toxic Control (USEPA, 1991).

Conditions and Requirements

Under Section 308 of the CWA, the IP necessitates the COP have monitoring requirements for metals and TRC. Since the discharge is potable water, whole effluent toxicity testing and fecal coliform standards are not applicable. In addition, since the discharge volume is highly variable, mass limitations are not set in the permit. To renew this permit, a complete and accurate application must be submitted no later than 180 days prior to the permit expiration date. An annual report including all monitoring data for the previous year must be submitted to ADEQ by February 28th for each year of the permit. Any noncompliance should be reported within 24 hours from the time the utility becomes aware of the circumstances.

Table A.2
Monitoring parameters and discharge limitations for NTDs in COP's IP

	Outfalls 001 through 012 (A&We, PBC) (3)	**Outfalls 013 through 015 (DWS, AgI, AgL) (3)**
	Concentration (µg/l unless stated)	
Parameter	**Daily maximum**	**Daily maximum**
TRC		700
Metals, cyanide and sulfides		
Antimony		6
Chromium (total as Cr)	100	100
Cyanide	83.86	----
Nickel (as Ni)	----	140
Selenium (as Se)	32.94	20
Thallium (as Tl)	---	2
Volatile organics		
Bromodichloromethane	---	<100 TTHM (1)
Bromoform	---	<100 TTHM (1)
Chloroform	---	<100 TTHM (1)
Dibromochloromethane	---	<100 TTHM (1)
Radiochemicals		
Alpha particle activity	---	15 pCi/L(2)
Radium 226 and Radium-228	---	5 pCi/L

1. Total for all THMs must be <100
2. pCi/L = picocuries/liter
3. A&We = aquatic and wildlife ephemeral; PBC = partial body contact; DWS = domestic water source; AgI = agricultural irrigation; AgL = agricultural livestock irrigation
4. Code of Federal Regulations

Table A.3
Unspecified outfall monitoring for Phoenix, Arizona IP

Parameter	Hydrant flushing water	Hydrostatic test water	Disinfection water from main construction/repair	Water from main breaks and miscellaneous unplanned flows
Sampling location	At hydrant	At adjacent hydrant or temporary connection to the new pipeline	At adjacent hydrant or temporary connection to the new pipeline	No sampling required
Frequency	3 per month	3 per month	3 per month	No sampling required
		Alert Levels		
TRC[1]	140,000 µg/L[2] 700 µg/L[3]	140,000 µg/L[2] 700 µg/L[3]	140,000 µg/L[2] 700 µg/L[3]	---
pH	6.5 to 9.0 S.U.[6]	6.5 to 9.0 S.U.	6.5 to 9.0 S.U.	---
Escherichia coli (E. coli)	576 CFU/100 mL[4]	576 CFU/100 mL[4]	576 CFU/100 mL[4]	---
Temperature	See note 5	See note 5	See note 5	---
TSS	See note 5	See note 5	See note 5	---
Total coliform	See note 5	See note 5	See note 5	---

1. Water will be dechlorinated prior to discharging
2. Level for discharges to ephemeral washes
3. Level for discharges to drinking water protected use waters
4. CFU = colony forming units
5. Monitoring and reporting only
6. Standard units

BMPs for NTDs

BMPs include operating procedures and practices to control plant site runoff, spillage or leaks, or drainage from raw /used material storage.

BMPs for Erosion Control

Erosion control BMPs (NCS, 2003) include installation of effective permanent or temporary erosion control devices, such as:

- Temporary diversion dikes which direct runoff to a sediment trapping device or a stabilized outlet
- Straw bale barriers to reduce runoff velocity and allow deposition of sediments
- Silt fences to intercept and detain sediments from disturbed areas

- Pipe slope drains to convey runoff down to erodible slopes
- Channel and culvert protection to absorb the energy of the flow and reduce flow velocity
- Lined channels

BMPs for Pollution Prevention

This section of the IP lists the set of BMPs to prevent permit limit exceedances for TDS, chlorine, conductivity, oil and grease, turbidity, and temperature to the ultimate receiving body of water. BMPs for pollution prevention require identification of potential pollutant streams. Various actions which can be taken are summarized below:

For well pump-outs:

- Minimize pump-out time to limit the discharge volume
- Limit discharges through use of detention basins
- Eliminate extended well pump-outs during storm events when possible
- Regular inspection and cleaning to cease accumulation of any oil, grease or other contaminants
- Minimize oil in pump-out water by:
  - Monitoring oil feed rates and maintaining lubrication feed system per manufacturer's specifications to minimize the amount of oil applied
  - Monitoring the aquifer and pumping water surface level to verify that the well pump setting is adequate to prevent intake of surface oil and other contaminants
  - Using temporary oil/water separator or manually removing (bailing) floating oil on the surface of the water in the well during regularly scheduled pump maintenance

For reservoir/tank overflows:

- Minimize use of chlorine or halogenated disinfection agents to an extent that the concentrations do not persist or impair designated uses
- Monitor levels of storage tanks to minimize potential for overflows
- Dechlorinate any discharge used to disinfect the tank/reservoir prior to discharge

Colorado

The Water Quality Control Division of Colorado Department of Health (CDH), under the Colorado Discharge Permit System (CDPS) issues a GP for miscellaneous discharges associated with treated water distribution systems. The goal of this permit is to eliminate or reduce the discharge of pollutants to an acceptable level while allowing the maximum flexibility for each permittee to determine and implement the procedures that will best accomplish the goal for them.

The various sources of water discharges in this permit include treated water reservoir cleaning, inspection or repairing of treated water lines, line flushing, hydrant flushing, line replacement, super chlorination of lines and storage tanks, flushing of sediment from reservoirs, and other activities associated with O&M of treated water distribution systems, which results in the discharge of wastewater. All permittees are required to prepare a TWMP for development of BMPs for miscellaneous sources covered under this permit. The general elements of this TWMP should include the following:

- Description and map of treated water distribution system
- Description of potential pollutant sources associated with treated water discharges.
- Treated water management controls which should include:
  - Risk identification and assessment
  - Sampling program and methodology
  - Preventive maintenance
  - Existing and proposed BMPs. Examples of BMPs are:
    - Sediment traps (e.g., sand/oil separators, gravel filter berm, etc.)
    - Use of neutralizers to reduce residual chlorine concentrations
    - Employee training
- Comprehensive facility inspection
- Record keeping and internal reporting procedures

New Mexico

No information was available on non-treatment and temporary discharge permits on the State of New Mexico Environment Division's Web site.

Utah

The DEQ of the State of Utah issues a GP (Permit No. UTG070000) under the Utah Pollutant Discharge Elimination System (UPDES) to apply to all discharges from construction dewatering of uncontaminated groundwater or surface water sources used in construction activities and hydrostatic testing of pipelines or other fluids vessels, water used in disinfection of drinking water vessels, and disinfection water for drinking water vessels. The permittee is authorized to discharge under this permit after submission of a completed NOI and after signature of the DEQ Executive Secretary authorizing coverage between an effective date and an expiration date.

Requiring an IP or an Alternative GP

- The Executive Secretary may require any person authorized by the GP to apply for and/or obtain either a UPDES IP or an alternative UPDES GP.
- Any discharger may request to be excluded from the coverage of the general permit by applying for an IP. An individual application is required to be completed in accordance with the requirements of Utah Administrative Code (UAC) R317-8-3.8(2)(b)2.
- When an individual UPDES permit is issued to an owner or operator or the owner or operator is authorized for coverage under an alternative UPDES GP, the applicability of the general permit to the individual UPDES permittee is automatically terminated on the effective date of the IP or the date of approval for coverage under the alternative GP, whichever the case may be.

Monitoring and Sampling Requirements

Samples and measurements must represent the actual volume and nature of the discharge. Monitoring must be conducted according to test procedures approved under UAC unless other test procedures have been specified in the permit. The permittee must retain records of all monitoring information, including all calibration and maintenance records, for a period of at least three years from the date of the sample, report, or application. All the discharges covered under the permit are required to be limited and monitored by the permittee as specified below in Table A.4.

Table A.4
Monitoring requirements and discharge limitations for NTDs in Utah

Effluent characteristics	Discharge limitations			Monitoring requirements	
	Average		Daily maximum	Measurement frequency	Sample type
	30-day	7-day			
Construction dewatering					
Flow, gpd[1]	N/A	N/A	N/A	14 days[2]	Instant
Oil and grease, visible	N/A	N/A	See note 3	Daily	Visual
Oil and grease, mg/L	N/A	N/A	10	14 days[2,4]	Grab
TSS[5], mg/L	255	355	70	14 days[2]	Composite / grab
pH, S.U.	6.5 to 9.0			Weekly	Grab

1. gpd = gallons per day
2. If the flow is greater than 1 cubic feet per second (cfs), sampling shall be done weekly
3. There shall be no visible oil sheen.
4. Sample for oil and grease only when a sheen is observed.
5. TSS

Management Requirements

- Use of chlorinated water for hydrostatic tests should be avoided unless it can be demonstrated that no potential for toxic impacts to the receiving waters is present. Chlorine sampling is required when chlorinated water is used and discharged to a stream with a chlorine standard.
- All point source discharges should place velocity dissipation devices at discharge locations and along the length of any outfall channel to insure non-erosive velocity flow from the structure to a water course.
- In the Colorado River basin, all water used for hydrostatic testing from a source that would not normally reach the Colorado River system must comply with the Colorado River Salinity Control forum policy of February, 1977.
- BMPs for surface runoff control shall be developed, implemented and maintained for the control of water runoff.

Noncompliance

The permittee must orally report any noncompliance which may seriously endanger health or environment as soon as possible, but no later than twenty-four hours from the time the permittee first became aware of the circumstances. A written submission must also be provided within five days of the time that the permittee becomes aware of the circumstances.

SOUTH REGION REGULATORY SUMMARY

For the four states in the South region (Arkansas, Louisiana, Oklahoma, and Texas), NTD regulatory information was available for Louisiana, Mississippi, and Texas from their respective Web sites. Details of the permitting requirements from these states are summarized in Table A.5. Arkansas regulates hydrostatic testing discharges from pipelines utilized in petroleum and gas industries and has used the permit on a limited basis for hydrostatic testing of PWS pipelines. Louisiana and Texas regulate hydrostatic testing waters from pipelines, vessels and other containers. An NOI is required in Texas. Louisiana and Texas require DMRs for all covered NTDs. Other NTDs are not regulated. Monitoring requirements vary for the three states but generally include flow, oil and grease, TSS, TRC, pH and other expected pollutants. Erosion and sediment control are required by the three states.

Table A.5
Summary of South region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Arkansas	There are no permits which regulate NTDs. State has used a GP for hydrostatic testing of pipelines and tanks for hydrostatic testing of PWS pipelines.				
Louisiana	GP	Hydrostatic testing of pipelines, vessels or tanks	Testing results reported in a DMR retained for three years; sediment control; erosion control	Flow, oil and grease, TSS, pH with specified monitoring frequency; and other expected pollutants	Site specific or statewide authorization
Oklahoma	Information was not available on Web site and phone calls were not returned.				
Texas	GP	Hydrostatic testing of pipelines, vessels, and other containers for raw and potable waters	Approved NOI, dechlorination, erosion control, BMPs for surface runoff control; DMR is required	TRC and qualitative requirements for sediments, oil and grease, and other pollutants	

Arkansas

The State of Arkansas DEQ regulates discharges from water treatment facilities, however, no information was available for the NTDs evaluated in this study.

Louisiana

The State of Louisiana issues a GP (Permit No. LAG670000) under the Louisiana Pollutant Discharge Elimination System (LPDES) to cover discharges of waste water associated with the hydrostatic testing of new pipelines, vessels, or tanks. This permit may either provide site- specific or state-wide authorization to discharge.

Effluent Limitations

All permittees covered under the LPDES GP are authorized to discharge hydrostatic test water in accordance with the discharge limitations and monitoring requirements as given in Table A.6

Table A.6
Monitoring requirements and discharge limitations for hydrostatic test water in Louisiana

Effluent characteristics	Daily maximum		Monitoring requirements	
			Measurement frequency	Sample type
Flow, mgd	Report		See Note 1	Estimate
TSS, mg/L	90		See note 1	Grab
Oil & grease, mg/L	15		See note 1	Grab
pH, S.U.	6.0 (min)	9.0 (max)	See note 1	Grab

1. Once prior to proposed discharge

Besides the above listed limitations, the following points are also necessary during operation of the tests.

- There must be no discharge of floating solids or visible foam, free oil, or toxic materials in quantities such as to cause acute toxicity to an aquatic organism.
- A discharge should not generate a flow condition that threatens public safety by virtue of its velocity.
- Additives such as corrosion inhibitors, bactericide, and dyes must not be added to the test water without prior written approval.

Monitoring Requirements

- All sampling and testing must be conducted in accordance with current USEPA-approved test methods listed in 40 CFR 136.3.
- Samples must represent the pollutants in the discharge and must be taken prior to any mixing with the receiving water.

- The monitoring results for each hydrostatic test must be summarized and reported in a DMR (EPA No. 3320-1) and must be retained for a period of at least 3 years from the date of the sample measurements.

Oklahoma

No information was available on the permitting of NTDs from water supply facilities on the Oklahoma DEQ Web site.

Texas

The Texas Commission on Environmental Quality (TCEQ) issues a Texas Pollutant Discharge Elimination System (TPDES) GP (No. TXG670000) under section 26.040 of the Texas Water Code and Section 402 of the CWA, authorizing discharges resulting from the hydrostatic testing of vessels (pipelines, tanks, and other containers). The GP also authorizes discharges resulting from the flushing of water supply lines or tanks for disinfection purposes.

An NOI is not required to authorize discharges from new vessels; existing vessels previously containing and/or transferring raw or potable water, in which the water used for hydrostatic tests does not contain corrosion inhibitors, antifreeze compounds, biocides, or other chemical additives (except chlorine or tracer dyes) or if the discharge is land applied at the site and no resulting run-off to water in the state.

Effluent Limitations

Requirements for discharges from hydrostatic test water from new vessels are listed in Table A.7.

Table A.7
Monitoring requirements and discharge limitations for chlorinated water in Texas

Parameter	Daily maximum limitations	Daily average limitations	Sample type	Monitoring frequency
TRC, mg/L	0.1	Report	Grab	2 per Discharge[1]

1. Samples shall be taken during the first hour of discharge. For discharges that extend beyond an hour in duration, a second sample shall be taken during the final hour of the discharge.

Additional Requirements

All discharges authorized by the provisions of the TPDES GP must comply with the following general requirements.

- Point of discharge:
  - The discharge must be to a splash pad or to a paved area to prevent erosion.
  - The rate of discharge must be controlled to prevent flooding and erosion.
- Discharge must not be located within 300 feet of the intake for a domestic drinking water

supply.

- Discharges must not pose any danger for pollution to private or public water wells.
- There must be no discharge of floating solids or visible foam other than in trace amounts, and no discharge of visible oil.
- The discharge must not contain a concentration of taste or odor producing substances that interferes with the production of potable water, impart unpalatable flavor to food fish including shellfish, or result in offensive odors.
- Solid wastes, including clean-up wastes, must be disposed of according to the Texas Health and Safety Code.
- The disposal of waste must be done in such a manner as to prevent nuisance conditions.

Noncompliance

Any noncompliance which may endanger human health or safety, or the environment must be reported by the permittee to the TCEQ. The report must be provided orally or by facsimile transmission to the regional office within 24 hours of becoming aware of the noncompliance. In addition, any effluent violation which deviates from the permitted effluent limitation by more than 40% should be reported in writing within 5 working days of becoming aware of the noncompliance.

Monitoring

Monitoring is required for each pollutant listed in a permit to ensure compliance with the permit limits. The GP has the following criteria established for monitoring.

- Samples must be collected, and measurements must be taken at times and in a manner so as to be representative of the monitored discharge.
- All samples must be collected according to the "Standard Methods for the Examination of Water and Wastewater" (American Public health Association et. al., 1998), or the "Methods for Chemical Analysis of Water and Wastes" (USEPA, 1979), or the "Biological Field and Laboratory Methods for Measuring the Quality of Surface Waters and Effluents" (USEPA, 1973).
- Sample containers, holding times, and preservation and analysis methods must meet requirements specified in Chapter 40, Part 136 of the CFR (40 CFR Part 136).
- The sampling point must be downstream of any treatment unit or treatment technique that is used to improve or otherwise alter the quality of the discharge.
- Analytical results for determining compliance with effluent limitations must be recorded on a DMR.

MIDWEST REGION REGULATORY SUMMARY

Information was researched for eleven states - Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin - for the regulation of NTDs. Although general NTD permits were not available online for Illinois, some NTDs, such as reservoir maintenance, may be regulated as part of a water system's IP. Regulation of NTDs for Michigan, Minnesota, Missouri, Nebraska and Wisconsin are described in Table A.8. Regulation of hydrostatic testing is practiced by the five states. Michigan regulates other short term discharges such as NTDs related to meter testing and disinfection water. Nebraska regulates NTDs related to distribution system flushing, disinfection water, and pipeline repairs. Wisconsin regulates NTDs related to hydrant flushing, disinfection water, and water meter testing. Generally, all states which regulate NTDs require an NOI, although reporting guidelines vary. Similarly, all states require a DMR, although the frequency of reporting varied with each state. Monitoring requirements included flow, discharge volume, oil and grease, TRC, chlorine discharge time, TSS, DO, pH, nitrate, and other expected pollutants. Generally, erosion and sediment control, dechlorination, and treatment of specific pollutants are required for NTDs. An IP may be required in Michigan, Missouri, or Wisconsin. In Missouri, the U.S. Fish and Wildlife Department must be notified if the discharge is within one-half mile of a receiving water. In Nebraska, a 48-hour acute WET test may be required.

Table A.8
Summary of Midwest region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Illinois	Information on NTD permitting was not available on Web site. Some discharges may be regulated under a facility's individual NPDES permit.				
Indiana	Information was not available on Web site and phone calls were not returned.				
Iowa	Information was not available on Web site and phone calls were not returned.				
Kansas	Information was not available on Web site and phone calls were not returned.				
Kentucky	Information was not available on Web site and phone calls were not returned.				
Michigan	GP	Hydrostatic pressure testing of new and existing piping, tanks, vessels, basins, and other similar equipment; short-term duration and discharge; tank and/or meter calibration water; and flushing, testing and/or disinfection of potable water systems	A plan including a BMP is required before hydrostatic testing, erosion and sediment control; DMR within 30 days; treatment of expected pollutants; dechlorination	Flow, discharge volume, oil and grease, TRC, chlorine discharge time, TSS, DO, pH with specified monitoring frequency; and other expected pollutants	IP may be required; reservoir maintenance is monitored without a permit
Minnesota	GP	Hydrostatic testing of pipelines, vessels or tanks	Requires notification five days prior to discharge, volume shall be < 50 MG, sediment control, erosion control, dechlorination	Flow	

(continued)

Table A.8 (Continued)
Summary of Midwest region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Missouri	GP	Hydrostatic testing of pipelines, vessels or tanks	Requires notification 30 days or reasonably in advance prior to discharge; submit a report within 30 days	Flow, oil and grease, TSS, pH with specified monitoring frequency; other expected pollutants to meet CWA WQS	U.S. Fish and Wildlife Department must be notified if the discharge is within ½ mile of receiving water; an IP may be required
Nebraska	GP or IP	Distribution system flushing, hydrostatic testing of pipelines, disinfection water, pipeline repair water	NOI per the permit, DMRs on a quarterly basis, erosion and sediment control	Flow, oil and grease, TRC, TDS, temperature, pH, nitrogen with specified monitoring frequency, and other expected pollutants	Permits are not available on Web site, 48-hour acute WET test may be required
Ohio	Based on information provided to researchers, formal permits are not needed for NTDs.				
Wisconsin	GP	Hydrostatic test water, hydrants flushing, water meter testing, disinfection water from water supply wells, water towers, and distribution systems	Annual reporting, compliance with local regulations, erosion and sediment control, treatment requirements, dechlorination	Flow, oil and grease, TRC, TDS, DO, pH, water treatment additives with specified monitoring frequency, and other expected pollutants	IP may be required

Illinois

No information was available on NTDs on the Web sites of the Illinois Environmental Protection Agency and the Illinois Department of Natural Resources.

Indiana

The purpose of the Indiana NPDES GP rule program defined in the Indiana Administrative Code (IAC) under Title 327 IAC 15 is to provide a streamlined NPDES permitting process for certain classes or categories of industrial point source discharges. GP (No. 327 IAC 15-11) covers the industrial activity for hydrostatic testing of commercial pipelines. However, no such permit is applicable for NTDs associated with drinking water utility activities.

Iowa

The State of Iowa regulates discharges from drinking water utilities for treated water such as discharges of spent filter backwash and from similar waste water generating operations, but does not regulate the NTDs covered under this project's scope of work.

Kansas

Information on regulation of study NTDs was not found on Kansas Department of Health and Environment (KDHE) and requests for information were unsuccessful.

Kentucky

No information was available on non-treatment and temporary discharge permits for the State of Kentucky. However, the Division of Water under the Kentucky Department for Environmental Protections (KDEP), has proposed issuing a GP (NPDES No. KYG640000) for wastewater discharges associated with drinking water plant activities, however, not including the discharges that are covered under this study.

Michigan

The Michigan Department of Environmental Quality (MIDEQ) issues a GP (No. MIG670000) to cover the discharges from the hydrostatic pressure testing of new and existing piping, tanks, vessels, basins, and other similar equipment which have been physically cleaned. In addition to hydrostatic pressure test water, this general permit may be used for other discharges of similar short-term duration and discharge quality, such as: prover loop water; tank and/or meter calibration water; and flushing, testing and/or disinfection of potable water systems.

Limitations and Monitoring Requirements

Self-monitoring results must be maintained as specified in Table A.9.

Table A.9
Discharge limitations and monitoring requirements for NTDs in Michigan

Parameters	Maximum limit for quantity and loading		Maximum limit for quantity and concentration	
	Monthly	Daily	Monthly	Daily
Discharge flow, gpm	---	Report	---	---
Total discharge volume, mg	---	Report	---	---
TSS, mg/L	---	---	---	30
Oil and grease, mg/L	---	---	---	15
Continuous discharge	---	---	---	38
TRC, µg/L	---	---	---	---
Intermittent discharge	---	---	---	200
Chlorine discharge time	---	---	---	Report
pH, S.U.	---	---	6.5 - 9	6.5 - 9
DO, mg/L	---	---	4	---
Equipment inspection	Report	---	---	---
Outfall observation	Report	---	---	---

Water Treatment Additives

Water additives include any material that is added to water used to condition or treat the water. This permit does not authorize the discharge of water additives other than chlorine or approved dechlorination reagents without approval from MIDEQ.

Final Discharge Monitoring Report

A final DMR must be submitted by a permittee to MIDEQ within thirty days after completing each discharge identified in the permittee's NPDES application. This report must include the analytical results required by the permit.

Requirements to Obtain an IP

MIDEQ may require any person to apply for and obtain an NPDES IP if any of the following circumstances apply:

- The discharge is a significant contributor to pollution as determined by MIDEQ on a case-by-case basis.
- The discharger is not complying or has not complied with the conditions of the permit.

- A change has occurred in the availability of demonstrated technology or practices for the control or abatement of waste applicable to the point source discharge.
- Effluent standards and limitations are promulgated for point source discharges subject to the permit.
- The criteria under which the permit was issued no longer apply.

Noncompliance Notification

Any noncompliance which may endanger health or the environment (including maximum daily concentration discharge limitation exceedances) must be verbally reported within 24 hours from the time the permittee becomes aware of the noncompliance.

Minnesota

The State of Minnesota GP (97-0005) regulates the hydrostatic testing NTDs from pipelines and tanks. The area hydrologist must be contacted five days prior to the discharge event. Water volume must be recorded and not exceed 50 million gallons. Monthly reports should be submitted annually on or before February 15th. A BMP plan including sediment and erosion control must be followed. The permit does not specify any monitoring requirements except for total discharge volume.

Missouri

The State of Missouri Department of Natural Resources GP (MO-G685000) regulates hydrostatic static testing discharges from pipelines and tanks.

The U.S. Fish and Wildlife Service should be contacted if the discharge facility is within one-half mile upstream of habitat for threatened or endangered aquatic species. The discharge effluent limitations and monitoring requirements for the hydrostatic testing NTDs are summarized in Table A.10

Table A.10
Discharge limitations and monitoring requirements for hydrostatic test water in Missouri

Paremeters	Discharge limitations	Monitoring requirements	
	Daily maximum	Measurement frequency	Sample type
Flow, mgd	24 hour estimate	Each discharge	Estimate
pH, S.U.	6.0-9.0	Each discharge	Grab
Oil and grease, mg/L	15	Each discharge	Grab
TSS, mg/L	100	Each discharge	Grab
Other chemicals	2.5 times the EPA Method quantification limit	Each discharge	Grab

An IP may be granted and a 30 days notice is required before the planned discharge. The report of effluent monitoring should be submitted within 30 days of the discharge. The discharge should meet all WQS of the receiving waters. All violations must be reported within five days of receiving analytical results and all monitoring data should be maintained for five years.

Nebraska

The Nebraska Department of Environmental Quality (NDEQ) issues individual and general NPDES permits to potable water treatment plants. The following itemizes NDEQ's approach to properly handle NTDs.

- The NDEQ has regulated the following activities on a site-specific basis:
  - Tank overflows and drains and well flushout
  - Disinfection and maintenance water from tanks
  - Well-purging activities
- For the discharges from water main repair activities and well sites, the municipality is required to seek coverage under the NDEQ General Dewatering Permit.
- The disinfection water from new water main construction and main repairs involves hydrostatic testing. Since this may involve chlorinated water, it is required to seek coverage under the NDEQ hydrostatic testing GP.

Ohio

Based on information obtained for this study, the State of Ohio currently does have a formal NTD regulation policy in place at this time.

Wisconsin

The State of Wisconsin issues a Wisconsin Pollutant Discharge Elimination System (WPDES) GP (No. WI-0057681-3) to cover discharges from hydrostatic test water, water supply system water such as discharge from fire hydrants to flush out the lines, water meter testing, and other disinfection water from water supply wells, water towers, and distribution systems. A very general applicability criterion is covered under this general permit to allow coverage of innocuous dischargers.

Facilities discharging to either ground waters or surface waters are required to meet the following:

Records Retention and Submittal

The WPDES GP requires annual reporting of monitoring results. All results shall be submitted to the State of Wisconsin, postmarked no later than February 15 of each year. Facilities must maintain any data they generate for three years. Surface water discharges include ditches, storm sewers and pipes that convey wastewater to creeks, streams, rivers and lakes in Wisconsin. Table A.11 specifies discharge limitations and monitoring requirements for surface water discharges.

Table A.11
Discharge limitations and monitoring requirements for NTDs in Wisconsin

	Limitations for surface water discharges		Monitoring requirements	
Parameter	Daily minimum	Daily maximum	Sample frequency	Sample type
Flow, gpd	-	-	Monthly	Estimate[3]
TSS, mg/L	-	40	Monthly	Grab
pH, S.U.	6	9	Monthly	Grab
DO, cold water fisheries[1], mg/L	6	-	Monthly	Grab
DO non-cold water fisheries[1], mg/L	5	-	Monthly	Grab
Water treatment additives[2]	-	-	Monthly	Report usage

1. DO monitoring is only required for discharges where oxygen scavenging compounds (e.g., sodium bisulfite for dechlorination) have been used.
2. Water treatment additive usage recording is not required for discharges consisting solely of water supply system water.
3. Estimate means a reasonable approximation of the average daily flow.

Water Treatment Additives

Water treatment additives vary from innocuous to highly toxic. This permit allows the use of additives such as non-biocide compounds that have been reviewed and approved by the State of Wisconsin. The WPDES GP exempts supply system water, chlorine use in wells, water tower, and distribution system disinfection from additive requirements. Facilities are required to maintain records of additive use for State inspection.

Water Supply, Well, Water Tower, and Distribution System Disinfection

Disinfection operations sometimes require a very high concentration of chlorine in the water supply system. The discharge permit requires treatment of disinfection water prior to discharge to surface water to reduce chlorine to the level which is typically found in the drinking water supply.

NORTHEAST REGION REGULATORY SUMMARY

Of the thirteen states in the Northeast, Connecticut, Maryland, Massachusetts, New Jersey, and Rhode Island clearly regulate NTDs (as shown in Table A.12). Delaware authorizes hydrostatic testing of NTDs if a water system contacts the state. In Pennsylvania, a water main break incident report is required to avoid discharge of chlorinated water into surface water. Connecticut, Massachusetts, New Hampshire and New Jersey regulate hydrostatic testing of NTDs using GPs. Connecticut also regulates discharge of hydrostatic testing of NTDs into sanitary sewers.

Besides the hydrostatic testing of NTDs, Maryland and Rhode Island regulate other NTDs. Generally, the permits in these states require an NOI, a BMP plan, dechlorination, and erosion and sediment control. The monitoring requirements vary but generally include TRC, TSS, pH, oil and grease, DO, water temperature and other expected pollutants. Discharge monitoring and disposal requirements may vary with the classification of receiving waters in Maryland, Massachusetts and New Hampshire.

Table A.12
Summary of Northeast region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Connecticut	GP	Hydrostatic testing of pipelines and tanks	NOI, erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, dechlorination, record keeping requirements	TRC, TSS, pH, oil and grease, COD, instantaneous and total flow, iron, polynuclear aromatic compounds	Regulates discharges into sanitary sewers
Delaware	Based on information provided to researchers, formal permits are not needed for NTDs. Hydrostatic testing can be authorized if state is contacted.				
Maine	Based on information provided to researchers, formal permits are not needed for NTDs.				
Maryland	GP	Tank overflows, hydrant flushing, well pumpout, hydrostatic testing, NOI required; disinfection water mechanical cleaning, dewatering of vessels or structures	NOI, BMP-based pollution prevention plan (PPP), erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, dechlorination, record keeping requirements	TRC, pH, water temperature, DO, and other expected pollutants	IP may be required
Massachusetts and New Hampshire	GP	Hydrostatic testing of pipelines and tanks	NOI, BMP-based PPP, compliance with receiving stream WQS	pH, temperature, TRC, hydrocarbons, metals, chlorine; discharge limits dependent on fresh water (FW) and salt water (SW)	An IP may be required
New Jersey	GP	Tank overflows, hydrant flushing, well pumpout, hydrostatic testing, disinfection water	NOI required	varies	
New York	Information was not available on Web site and phone calls were not returned.				
Pennsylvania	Based on information provided to researchers, formal permits are not needed for NTDs. A water line break incident report is required to document TRC in the discharge.				

(continued)

Table A.12 (Continued)
Summary of Northeast region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Rhode Island	GP (Storm Water Permit), or IP	Distribution system flushing, hydrostatic testing of pipelines, disinfection water, pipeline repair water, reservoir maintenance, well development and maintenance	NOI, storm water PPP, DMRs on a quarterly basis, erosion and sediment control	Flow, oil and grease, TRC, TSS, TDS temperature, pH, color, phosphorus, nitrogen, and metals with specified monitoring frequency, and other expected pollutants	Fines for non compliance
Vermont	Based on information provided to researchers, formal permits are not needed for NTDs.				
Virginia	Based on information provided to researchers, formal permits are not needed for NTDs.				
West Virginia	Based on information provided to researchers, formal permits are not needed for NTDs.				

Connecticut

The State of Connecticut issues a GP under the Department of Environmental Protection for discharges of hydrostatic pressure testing. This GP is issued under the authority of Section 22a-430b of the Connecticut General Statutes. An NOI is required before commencing any test activity.

Special Conditions to Discharge to a Surface Water Body

- Effective BMPs must be provided to prevent erosion, discoloration of the receiving water body, and to dissipate energy prior to discharge.
- The maximum instantaneous flow must be less than 10% of the surface water's ambient flow rate in the case of flowing surface waters. For the other surface waters (e.g., nonflowing), it should be less than 1% of the total volume of the receiving water body.
- The discharge must not cause visible discoloration or foaming in the receiving waters.
- The discharge must not contain a visible oil sheen or floating solids.
- When surface waters are used for test water, the intake point must be located at a depth no greater than one-half of the total depth of the water column.

Limitations and Conditions

The pollutant concentration in the discharge of hydrostatic pressure testing must be less than the maximum concentration set up in the permit (depending on the water quality of receiving stream). Table A.13 lists the pollutants and their maximum allowable concentrations.

Table A.13
Monitoring parameters and the effluent limitations in Connecticut

Parameter	Discharge to a sanitary sewer	Discharge to surface water
TRC, mg/L	No limit	0.05
Oil & grease, mg/L	50	10
TSS, mg/L	100	45
pH, S.U.	6 - 9 or within 0.5 of source water	6 - 9 or within 0.5 of source water

Monitoring and Reporting Requirements

All monitoring and analytical results must be retained at the facility, and must be made available to the State upon request. Table A.14 provides various monitoring requirements and sampling frequencies.

Table A.14
List of monitoring requirements and sampling frequency

Monitoring parameters	Monitoring location	Monitoring frequency
COD	See note 1	2 grab sample per event[2]
Total daily flow	See note 1	2 grab samples per event[2]
Maximum instantaneous flow	See note 1	2 grab samples per event[2]
Total iron	See note 1	2 grab samples per event[2]
TRC	See note 1	2 grab samples per event[2]
Oil and grease, total	See note 1	2 grab samples per event[2]
TSS	See note 1	2 grab samples per event[2]
pH	See note 1	Grab sample at every 4 hours until the discharge ends
PAHs	See note 1	2 grab samples per event[2]

1. Samples must be taken prior to the discharge combination with any other wastewater.
2. First grab sample during the first 10% of the time and other during the last 10% of the time.

Delaware

The State of Delaware does not issue permits to individual facilities for direct discharge to surface waters. The State issues permits for filter backwash water discharge unless it is discharged to a WWTP. There are currently no non-treatment activities (e.g., water main repair, hydrant flushing, hydrostatic water testing from new water main construction, disinfection water from new water main construction) that require a permit.

Maine

From various Internet searches and utility communications conducted for this study, it was found that the State of Maine does not regulate NTDs from drinking water utilities.

Maryland

The State of Maryland has a GP which covers various discharges from potable water systems resulting from the overflow, flushing, disinfection, hydrostatic testing, mechanical cleaning, or dewatering of vessels or structures used to store or convey potable water. The State may require any person authorized by this permit to obtain an individual state/NPDES discharge permit. The GP covers all discharges from drinking water utilities, which include water from overflows, draining, or dewatering of reservoirs, or structures used to store or convey potable water for consumption including standing water and water from flushing, disinfection, hydrostatic testing, mechanical cleaning, water main breaks, leaks, and from other releases. All facilities are required to develop a PPP with technology based BMPs. Some of the BMPs are listed below.

- The discharge may not cause the temperature of the receiving waters, beyond a mixing zone, to exceed 68 deg. F.
- All necessary measures to prevent erosion damage during the discharge should be taken. These preventive measures may include discharge via a diffuser or riprap or to a splash barrier and use of flow rate control devices.

Massachusetts and New Hampshire

The States of New Hampshire (Permit No. NHG640000) and Massachusetts (Permit No. MAG640000) issue GPs for potable WTPs generating wastewater from pre-sedimentation, coagulation/settling processes underflow, and treated filter backwash water. Among the NTDs covered under this study, only waters from the hydrostatic testing of pipelines and tanks are regulated under other GPs (Permit No. MAG910000 and Permit No. NHG910000).

NOIs are required under these GPs. Depending on the submitted NOI, the state may require an IP based on specified conditions. A permittee must monitor monthly for each outfall in accordance with the specified water quality limits shown in Tables A.15 through A.20 that follow. All of the parameter limits of the permit apply except where the permittee has certified that pollutants are "believed absent" in the discharge or where specifically excluded given the provisions that follow.

Discharge pH requirements in Massachusetts and New Hampshire are summarized in Tables A.15 and A.16.

Table A.15
pH limits in Massachusetts

Effluent characteristic	Units	Discharge	Monitoring requirement limitation	
			Measurement frequency	Sample type
pH range for Class A & Class B waters[1]	S.U.	6.5 to 8.3	1 per month	Grab
pH range for Class SA & Class SB waters[1]	S.U.	6.5 to 8.5	1 per month	Grab

1. State certification requirement

Table A.16
pH limits in New Hampshire

Effluent characteristic	Units	Discharge	Monitoring requirement limitation	
			Measurement frequency	Sample type
pH range for Class A & Class B waters[1]	S.U.	6.5 to 8.0	1 per month	Grab

1. State certification requirement

The discharge must not cause a violation of the WQS of the receiving water.

- The discharge must be adequately treated to insure that the surface water remains free from pollutants in concentrations or combinations that settle to form harmful deposits, float as foam, debris, scum, or form a visible sheen or other visible pollutants.
- The discharge must be adequately treated to insure that the receiving waters remain free from color, odor, taste, or turbidity in concentrations that would render them unsuitable for their designated use unless such concentrations are naturally occurring.

The discharge must not contain materials in concentrations or in combinations which are hazardous or toxic to AL or which would impair the uses designated by the classification of the receiving waters. If the discharge is expected to increase temperature of the receiving waters, the conditions shown in Table A.17 apply to warm water fisheries and cold water fisheries.

Table A.17
Temperature limits in Massachusetts warm water and cold water fisheries

Temperature limits effluent characteristic	Units	Discharge limitation	Monitoring requirement: Measurement type	Monitoring requirement: Sample frequency
Warm water fisheries daily maximum temperature	°F (Fahrenheit)	83	1 per month	Grab
Cold water fisheries daily maximum temperature	°F	68	1 per month	Grab

For coastal and marine sites in Massachusetts, the following temperature limits shown in Table A.18 apply:

Table A.18
Temperature limits in coastal & marine sites in Massachusetts

Temperature limits effluent characteristic	Units	Discharge limitation	Monitoring requirement: Measurement type	Monitoring requirement: Sample frequency
Coastal and marine waters daily maximum and maximum of maximum daily mean	°F	85 (daily max) 80 (maximum daily mean)	1 per month	Grab

Further criteria for changes in temperature of a receiving stream apply in both states, as shown in Table A.19.

Table A.19
Temperature change limits in New Hampshire and Massachusetts

Class of water body	Type of fishery or subcategory	Units	Maximum change in temperature	Measurement frequency	Sample type
A	Warm water	° F	1.5	1 per month	Grab
B	Cold water	° F	5	1 per month	Grab
	Lakes/ponds	° F	3	1 per month	Grab
SA	Coastal	° F	1.5	1 per month	Grab
SB	July to September	° F	1.5	1 per month	Grab
	October to June	° F	4	1 per month	Grab

A permittee must also demonstrate compliance with all of the following water quality parameter limits in discharges, as shown in Table A.20.

Table A.20
Water quality limits in New Hampshire and Massachusetts

Contaminant	Unit	Measurement frequency	Sample type
TRC	FW[1] = 11μg/L SW[2] = 7.5 μg/L	Monthly average	Grab
TPH[3]	5.0 mg/L	Daily maximum	Grab
Benzene	50.0 μg/L	Daily maximum	Grab
Total BTEX[4]	100 μg/L	Daily maximum	Grab
Naphthalene	20 μg/L	Daily maximum	Grab
Ethylene dibromide	0.05 μg/L	Daily maximum	Grab
MtBE[5]	70.0 μg/L - MA	Daily maximum	Grab
tert-Butyl-alcohol	Monitor only (μg/L)	Daily maximum	Grab
tert-Amyl methyl ether	Monitor only (μg/L)	Daily maximum	Grab
PAHs[6]		Daily maximum	Grab
Lead (total recoverable)	In MA: FW = 1.3 μg/L SW = 8.5 μg/L	Monthly average	Grab

(continued)

Table A.20 (Continued)
Water quality limits in New Hampshire and Massachusetts

Contaminant	Unit		Measurement frequency	Sample type
Nickel (total recoverable)	In MA:	FW = 29.0 µg/L	Monthly average	Grab
		SW = 8.2 µg/L		
	In NH:	FW = 16.1 µg/L		
		SW = 8.2 µg/L		
Chromium (trivalent)	In MA:	FW = 48.8 µG/L	Monthly average	Grab
	In NH:	FW = 27.7 µg/L		
Chromium (hexavalent)	In MA:	FW = 11.4 µg/L	Monthly average	Grab
	In NH:	FW = 11.4 µg/L		
Zinc	In MA:	FW = 66.6 µg/L	Monthly average	Grab
		SW = 85.6 µg/L		
	In NH:	FW = 37 µg/L		
		SW = 85.6 µg/L		
Iron	In MA: 1,000 µg/L		Daily maximum	Grab
	In NH: 1,000 µg/L			

1. FW = fresh water
2. SW = salt water
3. TPH = total petroleum hydrocarbon
4. BTEX = benzene, toluene, ethyl benzene, and the xylenes
5. MtBE = methyl-tert-butyl-ether
6. PAH = polynuclear aromatic hydrocarbon

Permittees are prohibited from adding materials or chemicals which would produce a toxic effect to any AL. If the States and/or the Environmental Protection Agency-Northeast (EPA-NE) suspect that a discharge has a reasonable potential to cause or contribute to an excursion above the State's narrative criterion for toxicity, the State or EPA-NE may require a WET test and/or a priority pollutant scan of the waste water to be discharged as part of the NOI, as authorized at 40 CFR Section 122.44(d)(1)(v). If toxicity testing is required, EPA-NE will provide the permittee with a copy of the test procedure and detailed protocol.

For new and existing tanks in New Hampshire and Massachusetts, the operator must take a minimum of six representative grab samples, including:

- For influent sampling, the operator must take one sample of the fill (source) water during the first 10% of the fill segment time and one sample during the last 10% of the fill-segment time;

- For in-process sampling, the operator must take samples of the tank water, following testing but before draining, one at the top and one at the bottom of the tank. The operator must analyze and evaluate in-process samples prior to discharge. If the analysis demonstrates that the water quality does not meet the effluent limits established in the permit, the operator must not discharge the effluent until treatment reduces the pollutant level below the limits established in the permit;
- For effluent sampling, the operator must take one sample of the discharge water during the first 10% of discharge and one sample during the last 10% of discharge. If at any time the analysis demonstrates that the discharge water quality is not consistent with the effluent limits established in this permit, the operator must cease discharging the effluent until further treatment achieves the effluent limits; and
- All effluent sampling must be taken prior to the combination with wastewaters of any type.

The permittee must develop and implement a best management practices plan (BMPP) for the discharge operations covered under the permit.

- In accordance with good engineering practices, the permittee must provide a plan for compliance with the terms of the permit. The BMPP should include methods: (1) to minimize the potential for violations of the terms of the permit; (2) to protect the designated water uses of surrounding surface water bodies; (3) to mitigate pollution from materials storage areas, in-plant transfers of hazardous and/or toxic materials, process and material handling areas, loading and unloading operations, and accidental spillage; and (4) to properly operate and maintain the treatment systems where they are used to meet the limitations in the permit.
- The plan must identify potential sources of pollution and describe what will be done to reduce the pollutants associated with day-to-day work activity from the facility.
- The BMPP may be a stand-alone document or may be incorporated into any other BMPP, Pollution Prevention (P2), or other plan required under other permits or programs.
- The permittee must maintain the BMPP on-site or at the location of the principal operator identified in the general permit and made available for inspection to federal and state personnel.
- The permittee must develop and include with the BMPP a preventative maintenance plan (PMP) to ensure that: (1) a maintenance schedule is in place for any treatment equipment used to meet the limits of the permit, and (2) implementation of regular maintenance activities are undertaken on the treatment system at the site.
- The BMPP must include a program for training new employees and for refresher training for other employees who have direct or indirect responsibility for ensuring compliance.
- The BMPP must insure that the discharges covered by the permit do not adversely affect existing water quality by preventing any erosion, stream scouring, or sedimentation caused directly or indirectly by the discharge.
- Prior to hydrostatic testing, pipes or tanks that will come into contact with the test water must be thoroughly cleaned to remove scale, soil, residues, etc.

- Discharge flow should not exceed the flow of receiving streams and rivers or alter the habitat in other water bodies.
- All chemical additives must be identified. Testing water containing additives must be disposed of as waste.
- De-watering structures (such as splash blocks, sediment filters, etc.) should be used to dissipate energy and control erosion.

Permittees are prohibited to discharge any sludge generated in the pre-cleaning or any rinsing solutions used in the pre-cleaning of the pipelines or tanks. Permittees are also prohibited from discharging hydrostatic test water to which treatment chemicals, corrosion inhibitors, or biocides have been added.

New Jersey

The State of New Jersey issues a GP for short term discharges (Permit No. NJ0132993) under the New Jersey Pollutant Discharge Elimination System (NJPDES) for water containing a very low amount of pollutants. The discharges eligible for authorization by this permit are not under the scope of this project. However, the Division of Water Quality has recently developed five new GPs to help streamline the NJPDES permitting process. Among these, the GP for "clean water discharges" to surface water is applicable to this study.

This GP provides requirements and guidelines for discharging "essentially clean" water/wastewater to surface water. These discharges are low volume, infrequent and/or temporary in nature, usually consisting of potable water, uncontaminated groundwater or essentially clean water/wastewater. Some examples of potential discharges include: potable water conveyance line and storage tank flushing, groundwater discharged from aquifer or well pump tests, discharges from draining municipal or commercial swimming pools, discharges of rinse/wash water from hydrostatic testing of storage tanks or natural gas pipelines, uncontaminated groundwater from various construction dewatering operations, or any other construction or maintenance related activity resulting in a similar clean water discharge not authorized under another NJPDES permit.

The "clean water discharge" GP will not cover discharges of untreated domestic sewage (fecal pollution), process wastewater, groundwater associated with the cleanup of a known or suspected contaminated site, etc. The GP also eliminates the burden of obtaining a permit or written authorization from the State.

New York

No information was available on the NTDs that are covered under this project on the New York State Department of Environmental Conservation Web site.

Pennsylvania

The State of Pennsylvania currently does not regulate NTDs but does require a PWS to submit a Water Line Break Incident Response Report and to control total chlorine residual in potential discharges to surface water.

Rhode Island

The State of Rhode Island has two parts of a GP which cover NTDs from drinking water utilities. They are as follows:

- Part I.B.2 of the Rhode Island Department of Environmental Management's (DEM's) GP for storm water discharges authorizes discharges from fire hydrant flushing.
- Part I.B.3 of the DEM's GP authorizes fire fighting activities, fire hydrant flushing, and discharges from potable water sources including waterline flushing and hydrostatic test water (with no contamination from process treatment chemicals). Any other discharges apart from the discharges listed above would be permitted under IPs.

Vermont

The State of Vermont does not currently regulate NTDs under NPDES GP or IP.

Virginia

In the State of Virginia, the DEQ administers the Virginia Pollutant Discharge Elimination System (VPDES). The State Water Control Board has adopted the VPDES GP for petroleum contaminated sites and hydrostatic tests regulated under the Virginia Administrative Code (9VAC25-120. (VAG83)) for equipment, pipelines, and vessels used on such sites. There was no specific permit information available for discharge of non-treatment water from water treatment utilities, which is the main focus of this study.

West Virginia

West Virginia does not regulate the study NTDs, however, some of the NTDs may be covered under an individual or a storm water permit for a water supply system

SOUTHEAST REGION REGULATORY SUMMARY

Based on the findings of this project, the Mississippi and Florida appear to regulate NTDs. of concern in this study. This information is summarized in Table A.21. Florida TRC in discharges to the state's surface water while Mississippi has a GP program for NTDs..

Table A.21
Summary of Southeast region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Alabama	Based on information provided to researchers, formal permits are not needed for NTDs.				
Florida	Although NTDs are not regulated, PWSs should conform to total chlorine standards for state surface waters.				
Georgia	Information was not available on Web site and phone calls were not returned.				
Mississippi	GP	Hydrostatic testing of pipelines, vessels or tanks	Requires a Hydrostatic test, NOI, DMR is required for flows > 3,000 gallons; sediment control; erosion control; dechlorination	Flow, oil and grease, TSS, TRC, pH with specified monitoring frequency; and other expected pollutants	An IP may be required
North Carolina	Based on information provided to researchers, formal permits are not needed for NTDs.				
South Carolina	Based on information provided to researchers, formal permits are not needed for NTDs.				
Tennessee	Information was not available on Web site and phone calls were not returned.				

Alabama

The State of Alabama has a GP which covers hydrostatic test waters associated with hydrostatic pressure tests from new and existing petroleum and natural gas pipelines. No GP is issued for discharges associated with drinking water utilities.

Florida

The State of Florida does not consider discharges from water mains during hydrostatic testing, disinfection, flushing, or repair activities to be discharges of wastes, and does not regulate such discharges, provided the public water system uses BMPs as necessary so as not to cause a violation of the state water quality. There is a standard for TRC (< 0.01 mg/L) for discharges to Class I, II, or III surface waters of the State.

Georgia

No information on non-treatment or temporary discharges was available through Internet searches and through communications with utilities in the State of Georgia.

Mississippi

The Mississippi Department of Environmental Quality (MDEQ) issues a "Hydrostatic Test Water Discharge GP" for discharges from new pipelines, storage tanks, or used pipelines, etc., in accordance with the NPDES. Before commencing any operation, a hydrostatic test NOI must be submitted. The test water may only be discharged under the terms of this permit only after receiving written notification of approval.

IP or Alternative GP

- The Office of Pollution Control (OPC) may require any covered facility to apply for an individual NPDES permit.
- Any covered facility may request to be excluded from permit coverage by applying for an IP or coverage under another general permit.
- Coverage under this permit is automatically terminated on the issuance or coverage date of the respective alternate IP or GP.

Limitations

Hydrostatic test water discharges must be free from:

- Debris, oil, scum, and other floating materials other than in trace amounts.
- Eroding soils and other materials that will settle to form objectionable deposits in receiving waters.
- Suspended solids, turbidity, and color at levels inconsistent with the receiving waters.
- Prior to hydrostatic testing, the pipeline, tank, vessels, etc. to be tested must be free from contaminants such as wax, debris, etc. (e.g., pre-pigging/ pre-cleaning).
- All water must be discharged in a manner to prevent erosion of materials and soils.
- For a discharge from a new pipeline, storage tank, etc., the test water must be discharged using erosion control devices such as energy dissipaters, splash plate, straw bales/silt fence, etc.

Monitoring Requirements

Table A.22 shows discharge limitations and monitoring requirements for various parameters during hydrostatic test water discharge for each discharge point. Samples must represent the volume and nature of the monitored discharge.

Table A.22
Discharge limitations and monitoring requirements for hydrostatic test water in Mississippi

Parameters	Discharge limitations		Monitoring requirements	
	Daily maximum[1]		Measurement frequency	Sample type
Flow, mgd	Report		Each discharge	Estimate
pH, S.U.	6.5 - 9.0		Each discharge	Grab
Oil and grease, mg/L	15		Each discharge	Grab
TSS, mg/L	90		Each discharge	Grab
TRC[2], mg/L	0.019 (FW)	0.013 (SW)	Each discharge	Grab

1. The "daily maximum" is the highest value recorded of any sample collected on any single day.
2. Monitoring of chlorine is not required if the source water is not chlorinated. Chlorinated water would typically come from a rural or municipal potable water supply.

Reporting

Discharges from hydrostatic tests from new pipelines, storage tanks, etc. that have not been used to transport or store gasoline products are not required to monitor or to submit the DMRs as long as the discharge is 3,000 gallons or less. All records and information resulting from the monitoring activities required by the MDEQ GP must be retained for a minimum of three years.

Management Requirements

- Any anticipated facility expansions or treatment modifications that may result in new, different, or increase discharges of pollutants must be reported by submitting a new NPDES application.
- The facility should be operated in good working order and operate efficiently.
- All reasonable steps must be taken to minimize or prevent any discharge in violation of the permit.

Noncompliance

The permittee must orally report any noncompliance that may seriously endanger health or environment as soon as possible, but no later than twenty-four hours from the time the permittee first became aware of the circumstances.

North Carolina

The North Carolina Division of Water Quality uses IPs to regulate discharges from water treatment plant operations. In this state, the following listed activities do not require NPDES permits:

- Filter backwash from raw water intake screening devices
- Flushing and hydrostatic testing associated with utility distribution systems
- Ground waters generated by well construction or other construction activities
- Street washwater and flows from fire fighting

Tennessee

The State of Tennessee Department of Environmental and Conservation regulates discharges from water treatment facilities but no information was available for the NTDs evaluated as part of this study.

South Carolina

The State of South Carolina does not regulate the various NTDs associated with regular O&M of drinking water utilities.

PACIFIC NORTHWEST REGION REGULATORY SUMMARY

In the Pacific Northwest, Alaska and Oregon regulate the NTDs of concern, as shown in Table A.23. Idaho does not regulate NTDs under a GP, but well development and maintenance of NTDs are regulated under a separate groundwater protection program. Most PWSs in Idaho have IPs for discharges to state's surface waters. Information for regulation of NTDs was not available on the state of Washington's Web site.

In Alaska, a GP exists for hydrostatic testing NTDs. A notice of disposal (NOD), BMPs, sediment and erosion control, dechlorination and compliance with other WQS are required. Monitoring requirements for NTDs include TRC, TSS, pH, oil and grease, COD, instantaneous and total flow, iron and PAH. In Oregon, NTDs are regulated with IPs and the state has specific requirements for discharges with TRC. Superchlorinated NTDs must be discharged to sanitary sewers, and dechlorination and erosion and sediment control is required for other NTDs.

Table A.23
Summary of Pacific Northwest region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Alaska	GP	Hydrostatic testing of pipelines and tanks	NOD, BMPs, erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, dechlorination, record keeping requirements	TRC, TSS, pH, oil and grease, COD, instantaneous and total flow, iron, polynuclear aromatic compounds	

(continued)

Table A.23 (Continued)
Summary of Pacific Northwest region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Idaho	Based on information provided to researchers, formal permits are not needed for NTDs. Well development and maintenance may be regulated under a groundwater protection program. Some systems utilize IPs.				
Oregon	IP guidance on chlorinated discharges	As per IP	Dechlorination, discharge of superchlorinated water to sanitary sewers, erosion and sediment control	Chlorine, TSS, phosphorus	
Washington	Information was not available on Web site and phone calls were not returned.				

Alaska

The State of Alaska Department of Conservation regulates NTDs as part of a GP (No. 2003-DB0089) for contained water, defined as water isolated from the environment in a manufactured container or a lined impoundment structure. Hydrostatic test water or chlorinated water from tanks and pipelines are considered contained waters. An NOD is required for discharges greater than 10,000 gallons. An NOD is not required for discharges less than 10,000 gallons but the discharge must meet requirements of the GP. The discharge must meet the water quality conditions summarized in Table A.24.

Table A.24
Water quality limitations for NTDs in Alaska

Parameter	Maximum value
Turbidity, NTU[1]	5 NTU above background level
Settleable solids, mL/L	0.2
TRC, µg/L	11 for FW and 7.5 for SW
Total aqueous hydrocarbons (TAqH), µg/L	15
Total aromatic hydrocarbons, (TAH) µg/L	10
pH, S.U.	Between 6.5 and 8.5 pH units or within 0.2 units (marine water), or 0.5 units (fresh water) of the receiving water pH at all times

1. NTU = nephelometric turbidity unit

In addition, the following conditions must be met:

- The discharge must not cause thermal or physical erosion.
- The discharge must not cause resuspension of sediments upon discharge to receiving waters.
- The discharge must be free of (a) any additives such as antifreeze solutions, methanol, solvents, and corrosion inhibitors; (b) solid wastes and garbage; (c) toxic substances; (d) grease or oils which produce a sheen; (e) foam in other than trace amounts; or (f) other contaminants.
- The discharge must not cause a violation of the Alaska WQS.
- The discharge must not cause adverse effects to aquatic or plant life, their reproduction or habitats.
- If a WQS for a toxic pollutant (including oil, grease, or solvents) is subsequently established that is more stringent than the limitation in the permit, the permit is considered to be modified in accordance with the new toxic pollutant concentration standard.
- For discharges equal to or greater than 10,000 gallons, the permittee must monitor the contained water, background natural condition, or the wastewater stream of the discharge in the following manner and frequency. For discharges less than 10,000 gallons, the permittee is required to conduct the field monitoring as identified in Table A.25, but is not required to conduct the TAqH or TAH lab analyses unless there is a sheen. Additional monitoring parameters and increased monitoring frequency may be required on a case-by-case basis.

Table A.25
Monitoring frequencies for NTDs in Alaska

Effluent characteristics	Sample location	Sample type	Sample method	Minimum frequency
Total flow	Effluent	Actual or Estimate	Field	Daily
Turbidity, NTU	Effluent and background	Grab	Field	Before discharge and 1 per week
Settleable solids, mL/L	Effluent	Grab	Field	Before discharge and 1 per week
Total chlorine, mg/L	Containment	Grab	Field	Before discharge
pH, S.U.	Containment	Grab	Field	Before discharge
TAqH, µg/L	Containment	Grab	Laboratory	Before discharge
TAH µg/L	Containment	Grab	Laboratory	Before discharge

Idaho

The State of Idaho does not regulate NTDs with any permits, but well development and maintenance discharges may be regulated by another state regulation.

Oregon

The State of Oregon issues IPs regulating NTDs by water utilities. The State of Oregon DEQ has a guidance document titled "Management Practices for Disposal of Chlorinated Waters." The guidance document includes a flowchart which can be used by fire departments and water utilities to manage their chlorinated discharges. Chlorinated discharges (< 4 mg/L) less than 500 gallons per event, reservoir leakages less than 0.1% of total volume, and emergency activities are excluded. Natural chlorine dissipation is assumed for travel distances more than 1,000 feet or more. Dechlorination of a discharge is required if the receiving stream's flow is less than 50 cfs. Superchlorinated discharges (> 4 mg/L) should not be discharged directly to a receiving stream, and alternate disposal options include discharge to sanitary sewer, land disposal, or irrigation.

Washington

The State of Washington regulates discharges from water treatment facilities with a GP but no specific information was available for the NTDs evaluated in this study.

NORTH REGION REGULATORY SUMMARY

In the North region, NTDs are regulated in North Dakota, South Dakota and Wyoming, as summarized in Table A.26. In North Dakota, a GP regulates dewatering NTDs, including hydrostatic testing discharges. In South Dakota and Wyoming, NTDs related to hydrostatic testing of new or used pipes, tanks, or other similar vessels, disinfection of potable water lines, and pump testing of wells are regulated with a GP. South Dakota also regulates flushing water from mains and other short term discharges.

An NOI is required in Wyoming. For control of NTDs, BMPs, erosion and sediment control, and compliance with WQS of receiving waters are required. The monitoring requirements vary but generally include TSS, flow, pH, TRC, oil and grease, and TPH. An IP may be required in South Dakota.

Table A.26
Summary of North region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
Montana	Information was not available on Web site and phone calls were not returned.				
North Dakota	GP	Dewatering activities including hydrostatic testing NTDs	BMPs, erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, record keeping requirements	TSS, flow, pH, TRC, oil and grease, TPH	
South Dakota	GP	Hydrostatic testing, disinfection water from pipelines, flushing from pipelines, pump testing of water wells, other short term discharges	BMPs, erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, record keeping requirements	TSS, flow, pH, TRC, oil and grease, TPH	An IP may be required
Wyoming	GP	Hydrostatic testing of new or used pipes, tanks, or other similar vessels; disinfection of potable water lines; pump testing of water wells	NOI, BMPs, dechlorination, erosion and sediment control, submission of results	Flow, TSS, TRC and pH for all discharges; TDS for groundwater; oil and grease for hydrostatic testing of pipelines and tanks	

Montana

For the State of Montana, no information was found during this investigation on NTDs such as hydrant flushing, water main breaks and repairs, reservoir/tank overflows, tank drainage, well pumpouts, and hydrostatic water testing. However, the state does issue a GP for construction dewatering/activities.

North Dakota

The State of North Dakota deals with NTDs on a case-by-case basis. A GP (Permit No. NDG-070000) is usually issued for larger projects which provides authorization to discharge relatively uncontaminated waters from temporary dewatering activities into the waters of the State of North Dakota. The water discharged from any of these activities must not contribute non-conventional or toxic pollutant loadings to the receiving stream.

Monitoring and Reporting

All samples and measurements taken must be representative of the discharge. The collection and transportation of all samples must conform to the USEPA preservation techniques and holding times. A log including flow information, sampling result, visual observation, and the name of receiving stream must be maintained on a daily basis. Table A.27 presents monitoring requirements and sampling frequency required.

Table A.27
Monitoring requirements and sampling frequencies in North Dakota

Sample parameter	Sample frequency	Sample type
Flow volume, gpd	Daily	Calculated or instantaneous
Total flow (drain), Mgal	Not limited/case basis	Calculated
pH (S.U.)	See note 1	Grab
Oil and grease (mg/L)	Daily	Visual
TPH (mg/L)	Biweekly	Grab
TRC (mg/L)	Daily (if required by the State)	Instantaneous
TSS (mg/L)	See note 1	Grab

1. At the beginning and end of the discharge and 1 sample during each week of discharge.

Effluent Limitations

The effluent limitations regulated under the North Dakota GP are listed in Table A.28.

Table A.28
Effluent limitations of various parameters in North Dakota

Parameter	Daily maximum
TSS	100 mg/L
TRC	0.1 mg/L[1]
TPH	1.0 mg/L[2]
pH (S.U.)	Between 6.0 and 9.0

1. Applies only if using chlorinated water.
2 If a visible sheen of oil and/or grease is observed in the discharge, a grab sample must be collected and the State must be contacted.

In addition to the above listed effluent maximum limitations, the State requires that there must be no discharge of floating solids or visible foam in other than trace amounts. Dewatering or basin draining (e.g., pumped discharges, trench cuts for drainage) must be managed with appropriate BMPs, such that the discharge does not adversely affect the receiving water or downstream landowners. The permittee must provide energy dissipation measures to adequately protect the outlet from erosion.

Standard Conditions

- O&M - The permittee must at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used.
- Planned Changes - The State must be given advance notice of any planned changes (expansion, production increase, or process modification) at the permitted facility.
- Records Retention - All records and information (including calibration and maintenance) required by this permit must be kept for at least three years or longer (if requested by the State or USEPA).
- Immediate Notification - The permittee must report any noncompliance of discharge as soon as possible, but no later than twenty-four hours from the time the permittee first became aware of the circumstance.

South Dakota

A GP (Permit No. SDG070000) covers discharges under the South Dakota Surface Water Discharge System for temporary discharge activities in South Dakota. The permit covers the operation of temporary dewatering, construction dewatering, and hydrostatic testing. Discharges resulting from disinfection and flushing of potable water lines, pump testing of water wells, and other short term discharges are also covered by this GP.

Management Requirements

- The permittee must complete and submit an NOI and a Certification of Applicant form to the South Dakota Department of Environment and Natural Resources (SDDENR).
- Effluent monitoring results must be summarized for each month and recorded on separate DMRs and submitted to SDDENR monthly.
- DMRs must be filled out and submitted for the duration of permit coverage.
- Once the temporary discharge activities cease, the permittee must submit a completed Notice of Termination Form. Once this form is received by the SDDENR, the coverage under the permit is terminated.

Pollution Prevention Plan

The permittee may request to develop and implement a pollution prevention plan before beginning the temporary discharge activities. The plan must describe the BMPs the permittee will undertake to reduce or eliminate any discharge of pollutants. Examples of BMPs applicable to temporary discharge activities are listed in Table A.29.

Table A.29
Various best management practices applicable to temporary discharge activities in South Dakota

Best management practice	Description
Filter berm	A temporary ridge of gravel or crushed rock; Retains sediment on-site by retarding and filtering runoff while allowing water to be discharged from the site
Vegetative buffer	An area of growing vegetation between the discharge and the receiving waters; Filters runoff and minimizes erosion
Filter fence	A low fence made of filter cloth and fencing material; Filters runoff water before discharge
Sediment pond	Small ponding area either diked or excavated; Allows the sediment to settle out before discharge

Requiring an Individual Surface Water Discharge Permit

The secretary may require any owner or operator covered under the GP to apply for an individual surface water discharge permit for any of the following reasons:

- The discharge is a significant contributor of pollution to waters of the state or it presents a health hazard.
- The discharge is not in compliance with the conditions of the permit.
- A change has occurred in the availability of demonstrated technology or practices for the control or abatement of pollutants applicable to the point source.
- Effluent limitation guidelines are promulgated for point sources covered by the GP.
- A water quality management plan containing requirements applicable to such point sources is approved.
- Conditions or standards have changed so that the discharge no longer qualifies for the GP.

Wyoming

The Wyoming Department of Environmental Quality (WDEQ) issues a GP for several temporary discharges under the Wyoming Water Quality Rules and Regulations. This GP authorizes discharges to surface waters of the state, including;

- Discharge of hydrostatic test water from the testing of new or used pipes, tanks, or other similar vessels
- Discharge of effluent associated with disinfection of potable water lines
- Discharge of effluent associated with pump testing of water wells

- Discharge of effluent associated with construction dewatering

Discharges must be of short duration, lasting no longer than one year. In addition, flushing, testing, and dewatering of water mains do not require coverage under this permit, provided the water is not superchlorinated or no additional chemicals are added. However, WDEQ strongly recommends implementing BMPs when flushing water mains to lower potential chlorine concentrations in the wastewater.

Conditions and Specific Limitations

- Before commencing any discharge activity, an NOI is required to be submitted to the administrator.
- Discharges that include soaps, degreasers, detergents, surfactants, antifreeze, deicers, or any hazardous substances are not allowed.
- No chemicals are allowed to be added to the discharge unless permission for the use of a specific chemical is granted by WDEQ.
- There must be no discharge of floating solids or visible foam in other than trace amounts.
- Water should be discharged in a manner to prevent erosion, scouring, or damage to stream banks, stream beds, ditches, or other waters of the state at the point of discharge.
- There must be no deposition of substances in quantities which could result in significant aesthetic degradation, or which could adversely affect public water supplies or those intended for agricultural or industrial use.
- This permit does not authorize discharges associated with dewatering activities that contain toxic pollutants or hazardous substances.
- The discharge of chlorinated water must not be allowed unless it can be demonstrated that the chlorine substantially dissipates prior to discharge and/or possesses no potential for toxic impacts to AL.

- There must be no discharge of floating solids or visible foam in other than trace amounts, nor must the discharge cause formation of a visible sheen or visible hydrocarbon deposits on the bottom or shoreline of the receiving water.

Effluent Limitations

Various effluent limitations regulated under the Wyoming GP are provided in Table A.30.

Table A.30
Sampling frequency for temporary discharges in Wyoming

Parameter	Effluent discharge	Frequency	Sample type
Effluent associated with disinfection of potable water lines			
Flow (gpm)	N/A	Daily	Instantaneous or continuous
TSS (mg/L)	See note 1	Weekly	Grab
pH (S.U.)	Between 6 and 9	Daily	Grab
TRC (mg/L)	Case by case basis, but < 1.0	Weekly	Grab
Effluent associated with pump testing of water wells[2]			
TDS (mg/L)	Less than 5000 mg/L[3]	Weekly	Grab
Hydrostatic test water effluent from testing of pipers, tank or other vessels[4]			
Oil and grease (mg/L)	Less than 10	Daily	Visual

1. The concentration must not exceed a monthly average of 30 mg/L, a weekly average of 45 mg/L or a daily maximum of 90 mg/L.
2. Includes the above parameters except total residual chlorine
3. Unless the discharge is to the Colorado River Basin.
4. Includes all the above listed parameters

Monitoring and Reporting

- Daily logs containing flow information and data, sampling results and observation must be maintained.
- After completion of the discharge, copies of all effluent monitoring results obtained during the discharge must be submitted to WDEQ.
- Samples and measurements must be representative of the volume and nature of the monitored discharge.
- Records of all monitoring information, must be kept for a period of at least three years from the date of the sample or measurement.
- Any noncompliance which may endanger health or the environment must be reported as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances.

FAR WEST REGION REGULATORY SUMMARY

In California, the NTDs are regulated with either GPs or municipal storm water permits by nine RWQCBs, as shown in Table A.31. The permit requirements can vary with each regional board, but the parameters of concern generally include TSS, TRC, pH, BOD, TDS, nitrogen, settleable solids, sulfides, DO, organic and inorganic contaminants, and WET testing. The permitting requirements include an NOI, BMPs, erosion and sediment control, discharge volume restrictions, and compliance with surface WQS.

In Hawaii, hydrostatic testing of NTDs are regulated with a GP. The permit requirements include an NOI, BMPs, dechlorination and erosion and sediment control. The monitoring requirements include flow, TSS, turbidity, TRC, pH, and other toxic pollutants. In Nevada, a temporary permit (< 180 days) regulates short duration NTDs.

Table A.31
Summary of Far West region NTD regulatory information from state Web sites

State	Type of Permit	NTDs	Permit Requirements	Monitoring Requirements	Remarks
California	Varies by region, GPs are available in certain regions	Varies, generally includes hydrostatic testing of pipelines, tanks or vessels; well development and maintenance; disinfection water; flushing from pipelines, tanks or vessels; hydrant testing and flushing	NOI, BMPs, erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, record keeping requirements	Varies by region	Regulation by nine RWQCBs; requirements vary by boards
Hawaii	GP	Hydrostatic testing of new or used pipes, tanks, or other similar vessels	NOI, BMPs, dechlorination, erosion and sediment control	Flow, TSS, turbidity, TRC and pH, other toxic pollutants	
Nevada	Temporary permit	Hydrostatic testing of pipelines, tanks or vessels; well development and maintenance; disinfection water; flushing from pipelines, tanks, or vessels; other temporary discharges	BMPs, erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, record keeping requirements	TSS, flow, pH, TRC, oil and grease, TPH	

California

The State of California regulates NTDs through nine RWQCBs. Permits are not readily available to the public from the individual regional boards. The RWQCB impacted by the water utility should be contacted for further details.

Hawaii

The State of Hawaii Department of Health regulates hydrostatic testing discharges from pipelines and tanks with a GP. Discharges to Class 1 inland waters, Class AA marine waters and other restricted waters by the Department are excluded from the permit. An NOI is required 30 days in advance of the discharge event. Water quality monitoring and a BMP plan as per the permit are required. The monitoring results must be reported in a report and submitted by 28th of the next month. Any non compliance should be reported within five days of receipt of analytical results. The permit requires a discharger to record flow of discharge, TSS, turbidity, pH, TRC and any other expected toxic pollutants. The numerical effluent limits depend on the established limits for the receiving waters.

Nevada

The Nevada Department of Conservation and Natural Resources issues a temporary permit for short term activity. The duration of a temporary permit cannot exceed 180 days. A temporary permit may be issued for the following types of discharges:

- Well tests
- Dewatering activities
- Hydrostatic testing of water mains
- Disinfection practices
- Other discharges of a temporary nature and requiring immediate action

SUMMARY OF STATE REGULATORY REVIEW

Based on the state regulatory review, 25 states regulate at least one NTD. Thirteen states do not regulate the NTDs directly, but one or more of these discharges may be regulated under a different facility permit. Regulatory information was not available for twelve states.

Of the 25 states that were determined to regulate NTDs, 20 use GPs. Three states use either a GP or IP to regulate NTDs. One state uses an IP to regulate NTDs. One state uses a temporary permit to regulate NTDs.

Hydrostatic testing of NTDs were the most commonly regulated discharges. Most states determined to regulate NTDs require an advance NOI for the discharge, though the notice period varied. Most regulating states require a BMP plan, sediment and erosion control, dechlorination, and compliance with receiving stream WQS. The reporting requirements varied with states, but most states require utilities to report non compliance within five days of receipt of analytical results. The most common monitoring parameters included flow, TSS, TRC, pH, oil and grease, and other expected organic and inorganic pollutants.

REGULATORY SURVEY

As part of the regulatory review, a tabular survey was developed to obtain information directly from state agencies on regulations pertaining to the types, quality, and quantity of discharges resulting from non-treatment drinking water utility operations. The full survey (see Appendix B) addressed state experience in regulating NTDs and included information requests on current rules, policies, and guidance in place for management, reporting, and monitoring criteria.

The survey was sent electronically in March 2006 to all 50 U.S. state agencies that regulate the CWA, and to eight RWQCBs in California. The research team contacted the appropriate personnel at each agency via both email and telephone after the survey was initially sent to follow up on the status of the responses. The states were grouped into eight regions (not the same as USEPA Regions) to represent common water quality, climate, and geographic considerations, as shown in Figure 6.1. The regions included the Pacific Northwest, Far West, Southwest, South, Southeast, Midwest, Northeast, and North.

Completed responses were received from 20 states and three California RWQCBs, resulting in a total of 23 completed state regulatory surveys. The survey respondents were located in 21 states and seven geographical regions - Pacific Northwest (Alaska, Idaho), Far West (California region 4, Oakland, Santa Ana), Southwest (Arizona, Colorado), South (Arkansas), Southeast (Tennessee, Florida), Midwest (Kansas, Wisconsin, Michigan, Iowa, Minnesota, Nebraska), and Northeast (Connecticut, Virginia, Maryland, Delaware, Massachusetts, West Virginia, Rhode Island). No responses were received from the North region. A tabulation of the responses is presented in Appendix C.

Of the 21 states that responded, 16 states have policies and regulations in place for NTDs, and five of these states do not regulate any NTDs for a PWS. Completed surveys were received from approximately one-half of the respondent states that have the most stringent and defined regulatory standards. Responses to the questions are discussed in the following sections. Appendix C includes a tabular summary of the survey responses from all the participating agencies.

Individual vs. General Permits

Of the 16 respondents that regulate NTDs, only four have provisions in place for issuing IPs. Arizona currently issues IPs for well development and maintenance, reservoir maintenance, hydrant flushing, and distribution system maintenance and repair. In Rhode Island, reservoir maintenance is generally covered for drinking WTPs that have existing IPs. The remaining two respondents, Arkansas and Nebraska, consider site-specific situations to determine whether a GP qualifies for an IP or not.

Local Agency Interface

Of the 16 respondents that regulate NTDs, five states (Arizona, Alaska, Massachusetts, California and Wisconsin) also require NTDs that discharge to an MS4 system to be permitted. In Arizona, all discharges need AZPDES permits, whether or not they initially go into an MS4 system. However, if a discharge stays in an on-site retention basin, an Aquifer Protection Permit (APP) may be required. In Massachusetts, local permits may apply. In Maryland, NTD permitting requirements are determined by the MS4 permit holder.

Regulatory Standards

More than three-fourths (13 of 16 regulated respondents) require submitting either an NOI or a permit application form providing information on the facility, person in charge of operation, receiving water, type, and duration of activity(ies), etc. A map or schematic diagram showing the general area and routing of the activity discharges may also be required by the regulatory agency. Arizona, for example, requires submitting BMPs for certain types of discharges or receiving water. The majority of the states require the information to be submitted at least thirty days prior to the anticipated date of discharge.

Of the 16 respondents, 13 have regulations dependent on the designated use of the receiving water body. Several states, including Nebraska and Michigan, have regulations dependent on the designated use of both the land and receiving water body. Other states, such as Minnesota and Delaware, do not have any regulations based on discharge location.

Monitoring and Frequency of Water Quality Parameters

The most commonly regulated water quality parameter for NTDs is chlorine (free or combined), which is regulated by most of the respondents. Minnesota, Nebraska, and one California regional board (Oakland) indicated that chlorine is not one of the regulated water quality parameters for NTDs. Average regulated levels of free and combined residual chlorine in the distribution system range from 0.01 mg/L to 1.5 mg/L, depending on the receiving water type. Various other parameters that are regulated by the states include TSS, turbidity, TDS, pH, temperature, nitrogen, and discharge flow. Very few respondents (less than three) also regulate color, oil and grease, DO, nitrogen, aluminum, phosphorus, settleable solids, iron, manganese, sulfide, and microbiological parameters.

The majority of the respondents have differing monitoring frequency requirements. Massachusetts, for example, requires different TRC levels for FW bodies (0.11 mg/L) and SW bodies (0.0075 mg/L). Eight respondents have regulated levels for monthly average TSS, which range from a maximum of 75 mg/L for certain NTDs such as hydrostatic test water (Santa Ana Region, California) to a minimum of 40 mg/L (Tennessee).

Reporting Requirements and Their Frequencies

Of the 16 survey respondents that regulate NTDs, 14 require submitting DMRs to state or regulatory agencies. Alaska, Minnesota, California (Santa Ana Region), and Tennessee require monthly operating or monitoring reports. California Region 4, Maryland, Nebraska, and Rhode Island require quarterly DMRs for certain NTDs . Arizona requires a Notice of Termination (NOT) to be submitted within 30 days after each discharge ceases (except area wide permittees), or when responsibility is transferred. Some states, such as Connecticut and Massachusetts, do not require any report submission unless there is a violation of the effluent limits. Colorado requires submission of an annual report.

Documentation of Fines

Of the 16 survey respondents that regulate NTDs, 10 states have penalties that are established in Federal regulations for NPDES permits. In Arizona, Massachusetts, and Rhode Island, the violations are subject to penalties of up to $25,000 per day. Compliance action is tailored to the severity of the violation and other factors on a case-by case basis. Massachusetts has established penalties for each type of violation. For example, failure to take samples and complete DMRs is a Class III violation with a base penalty of $290 and a maximum penalty of $1,000. Exceeding permit limits is a Class I penalty, with a base penalty of $5,750 and a maximum penalty of $25,000. Colorado and Minnesota have financial penalties which may reach up to $10,000 per violation per day. California (Region 4 and the Santa Ana

Region) has a penalty of $3,000 per violation of GPs and IPs and has administrative civil liability, cease and desist, cleanup, and abatement orders.

Best Management Practices

Seven (Alaska, Arizona, California Region 4, Colorado, Maryland, Massachusetts, and Nebraska) of the 23 respondents indicated that BMPs are required for compliance with NTD regulations. Erosion prevention, dechlorination, and sediment and scour control are the most commonly required BMPs. Colorado also requires BMPs emphasizing reuse of NTD water, rather than discharge of this water to waste.

WET Testing Requirements

WET testing is typically not required by most of the respondents but maybe required on a case-by-case basis. Five respondents (California Region 4, Connecticut, Massachusetts, Michigan, and Nebraska) indicated that they have WET testing requirements for certain NTDs of concern . For regulators such as California (Santa Ana Region) and Nebraska, WET testing is not required for the GP.

State Regulatory Documents

In addition to completing the survey, the state regulatory agencies were asked to provide permit and guidance documents, regulations, or other related documents to supplement the survey. Several state agencies provided the following supporting documents:

- State of Connecticut Department of Environmental Protection - Reissuance of the GP for the Discharge of Hydrostatic Pressure Testing Wastewater
- Maryland Department of the Environment - GP for Discharges from Tanks, Pipes, and Other Liquid Containment Structures at Facilities Other Than Oil Terminals
- Michigan Department of Environmental Quality - General NPDES permit
- AWWA California - Nevada section - Guidelines for the Development of BMPs Manual for Drinking Water System Releases

Regulatory State Contact Information

State	Contact Name	Email Address	Phone
Alabama	Eric Sanders	ELS2adem.state.al.us	
Alaska	Tim Wingerter	tim_wingerter@dec.state.ak.us	907-451-2116
Alaska	Sharmon Stambaugh	sharmon_stambaugh@dec.ak.us	907-269-7565
Alaska	Gretchen Keiser	gretchen_keiser@dec.state.ak.us	907-465-5308
Arizona	Lavinia Wright	wright.lavinia@azdeq.gov	602-771-4585
Arkansas	Morteza (Mo) Shafii	Shafii@adeq.state.ar.us	501-682-0616
California Region 1			
California Region 2	Harvey Packard	Hpackard@waterboards.ca.gov	
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California Region 5	Dave Carlson	dcarlson@waterboards.ca.gov	
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California Region 8	Jun Martirez	jmartirez@waterboards.ca.gov	
California Region 9	Brian Kelly	BKelley@waterboards.ca.gov	
Colorado	Gary Beers	g.beers@stste.co.us	303-692-3524
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Delaware	R Peter Hansen	Peder.hansen@stste.de.us	302-739-5731
District of Columbia			
Florida	Elsa Potts	elsa.potts@dep.state.fl.us	
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Hawaii			
Idaho	Richard Huddleston	Richard huddleston@deq.idaho.gov	208-273-0561
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Indiana	Catherine Hess	Catherine.hess@idem.in.gov	317-232-8704
Iowa	Steve Williams	steve.williams@dnr.state.ia.us	515-281-8884
Kansas	Ed Dillingham	edilling@kdhe.state.ks.us	785-296-5500
Kentucky	Jory Becker	jory.becker@ky.gov	
Louisiana			
Maine	Greg Wood		
Maryland	Edwal Stone	estone@mde.state.md.us	410-537-3661
Massachusetts	Kathleen Koehone	kathleen.keohone@stste.ma.us	508-767-2856
Michigan	Dan Dell	Delld@michigan.gov	517-335-4130
Minnesota	Sally Patrick	Sally.patrick@state.mn.us	651-297-4784
Mississippi	Harry Wilson	Harry_wilson@adeq.state.ms.us	
Missouri	Richard Laux	richard.laux@dnr.mo.gov	573-751-6982
Montana	Bonnie Lovelace	blovelace@mt.gov	307-777-6709

(continued)

Regulatory State Contact Information (Continued)

State	Contact Name	Email Address	Phone
Nevada			
New Hampshire	George Berlandi	gberlandi@des.stste.nh.us	603-271-2458
New Jersey	Muhammad Shaikh	Muhammad.Shaikh@dep.state.nj.us	609-633-3869
New Mexico	Steve Baumgam	steve_baumgam@nmenv.stste.nm.us	505-827-2803
New York	Angus Eaton	Akeaton@gw.dec.state.ny.us	518-402-8123
North Carolina	Susan Wilson	susan.a.wilson@ncmail.net	
Ohio	Eric Nygaard	Eric.nygaard@epa.stste.oh.us	614-644-2024
Oklahoma	Carol Paden	carol.paden@deq.stste.ok.us	405-702-8183
Oregon	Annette Liebe	liebe.annette@deq.state.or.us	503-229-5589
Pennsylvania	Lee McDonald	lmcdonald@stste.pa.us	717-783-2938
Puerto Rico	Sergio Bosques	Bosques.Sergio@epa.gov	
Puerto Rico	Jeff Gratz	Gratz.jeff@epa.gov	212-637-3873
Rhode Island	Erick Beck	waterresources@dem.ri.gov	401-222-4700 (7202)
South Carolina	Melinda Vickers	vickermg@dhec.sc.gov	
South Dakota	Kelli Buscher	kelli.buscher@stste.sd.us	605-773-3351
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Vermont	Peter Laflamme	peter.laflamme@anr.stste.vt.us	802-241-3777
Virginia	Kyle Ivar Winter	kiwinter@deq.virginia.gov	804-698-4182
Washington	Dave Peeler	dpee461@ecy.wa.gov	360-407-6405
West Virginia	Yogesh Patel	ypatel@wvdep.org	304-926-0499
Wisconsin	Duane Schuettpelz	Schuettpelzd@dnr.state.wi.us	608-266-1056
Wyoming	Todd Parfitt	tparfi@stste.wy.us	307-777-6709

APPENDIX B
STATE REGULATORY SURVEY QUESTIONNAIRE

Regulatory Agency Survey for AwwaRF Project 2937 - Environmental Impacts of Non-Treatment Discharges from Drinking Water Utilities

Please enter responses within the green shaded/red bordered areas provided to the right of each question below. If more space is required for your response, either adjust the row height (for electronic replies) or attach a sheet with Question # (for paper replies)

	Contact Information for the person completing the survey	Date:	
		Name:	
		Title:	
		Street Address:	
		City, State:	
		Zip Code:	
		Tel:	
		Fax:	
		e-mail:	
Please provide website links to specific regulations impacting the Non-Treatment Discharges (discharges of potable water resulting from routine and controlled activties such as distribution system flushing, hydrostatic testing of pipes, etc. by a Water Utility)		Agency Website Links:	
NUMBER	QUESTION	POSSIBLE RESPONSES	
1	Does your agency specifically regulate the Non-Treatment Discharges shown in the next column under the NPDES Permit program or through another regulatory mechanism? Provide your answer as 'yes' or 'no', and add any comments for clarification. Include any other discharges which are not listed. If another program controls these discharges, state the program name.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Other Discharge:	
		Other Discharge:	
		Other Discharge:	
2	If the discharges are regulated, are the types of discharges listed in Question 1 differentiated as Non-Treatment versus point source discharges?	Yes (please list which types are considered point sources)	
		No	
		Sometimes	
3	Does your agency provide a General Permit to cover discharges indicated in Question 1 above? If yes, what is the procedure to apply for the General Permit? Please provide web link or include a copy of the permit forms to this survey response.		
4	Are any of the discharges listed in Question 1 generally covered under an existing Individual Permit approved by your agency? If yes, please list the type of discharges from Question 1.		
5	Describe the application or notice of intent of filing procedure for General Permits for Non treatment Discharges from water utilities, if applicable.		

Regulatory Agency Survey for AwwaRF Project 2937 - Environmental Impacts of Non-Treatment Discharges from Drinking Water Utilities

6	If your agency regulates the Non-Treatment Discharges from Drinking Water Utilities, are the regulations dependent on the designated uses of the discharge location indicated in the next column?	Land use	
		Receiving Water Body Use	
		Independent of Land Use	
		Independent of Receiving Water Body Use	
7	What water quality parameters (see next column to the right) are regulated, if the Non-treatment Discharges from Drinking Water Utilities are currently regulated by your agency? Please indicate with a 'Yes' or 'No'. If the answer is 'yes', provide the acceptable range for each parameter. (For example, free chlorine - yes, < 1 mg/L). List various trace elements such as copper, arsenic, etc. for 'Other Parameters'	Free Chlorine (mg/L)	
		Combined Chlorine (mg/L)	
		Total Chlorine (mg/L)	
		Suspended Solids (mg/L)	
		Turbidity (NTU)	
		Dissolved Solids (mg/L)	
		pH (standard units)	
		Color (units)	
		Oil and Grease (mg/L)	
		Microbiological Parameters	
		Temperature (C)	
		Phosphorus (mg/L)	
		Discharge Flow (MGD)	
		Nitrogen (mg/L)	
		Other Parameters (units)	
		Other Parameters (units)	
		Other Parameters (units)	
8	What is the required monitoring frequency (if any) for the water quality parameters for the Non-Treatment Discharges from Drinking Water Utilities listed under Question 1? List 'None' if monitoring is not required. List various trace elements such as copper, arsenic, etc. for 'Other Parameters'.	Free Chlorine	
		Combined Chlorine	
		Total Chlorine	
		Suspended Solids	
		Turbidity	
		Dissolved Solids	
		pH	
		Color	
		Microbiological Parameters	
		Temperature	
		Phosphorus	
		Discharge Flow	
		Nitrogen	
		Other Parameters	
		Other Parameters	
		Other Parameters	
9	List the type and frequency of reports that a permittee is required to submit to your agency for the Non-treatment discharges in Question 1.		
10	What are the Penalties associated with Non Compliance by a utility? What are the differences in penalties for monitoring violations (e.g., failure to take samples) versus major violations (e.g., exceedance of a parameter assigned limit)?		

Regulatory Agency Survey for AwwaRF Project 2937 - Environmental Impacts of Non-Treatment Discharges from Drinking Water Utilities

11	List the types of Best Management Practices (BMPs) necessary to comply with the requirements for non-treatment discharges from drinking water utilities. Please list applicable BMP reference documents.		
12	Which type of non-treatment discharges from drinking water utilities does your agency allow to be discharged to permitted storm water (MS4) systems, without additional permitting efforts. Please provide answers as 'yes' or 'no' and any additional comments, if necessary.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional Discharge:	
		Additional Discharge:	
		Additional Discharge:	
13	Is Whole Effluent Toxicity (WET) testing considered in establishing these types of General or Individual permits? If yes, what are the typical WET test values that are acceptable for similar discharges?		

Please email survey response to; don@ncseng.com. Please mail copies of all applicable permits or support materials to: Narasimhan Consulting Services, Inc., 3660 North 3rd Street, Phoenix, AZ 85012 Attn: Don Conroy. For additional information - Phone: (602) 629-0206

APPENDIX C
STATE REGULATORY SURVEY RESPONSES

Table C.1
State responses to Questions 1 through 3

State	1. Web link and Web site to specific regulations impacting the NTDs	2. Are the regulated NTDs differentiated as non-treatment versus point source discharges?	3. GP in place to cover NTDs? What is the procedure to apply for the permit? Any Web link or a copy of the permit available?
Alaska	Title18 Alaska Administrative Code Chapter 72 (18 AAC 72), http://info.dec.state.ak.us/SPS/PermitAll2.asp	Sometimes - some of these may also be covered under the EPA Multi-Sector General Permit (MSGP)	http://info.dec.state.ak.us/SPS/PermitAll2.asp
Arizona	http://www.azdeq.gov	Yes, all discharges are considered as point source discharges	YES - DGP - http://www.azdeq.gov/environ/water/permits/gen.html#demi
Arkansas	http://www.adeq.state.ar.us/water/branch_npdes/permits/general_pmts.htm#ARG670000	Sometimes	GP, see the Web site
California Region 4	http://www.waterboards.ca.gov/losangeles/html/permits/general_permits.html	No	Yes. Submit EPA forms for new applications and NOI for existing discharges. http://www.waterboards.ca.gov/losangeles/html/permits/gen_orders/appl-GeneralNPDES.html
Colorado	http://www.cdphe.state.co.us/regulate.asp http://www.cdphe.state.co.us/wq/PermitsUnit/wqcdpmt.html	Yes, all discharges are considered as point source discharges	http://www.cdphe.state.co.us/wq/PermitsUnit/380000TWDSper.pdf
Connecticut		Hydrostatic testing of pipelines is considered as point source discharges	Hydrostatic pressure testing GP
Delaware		No	Not available
Florida		Not available	No
Idaho		Not available	No
Iowa	iowadnr.com	Not Applicable	No
Kansas	Not available	Not available	Not available

(continued)

Table C.1 (Continued)
State responses to Questions 1 through 3

State	1. Web link and Web site to specific regulations impacting the NTDs	2. Are the regulated NTDs differentiated as non-treatment versus point source discharges?	3. GP in place to cover NTDs? What is the procedure to apply for the permit? Any Web link or a copy of the permit available?
Maryland		Pipeline disinfection discharges of superchlorinated water are considered as point source discharge. All other discharges are covered by BMPs, which may include monitoring.	A GP covers all discharges from distribution systems. To apply, a facility completes a form and submits it with a map of the distribution system.
Massachusetts	http://www.mass.gov/dep/service/regulations/314cmr04.pdf, http://www.mass.gov/dep/service/regulations/314cmr04.pdf	Hydrostatic testing of pipelines is considered point source discharges	Hydrostatic testing is covered under a GP, jointly issued by the EPA and MassDEP. The forms (BRP WM 12) are available at: http://www.mass.gov/dep/water/approvals/wm12ins.pdf
Michigan		The program deals primarily with point source discharges. We may differentiate between point source and non-point source discharges when determining whether a permit is necessary. Process wastewater would be compared with other process wastewater.	Yes. Hydrostatic testing is covered by a GP. All permits are acquired by filling out a permit application. MIDEQ determines whether a GP or IP is needed.
Minnesota		No	No
Nebraska	http://www.deq.state.ne.us	Excavation dewatering, hydrostatic testing, disinfection test waters, and disposal of contaminated water in the distribution system are considered as point source discharges	Yes, an NOI form is used to apply for the appropriate GP.

(continued)

Table C.1 (Continued)
State responses to Questions 1 through 3

State	1. Web link and Web site to specific regulations impacting the NTDs	2. Are the regulated NTDs differentiated as non-treatment versus point source discharges?	3. GP in place to cover NTDs? What is the procedure to apply for the permit? Any Web link or a copy of the permit available?
Rhode Island	http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/pdfs/msgp.pdf http://www.dem.ri.gov/pubs/regs/regs/water/ripdes03.pdf		All discharges are considered as point source discharges. To apply for the GP, the facility must submit an NOI and a surface water pollution prevention plan (SWPPP), if an operator of a MS4.
Santa Ana, California	http://www.waterboards.ca.gov/santaana/html/2003_orders.html; download R8-2003-0061	Yes	Complete and submit an NOI, http://www.waterboards.ca.gov/santaana/html/2003_orders.html; download R8-2003-0061
Tennesee	http://www.state.tn.us/environment/	No answer provided	No GP.
Virginia	http://www.deq.virginia.gov/vpdes/	None in place	None in place
West Virginia	http://www.wvdep.org	No	Yes, http://www.wvdep.org
Wisconsin	See permit titled "Hydrostatic Test Water and Water Supply System Water at - http://dnr.wi.gov/org/water/wm/ww/gpindex/gpinfo.htm	None	GP - See Web site - granting of coverage may occur without submittal of an application or NOI if it is determined that the discharge or potential discharge is covered by the permit.

Table C.2
State responses to Questions 4 through 7

State	4. IP in place to cover NTDs? List the covered discharges.	5. Application / filing procedure of NOI in place for GPs for NTDs water utilities	6. Are the regulations dependent on the designated uses of the discharge location?	7. The type and frequency of reports required to submit to the state agency for NTDs
Alaska	No	The process is described in GP	Yes; regulations are dependent on receiving water body use - see 18 AAC 70 for designated uses	Typically monthly

(continued)

Table C.2 (Continued)
State responses to Questions 4 through 7

State	4. IP in place to cover NTDs? List the covered discharges.	5. Application / filing procedure of NOI in place for GPs for NTDs water utilities	6. Are the regulations dependent on the designated uses of the discharge location?	7. The type and frequency of reports required to submit to the state agency for NTDs
Arizona	ADEQ has issued one IP for potable water discharges (COP). It covers discharges from 15 specified facilities (for well development and maintenance, reservoir maintenance); and unspecified locations for hydrant flushing and distribution system maintenance / repair.	Applicant submits an NOI (by mail, hand-delivery, or fax). BMP Plan must be submitted for certain types of discharge or receiving water. Required review time is 5 to 30 business days, depending on type of receiving water.	Yes, receiving water body use and independent of land use; (1) An NOT must be submitted within 30 days after discharge ceases (except areawide permittees); or when responsibility is transferred. (2) For discharges exceeding 250,000 GPD or 4 days continuously: submit De Minimus DMR (once) within 30 days after discharge ceases. Areawide permittees submit these once by Feb. 2008 for all such discharges through 12/31/2007.	
Arkansas	GP if they have the qualification for that permit	See the Web site	Yes; regulations are dependent on receiving water body use.	See the Web site
California Region 4	Generally, no	Discharger is required to submit EPA Forms 1 and 2E. Submit certification requirements. Submit analytical data of water samples. Submit United States Geological Survey (USGS) Quad Maps. Takes 30 to 45 days to enroll under the NPDES GP. All necessary documents and forms are posted on Web site at the link provided.	Yes; regulations are dependent on receiving water body use.	Quarterly
Colorado	No	http://www.cdphe.state.co.us/wq/PermitsUnit/treatedwaterdist.pdf	Yes; regulations are dependent on receiving water body use	Annual Report

(continued)

Table C.2 (Continued)
State responses to Questions 4 through 7

State	4. IP in place to cover NTDs? List the covered discharges.	5. Application / filing procedure of NOI in place for GPs for NTDs water utilities	6. Are the regulations dependent on the designated uses of the discharge location?	7. The type and frequency of reports required to submit to the state agency for NTDs
Connecticut	No	Registration form	Dependent on receiving water body use - WQS classification	None required, unless there is a violation
Delaware	None in place	None in place	None in place	Not available
Florida	Not available	Not available	Not available	Not available
Idaho	Not available	Not available	Not available	Not available
Iowa	No	Not applicable	Not applicable	Not applicable
Kansas	Not available	Not available	Not available	Not available
Maryland	No IPs are typically used.	The NOI must be sent with a map of the distribution system, and is covered upon receipt of a registration letter from the MDE	Yes; regulations are dependent on receiving water body use with more protective measures expected in areas discharging to natural trout streams	Quarterly, if any discharges meet criteria
Massachusetts	No	Applicants submit to both DEP and EPA. Applications to Mass DEP include a transmittal form http://www.mass.gov/dep/service/online/trasmfrm.shtml, application http://www.epa.gov/region1/npdes/remediation/AppendixV_NOI.pdf. Mass DEP reviews, sends concurrence to EPA, who also reviews, then issues permit coverage.	Yes; regulations are dependent on receiving water body use	Operators must prepare DMRs monthly that are kept on-site unless there is a violation of the effluent limits or if the agencies require a copy of the report.

(continued)

Table C.2 (Continued)
State responses to Questions 4 through 7

State	4. IP in place to cover NTDs? List the covered discharges.	5. Application / filing procedure of NOI in place for GPs for NTDs water utilities	6. Are the regulations dependent on the designated uses of the discharge location?	7. The type and frequency of reports required to submit to the state agency for NTDs
Michigan	If contaminated waters must be discharged to surface or ground waters, treatment is often necessary to meet WQS or otherwise protect the designated use. Examples are disposal of contaminated waters in a disposal system. Reservoir maintenance waters may need sampling and oversight. In rare cases, a permit may be required.	Same as for GPs, an application is usually needed. At least a descriptive letter showing the discharge location and indicating discharge quality/constituents is required.	Land use and receiving water body use	Varies
Minnesota	No	Not available	No, independent of land use and receiving water use	Monthly DMRs
Nebraska	Site specific situation	Currently a telephone or letter requesting an NOI. In near future the NOI, the GP, and necessary reporting forms will be on the Department's Web site.	Both land use and receiving water body use	DMRs are submitted on a quarterly basis.
Oakland, California	Not available	Not available	Not available	Not available
Rhode Island	Generally, reservoir maintenance is covered for plants that have existing IPs	Not available	Designated use of the receiving water.	SWPPP, storm water management plan (SWMP), Drinking Water Plant Residuals Management Plans (RMPs), and DMRs

(continued)

Table C.2 (Continued)
State responses to Questions 4 through 7

State	4. IP in place to cover NTDs? List the covered discharges.	5. Application / filing procedure of NOI in place for GPs NTDs water utilities	6. Are the regulations dependent on the designated uses of the discharge location?	7. The type and frequency of reports required to submit to the state agency for NTDs
Santa Ana, California	None in place in this region	The NOI is completed and submitted together with information described in Section I of the Order-Application Requirements for New Dischargers	Yes, receiving water body use	Monthly monitoring reports
Tennessee	No answer provided	No answer provided	Yes; regulations are dependent on receiving water body use	Monthly operating report
Virginia	None in place	None in place	None in place	None in place
West Virginia	Any kind of stormwater (contaminate, non-contaminated) are covered under an IP. If facility has only stormwater discharge they are covered under stormwater GP.			
Wisconsin	No	See the Web site	No answer provided	

Table C.3
State responses to Questions 8 through 10

State	8. What are the penalties associated with Non Compliance by a utility?	9. Types of BMPs necessary to comply for NTDs. List applicable BMP reference documents.	10. Is WET testing considered in establishing these types of GPs or IPs?
Alaska	The wastewater program does not currently have administrative penalty authority but will have once delegated to the NPDES program	See the GP.	No
Arizona	All AZPDES violations are potentially subject to penalties of up to $25,000 per day. Compliance action is tailored to the severity of the violation and/or other factors on a case-by-case basis.	Must minimize: erosion, scour, and sedimentation in the receiving water; any other pollutants in the discharge; and duration of discharge during system failures such as line breaks and overflows. Must ensure compliance with WQS and other terms of the De Minimus permit. Must provide for dissipation or removal of chlorine from superchlorinated water prior to discharge. (BMP reference documents are currently being researched.) WET testing was not part of ADEQ's process for establishing its existing permits for NTD (De Minimus GP and one IP). The permits do not contain WET testing requirements. When conducted in accordance with the terms of the permits, these discharges are not expected to have toxic effects. However, WET testing could be required on a case-by-case basis in future potable-discharge permits or for specific approvals under the DGP, if water quality parameters indicate a potential for toxicity.	
Arkansas	Case-by-case	No answer provided	Case -by -case
California Region 4	Mandatory minimum penalty, Administrative Civil Liability, Cease and Desist, Cleanup and Abatement Order	Declorination, sedimentation	Yes, Acute toxicity testing
Colorado	$10,000 per day	Dechlorinate, neutralization, reuse instead of discharge	Applied if unknown synergystic reaction occurs whereby the narrative standard applies.
Connecticut	No answer provided	No answer provided	Yes, LC(50) >100%
Delaware	Not available	Not available	No
Florida	Not available	Not available	Not available

(continued)

Table C.3 (Continued)
State responses to Questions 8 through 10

State	8. What are the penalties associated with Non Compliance by a utility?	9. Types of BMPs necessary to comply for NTDs. List applicable BMP reference documents.	10. Is WET testing considered in establishing these types of GPs or IPs
Idaho	Not available	Not available	Not available
Iowa	Not applicable	Not applicable	Not applicable
Kansas	Not available	Not available	Not available
Maryland	Penalties are those established in Federal regulations for NPDES permits; each case is evaluated individually according to factors included in Maryland law.	As determined by utility	Chlorine is the only toxic anticipated from these discharges.
Massachusetts	Failure to take samples and complete DMRs is a Class III violation with $290 base penalty and $1000 maximum. Exceeding permit limits is a Class I penalty with $5750 base penalty and $25,000 maximum.	Operators develop BMP plan, flow regulation, management of run-on and run-off, erosion, scouring, and sediment control. Tanks and pipelines must be clean and flow controlled to avoid erosion or altering flow regime of receiving water.	WET testing may be required per I.D.3 of the RGP. Although no limit is specified in the permit, DEP toxics policy would limit LC50 to 100% at dilutions <100.
Michigan		BMPs are often proposed by permittees and approved on a case-by-case basis. As mentioned in question 1, BMPs are being considered for well development and maintenance. They are not available at this time.	Yes. If the wastewater composition is complex, this may be the most cost effective way to assess real life impacts. Typically, drinking water related flows are not complex contamination sources, however, a contaminated water supply might be assessed with a WET.
Minnesota	Up to $10,000 per violation per day.	None in place	Not required
Nebraska	Notice of Violation (Letter)	Physical characteristic examination of the discharge and prevent erosion caused by the the discharge.	Yes, A 48-hour acute WET test would be considered for a site specific situation. No WET testing is required in the GPs. If an NOI indicates a WET test is required, the permittee will be required to conduct a WET test. (continued)

Table C.3 (Continued)
State responses to Questions 8 through 10

State	8. What are the penalties associated with Non Compliance by a utility?	9. Types of BMPs necessary to comply for NTDs. List applicable BMP reference documents.	10. Is WET testing considered in establishing these types of GPs of IPs?
Oakland, California			
Rhode Island	Penalties up to $25,000/day depending on severity of violation and environmental impact	No answer provided	WET testing is not typically required.
Santa Ana, California	Mandatory minimum penalties are issued- $3,000 per violation	Varies from project to project; regulating agency is prohibited from specifying mode on how proponents will comply with the requirements.	WET testing is not required for those activities regulated under the GP.
Tennessee	No answer provided	No answer provided	No
Virginia	None in place	None in place	No answer provided
West Virginia			

REGULATORY REVIEW SUMMARY

Table C.4 summarizes the findings of the regulatory review by state, and includes the monitoring requirements, permitting approach, and other key issues.

Table C.4
Regulatory review summary

State	Monitoring requirements	Permitting approach	Other key issues
Alaska	Sediments, settleable solids, pH, TRC, TACH	GP for contained water (hydrostatic test water and chlorinated water in pipelines and tanks), NOD for >10,000 gallons, compliance required for all discharges (partial monitoring for discharges < 10,000 gallons)	Erosion and sediment control, compliance with receiving streams WQS; limit discharge volumes, record keeping requirements
Arizona	Chlorine, sediments, pH, flow, oil and grease	DGP- water systems file an NOI, or an IP	Erosion and sediment control, compliance with receiving streams WQS, limit on discharge volumes, Declorination, record keeping requirements
California	Sediment, TRC, pH, BOD, organic and inorganic contaminants	Regulation by nine RWQCBs, requirements vary by boards, BMPs	Erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, record keeping requirements
Colorado	None	GPs with BMP based compliance	Permittees prepare a TWMP to minimize pollution based on BMPs
Connecticut	Chlorine, sediments, pH, oil and grease, COD, instantaneous and total flow, PAY	GP for hydrostatic testing	Erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, Declorination, records keeping requirements
Florida	TRC	TRC < 0.1 mg/L for Class I, II, or III surface waters of the State	Declorination
Indiana	No parameters shown	GP for hydrostatic testing	No information available
Kansas	Chlorine, sediments, pH, flow, oil and grease, iron	GP for hydrostatic testing of pipelines and tanks, NOI required, IP may be required	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, Declorination

(continued)

Table C.4 (Continued)
Regulatory review summary

State	Monitoring requirements	Permitting approach	Other key issues
Louisiana	Sediments, pH, flow, oil and grease	GP	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, Declorination, record keeping requirements
Maryland	Chlorine, pH, water temperature	GP, BMP based PPP	Erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, Declorination, record keeping requirements
Massachusetts and New Hampshire	pH, temperature, chlorine, hydrocarbons, metals, chlorine; discharge limits dependent on fresh water (FW) and salt water (SW)	GP for hydrostatic testing of pipelines and tanks, NOI, IP may be required, BMP based PPP	Erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, Declorination, record keeping requirements
Michigan	Chlorine, sediments, pH, flow, DO water treatment additives, report on discharge "observation"	GP, report within 30 days, IP may be required	Erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, Declorination, record keeping requirements
Mississippi	Chlorine, sediments, pH, flow, oil and grease	GP for hydrostatic testing of pipelines and tanks, NOI required, IP may be required	Erosion and sediment control, compliance with receiving stream WQS, limited discharge volumes, Declorination, record keeping requirements
Nebraska	No parameters shown	IP or GP (water main repair activities and well sites, hydrostatic testing) permits	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, Declorination
Nevada	No information available	Temporary permit (< 180 days)	No information available
North Carolina	No information available	IP	No information available

(continued)

Table C.4 (Continued)
Regulatory review summary

State	Monitoring requirements	Permitting approach	Other key issues
North Dakota	Sediments, flow, pH, TRC, oil and grease, TH	GP for dewatering discharges, other NTDs on a case-by-case basis, BMPs	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, record keeping requirements
Oregon	Chlorine, TSS, phosphorus	IP, guidance on chlorinated discharges	Declorination, discharge of superchlorinated water to sanitary sewers
Rhode Island	No information available	GP	No information available
South Dakota	No information available	GP, NOI required, BMP based compliance, IP may be required	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, record keeping requirements
Texas	Chlorine, sediments, flow, oil and grease, pH	GP with NOI	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes; declorination, record keeping requirements
Utah	Chlorine, sediments, pH, flow, oil and grease	GP with NOI; IP may be required	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, declorination, record keeping requirements
Wisconsin	Chlorine, sediments, pH, flow, DO, water treatment additives	GP	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, declorination, record keeping requirements.
Wyoming	Flow, sediments, chlorine residual and pH for all discharges; NTDs for groundwater, oil and grease for hydrostatic testing of pipelines and tanks	GP, NOI is required	Erosion and sediment control, compliance with receiving streams WQS, limited discharge volumes, record keeping requirements

APPENDIX D
UTILITY QUESTIONNAIRE

Utility Survey for AwwaRF Project 2937: Environmental Impacts of Non-Treatment Discharges from Drinking Water Utilities

Please enter responses within the green shaded/red bordered areas provided to the right of each question below. If more space is required for your response, either adjust the row height (for electronic replies) or attach a sheet with Question # (for paper replies)

	Contact information for the person filling out this survey (The information will not be shared with any agency and will be presented as an anonymous utility)	Date:	
		Name:	
		Title:	
		Street Address:	
		City, State:	
		Zip Code:	
		Tel:	
		Fax:	
		e-mail:	
NUMBER	QUESTION	POSSIBLE RESPONSES	
1	Does your State (or EPA Region if State does not have primacy) specifically regulate your utility for the Non-Treatment Discharges (discharges of potable water resulting from routine and controlled activties by a Water Utility) shown in the next column to the right under the NPDES Permit program or through another regulatory mechanism? Provide your answers as yes or no, and add any supporting comments. Include any other discharges you may have which are not listed.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional discharge:	
		Additional discharge:	
		Additional discharge:	
2	Please provide the contact information (e.g., name, title, e-mail address, phone number) for the State (or EPA Regional Office) Person who is in charge of regulating the discharges in Question 1.		
3	During normal operation of your utility, how often (frequency) are the specified Non-treatment Discharges encountered in a year? In the absence of an exact number, please provide an approximate number. Include any other discharges which are not listed in the column to the right.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional discharge:	
		Additional discharge:	
		Additional discharge:	
4	Please provide the quantity of each discharge per event. Include any other discharges which are not shown in next column. Indicate if the quantity is an estimate.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional discharge:	
		Additional discharge:	
		Additional discharge:	
5	Do you have any issues/concerns with the water quality standards for the regulation of these discharges under the Clean Water Act or State or Local regulations? Include any other discharge types which are not listed. (Note: Information provided will be kept anonymous.)	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional discharge:	
		Additional discharge:	
		Additional discharge:	

Utility Survey for AwwaRF Project 2937: Environmental Impacts of Non-Treatment Discharges from Drinking Water Utilities

6	Except for emergency situations, do you coordinate disposal of specified Non-treatment discharges with your State (or EPA Regional Office) prior to undertaking the operational activity(ies) resulting in these discharges? If yes, how much notice do you provide the State (or EPA Regional Office)?		
7	What water quality parameter(s) do you monitor for the Non-treatment Discharges for your utility? Please indicate with a 'Yes' or 'No'. If the answer is 'yes', provide the specified acceptable range for each parameter. (For example, free chlorine - yes, < 1 mg/L). List various applicable trace elements such as copper, arsenic, etc. for 'Other Parameters'.	Free Chlorine (mg/L)	
		Combined Chlorine (mg/L)	
		Total Chlorine (mg/L)	
		Suspended Solids (mg/L)	
		Turbidity (NTU)	
		Dissolved Solids (mg/L)	
		pH (standard units)	
		Color (units)	
		Oil and Grease (mg/L)	
		Microbiological Parameters	
		Temperature (C)	
		Phosphorus (mg/L)	
		Discharge Flow (MGD)	
		Nitrogen (mg/L)	
		Other Parameters (units)	
		Other Parameters (units)	
		Other Parameters (units)	
8	What are the typical monitoring frequencies for the water quality parameters in Non-Treatment Discharges from your utility? List 'None' if they do not apply. List various applicable trace elements such as copper, arsenic, etc. for 'Other Parameters'.	Free Chlorine	
		Combined Chlorine	
		Total Chlorine	
		Suspended Solids	
		Turbidity	
		Dissolved Solids	
		pH	
		Color	
		Oil and Grease	
		Microbiological Parameters	
		Temperature	
		Phosphorus	
		Discharge Flow	
		Nitrogen	
		Other Parameters	
		Other Parameters	
		Other Parameters	
9	List the type and frequency of reports that you are required to submit to the regulatory agency.		
10	List the types of Best Management Practices (BMPs) that your utility utilizes to control, or minimize, the impacts associated with these discharges. Please provide a list of reference BMP documents for each applicable discharge. Include any other discharges which are not shown in the next column.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional discharge:	
		Additional discharge:	
		Additional discharge:	
11	Which type of Non-treatment Discharges from your utility are allowed to be discharged to storm water systems (MS4) without any additional permitting efforts? Please provide answers as 'yes' or 'no' and add any supporting comments, if necessary. Include any other discharges which are not listed.	Distribution System Flushing	
		Well Development and Maintenance	
		Reservoir Maintenance	
		Pipeline Repair and Maintenance	
		Hydrostatic Testing of Pipelines	
		Pipeline Disinfection Test Waters	
		Disposal of Contaminated Waters in Distribution System	
		Additional Discharge:	
		Additional Discharge:	
		Additional Discharge:	

Utility Survey for AwwaRF Project 2937: Environmental Impacts of Non-Treatment Discharges from Drinking Water Utilities

12	Is Whole Effluent Toxicity (WET) testing considered in the permits regulating the non-treatment discharges? If yes, what are the WET test regulatory limits?	
13	Does the person collecting the Non-Treatment Discharges require a special certification issued by the regulatory agency?	

Please email survey response to; don@ncseng.com. Please mail copies of all applicable permits or support materials to: Narasimhan Consulting Services, Inc., 3660 North 3rd Street, Phoenix, AZ 85012 Attn: Don Conroy. For additional information - Phone: (602) 629-0206

APPENDIX E
UTILITY RESPONSES

Table E.1
Utilities survey Questions 1 through 4

Utilities	1.Any coordination with the State (or EPA Regional Office) prior to undertaking the operational activity(ies) resulting in NTDs?	2. What type and frequency of reports are required tobe submitted to the agency?	3. Is WET testing considered in the permits regulating the NTDs?	4. Does the person collecting the NTDs require a special certification issued by the regulatory agency?
Amarillo, Texas	No	None	No	No
Corona, California	Yes, 5 days prior notice for any planned discharge	Monthly DMRs	No	No
Carson City, Nevada	No	None	No	No
Carson, California	No	Annual reports (once a year)	Yes	No
CCWD, California	No	None	Not available	Not available
DCWASWA	No	None	No	No
Denver, Colorado	No, follow permit BMPs and file a yearly report with the CDH	Annual report	Not available	Certified operator in the State of Colorado
Elgin, Illinois	Contact the EPA Regional office at least 3 days in advance if discharging dechlorinated finished water from reservoirs to the river.	Monthly NPDES; DMR for outfalls - 3 outfalls are finished water reservoirs whose discharge is extremely rare	No	No answer provided
Fountain Valley, California	No, but do give notice to County Properties per encroachment permit requirements allowing discharges into their storm drain system	Monthly summary of discharge volume (even if 0) with analytical results (if any)	No	No

(continued)

Table E.1 (Continued)

Utilities survey Questions 1 through 4

Utilities	1.Any coordination with the State (or EPA Regional Office) prior to undertaking the operational activity(ies) resulting in NTDs?	2. What type and frequency of reports are required to be submitted to the agency?	3. Is WET testing considered in the permits regulating the NTDs?	4. Does the person collecting the NTDs require a special certification issued by the regulatory agency?
Grants, New Mexico	No	Monthly, quarterly	No	Yes
Lewiston, Idaho	No	Distribution chlorine residuals (MRDL) monthly, TOC monthly, TTHM quarterly, HAA quarterly, VOC annually, SOC annually, IOC annually, and radiological compounds annually	No	No
MWD, California	No	Before each shutdown and a monthly report 30 days after	No answer provided	No answer provided
Orange County, California	No, but do give notice to County Properties per encroachment permit requirements allowing discharges into their storm drain system	Monthly summary of discharge volume (even if 0) with analytical results (if any)	No	No
Philadelphia, Pennsylvania	Provide over 7 days notice in 2005 prior to instituting a new dechlorination procedure.	Available at http://www.dep.state.pa.us/dep/subject/pubs/water/wsm/FS2209.pdf	WET testing is only in NPDES permits for wastewater plant effluents	No
Phoenix, Arizona	Usually 10-30 days for planned discharges	Annual report under IP per event for individual NOI (5 per year)	No	No

(continued)

Table E.1 (Continued)

Utilities survey Questions 1 through 4

Utilities	1.Any coordination with the State (or EPA Regional Office) prior to undertaking the operational activity(ies) resulting in NTDs?	2. What type and frequency of reports are required tobe submit to the agency?	3. Is WET testing considered in the permits regulating the NTDs?	4. Does the person collecting the NTDs require a special certification issued by the regulatory agency?
PWB, Oregon	No	DMRs for NPDES IP	No	No
Santa Ana, California	No, but do give notice to County Properties per encroachment permit requirements allowing discharges into their storm drain system	Monthly summary of discharge volume (even if 0) with analytical results (if any)	No	No
Sioux Falls, South Dakota	Yes. Try to provide at least a month notice	DMRs are required to be submitted monthly	No	No
WSSC, Maryland	Required to provide 48 hours prior notice for discharges in excess of 100,000 gallons	None - monitoring records are retained and produced upon request to MD Dept. of Environment	No	No

Table E.2
Utilities survey Questions 5 through 9

Utilities	5. Do you have any concerns with the WQS for the regulation of these discharges under the applicable regulations?	6. Do you monitor any water quality parameter(s) for NTDs?	7. What are the typical monitoring frequencies for the water quality parameters in NTDs?	8. List the types of BMPs associated with NTD discharges.	9. Which type of NTDs are allowed to be discharged to storm water systems (MS4) without any additional permitting efforts?
Amarillo, Texas	No	No	None	None	Distribution system flushing, well development and flushing, reservoir maintenance, pipeline repair and maintenance, hydrostatic testing of water main, disinfection water test
Corona, California	Pipeline repair and maintenance, hydrostatic testing of pipelines, and pipeline disinfection of test waters.	Total chlorine <0.1 mg/L, TSS< 75 mg/L, pH is 6.5 to 8.5 S.U., oil & grease<15 mg/L, flow, nitrogen, and TPH < 100 µg/L	During the 1st 30 minutes of each discharge and then weekly thereafter for continuous discharges for total chlorine, TSSand TPH. Daily pH and discharge flows, and annual analysis of TDS.	Inspection, preventative, and planned maintenance	Most NTDs
Carson City, Nevada	No	Free chlorine should be minimum 0.2 mg/L, turbidity should be 1 NTU, microbial parameters 0 total coliform and flow	Measure Free chlorine, pH, turbidity, and microbial parameters per event	Waddells, silt screens, and evaporation used as required	Distribution system flushing, pipeline repair and maintenance, hydrostatic testing of pipes, pipeline disinfection test water

(continued)

Table E.2 (Continued)
Utilities survey Questions 5 through 9

Utilities	5. Do you have any concerns with the WQS for the regulation of these discharges under the applicable regulations?	6. Do you monitor any water quality parameter(s) for NTDs?	7. What are the typical monitoring frequencies for the water quality parameters in NTDs?	8. List the types of BMPs associated with NTD discharges.	9. Which type of NTDs are allowed to be discharged to storm water systems (MS4) without any additional permitting efforts?
Carson, California	No	Residual chlorine daily max < 0.1 mg/L, TSS< 150 mg/L, turbidity< 150 NTU, pH between 6.5 to 8.5 S.U., oil & grease< 15 mg/L, temperature < 100 Deg. F, flow, nitrogen< 10 mg/L, BOD<30 mg/L, settleable solids <0.3 mL/L, and sulfides < 1 mg/L	All parameters to be analyzed per discharge	Dechlorination while distribution system flushing, sand bag and pumps used while well development and maintenance and pipeline repair	None
CCWD, California	No	Total chlorine should not be present	Only total chlorine to be measured while discharging.	Controlled flow, dechlor, mitigate erosion, etc., performed as required	As per BMP plan
DCWASA	No answer provided	No answer provided	No answer provided	No answer provided	No answer provided
Denver, Colorado	Low chlorine residual	Total chlorine should be 0.05 to 0.1 mg/L, TSS to be measured if turbidity >10 NTU, turbidity<10 NTU, 6.5<pH<9.0, visual oil & grease, and flow	Total chlorine, turbidity and flow to be measured per discharge event, TSS to be analyzed based on the turbidity	Included in BMP plans	None except in case of emergency main breaks
Elgin, Illinois	No answer provided	None	None	None	None

(continued)

Table E.2 (Continued)
Utilities survey Questions 5 through 9

Utilities	5. Do you have any concerns with the WQS for the regulation of these discharges under the applicable regulations?	6. Do you monitor any water quality parameter(s) for NTDs?	7. What are the typical monitoring frequencies for the water quality parameters in NTDs?	8. List the types of BMPs associated with NTD discharges.	9. Which type of NTDs are allowed to be discharged to storm water systems (MS4) without any additional permitting efforts?
Fountain Valley, California	No	Total chlorine<0.1 mg/L, TSS<75 mg/L, pH between 6.5 and 8.5, oil & grease < 15 mg/L, and TPH < 100 µg/L	Every 30 minutes for the parameters required	Continuous monitoring by field staff	None
Grants, New Mexico	No	No tests	None	Public notice	Distribution system flushing, well development and flushing, pipeline repair and maintenance, hydrostatic testing of water main, disinfection water test
Lewiston, Idaho	No	Flow and free chlorine < 2 mg/L.	None	None	Distribution system flushing and discharge
MWD, California	TSS, TDS and chlorine from distribution system flushing, reservoir maintenance, pipeline repair and maintenance, hydrostatic testing of pipelines, and pipeline disinfection of test waters	Total chlorine <0.1 mg/L, TSS < 75 mg/L, TDS should average 500 mg/L, pH between 6.5 and 8.8, color, visual oil & grease	Once per sample discharge except free and residual chlorine	None	None

(continued)

Table E.2 (Continued)
Utilities survey Questions 5 through 9

Utilities	5. Do you have any concerns with the WQS for the regulation of these discharges under the applicable regulations?	6. Do you monitor any water quality parameter(s) for NTDs?	7. What are the typical monitoring frequencies for the water quality parameters in NTDs?	8. List the types of BMPs associated with NTD discharges.	9. Which type of NTDs are allowed to be discharged to storm water systems (MS4) without any additional permitting efforts?
Orange County, California	No	Total chlorine < 0.1 mg/L, TSS < 75 mg/L, pH between 6.5 and 8.5, oil and grease < 15 mg/L and TPH < 100 g/L	Every 30 minutes for the parameters required	Continuous monitoring by field staff	None
Philadelphia, Pennsylvania	No answer provided	Fish kill if discharge occurs to natural waterways	None	dechlorination procedures being developed for tank drainings	None
COP, Arizona	No	Free total chlorine, TSS, turbidity, TDS, pH, oil & grease, microbial parameters, temperature, phosphorus, flow, and nitrogen.	20 samples per year	Flow rate control, plastic sheet used as required, dechlorination while pipeline disinfection	Storm water discharge permits are required
Portland, Oregon	Phosphorus from reservoir maintenance and chlorine from well development and maintenance	Total chlorine, turbidity, pH, temperature, phosphorus, & flow	Total chlorine, pH, turbidity, phosphorus to be monitored daily	BMP for each discharge specified in BMP plan documents.	None
Santa Ana, California	No	Total chlorine < 0.1 mg/L, TSS < 75 mg/L, pH between 6.5 and 8.5, oil and grease < 16 mg/L and TPH < 100 µg/L	Every 30 minutes for the parameters required	Continuous monitoring by field staff	None

(continued)

Table E.2 (Continued)
Utilities survey Questions 5 through 9

Utilities	5. Do you have any concerns with the WQS for the regulation of these discharges under the applicable regulations?	6. Do you monitor any water quality parameter(s) for NTDs?	7. What are the typical monitoring frequencies for the water quality parameters in NTDs?	8. List the types of BMPs associated with NTD discharges.	9. Which type of NTDs are allowed to be discharged to storm water systems (MS4) without any additional permitting efforts?
Sioux Falls, South Dakota	No	Total chlorine <0.05 mg/L, TSS < 90 mg/L, pH 6.0 to 9.0, initial discharge only for oil & grease and TPH; TPH should be less than 1 mg/L, BTEX less than 0.1 mg/L, and benzene below 0.005 mg/L.	Total chlorine daily, weekly TSS & pH	None	No. Well maintenance waters are typically outside City limits and discharge is allowed to soak into ground. State does not require a permit if discharge does not reach waters of the state.
WSSC	No answer provided	No answer provided	No answer provided	No answer provided	No answer provided

Table E.3
NTD types, frequency, and quantity

Utility	Distribution System Flushing	Well Development and Maintenance	Reservoir-Maintenance	Pipeline Repair and Maintenance
What is the frequency (approximate #) of specified NTDs during normal operation of the utility				
Amarillo, Texas	Daily	Daily	Bi-annual	Daily
Corona, California	993	309	9	162
Carson City, Nevada	Annually	Non-routine - Only during special	Annually	Non-routine-monthly
Carson, California	12 (past)	NR	NA	1 or 2
CCWD, California	12 / week	NA	12 per year	15 - 20 per month
DCWASA	Daily		1 - 3 per year. Each Reservoir once per year or when WQS dictate a drain and cleaning	Approx. 12 major breaks
Denver, Colorado	Annual flushing	NA		As needed
Elgin, Illinois	April / May	Rarely	Rarely	Rarely
Fountain Valley, California	0	60	0	0
Grants, New Mexico	0	1	0	12
Lewiston, Idaho	Annually	0	2	Average 40
MWD, California	30	NA	1	30
Orange County, California	0	60	0	0
Philadelphia, Pennsylvania	100 - 150	NA	One	1000 - 2000
COP, Arizona	Daily	1 - 2 per year - Varies, but is less than once per well	3 - 4 per year	10 - 12 per year - Varies, one to several times per week
PWB, Oregon	Daily	NR	Cleaned well once every 5 years	NR
Santa Ana, California	0	60	0	0
Sioux Falls, South Dakota	6000 hydrant	Once or twice a year	Once every 2 years	20 to 25 events a year
WSSC, Maryland	640	NA	16	432

(continued)

Table E.3

NTD types, frequency, and quantity (Continued)

Utility	Distribution System Flushing	Well Development and Maintenance	Reservoir-Maintenance	Pipeline Repair and Maintenance
	How much is the quantity of each discharge per event?			
Amarillo, Texas	20,000	10,000 gal	100,000 gal	1,000
Corona, California	~2,500 gal / event 5		~431,472 gal / event 1	~23, 058 gal/event
Carson City, Nevada	12,000 - 400,000 gal			
Carson, California	Varies	NA	Varies	Varies
CCWD, California	Approx. 23,000 Gallons		Approx. 2 to 5 MG	Varies
DCWASA	2,000 - 30,000 gal	NA	0.5 - 2.5 mg / discharge	Varies
Denver, Colorado	15 MG in 6 weeks period	Rarely	Rarely	Rarely
Elgin, Illinois				
Fountain Valley, California	NR	75,000 gal	NR	NR
Grants, New Mexico	0	1.5	0	0.25 MG
Lewiston, Idaho	5.2 MG (est)	None	100,000 gal	NR
Metropolitan Water District, California	10 A/F	NA	100 A/F	10 A/F
Orange County, California	NR	75,000 gal	NR	NR
Philadelphia, Pennsylvania	Variable, ~50 - 500 gpm / event 6,000 - 10,000 gal (hydrant testing only)			
COP, Arizona	NR	200,000 - 400,000 gal	20,000 - 1 MG	20,000 - 1 MG
PWB, Oregon	1,000 - 100,000 gal	100,000 - 2000,000 gal	100,000 - 3,000,000 gal	10,000 - 1,000,000 gal
Santa Ana, California	NR	75,000 gal	NR	NR
Sioux Falls, South Dakota	3,000 gal / hydrant	23,000 gal / well	100,000 gal	25,000 gal
WSSC, Maryland	60,000 gal	NA	3.5 MG	7,500 gal

(continued)

Table E.3 (Continued)
NTD types, frequency, and quantity

Utility	Hydrostatic Testing of Pipelines	Pipeline Disinfection Test Waters	Disposal of Contaminated Waters in Distribution System	Discharges resulting from system failures, pressure releases, etc.	Emergency Flow (main breaks and leaks)
	What is the frequency (approximate #) of specified NTDs during normal operation of the utility.				
Amarillo, Texas	Daily	Daily	Never	NR	NR
Corona, California				5	
Carson City, Nevada	Non-routine	None-routine	Non-routine	NR	NR
Carson, California	NA	4	NA	NR	NR
CCWD, California	16 - 20 per month	17 - 20 per month	None to date	NR	NR
DCWASA	No response	Once per month		NR	NR
Denver, Colorado		After pipeline	3 times per year	NR	NR
Elgin, Illinois	Daily	Daily	0	NR	NR
Fountain Valley, California	0	0	0	NR	NR
Grants, New Mexico	1	0	0	NR	NR
Lewiston, Idaho	Average 12	Average 12	0	NR	NR
MWD, California	5	5	0	NR	NR
Orange County,	0	0	0	NR	NR
Philadelphia, Pennsylvania	100 - 150	100 - 151	1	NR	NR
COP, Arizona	4 in a year (city owned) not counting contractors	4 a year	5 a year (city owned) not counting contractors	NR	NR
PWB, Oregon	Varies, about once a week	Varies, about once a week	No	NR	NR
Santa Ana, California	0	0	0	NR	NR

(continued)

Table E.3 (Continued)

NTD types, frequency, and quantity

Utility	Hydrostatic Testing of Pipelines	Pipeline Disinfection Test Waters	Disposal of Contaminated Waters in Distribution System	Discharges resulting from system failures, pressure releases, etc.	Emergency Flow (main breaks and leaks)
Sioux Falls, South Dakota	Once a week during summer	Once a week during summer	Has not occurred	NR	NR
WSSC, Maryland	No records	159	2568	1689	4
How much is the quantity of each discharge per event?					
Amarillo, Texas	1,000 gal	1,000 gal	0	NR	NR
Corona, California	-	-	-	Average 565,700	
Carson City, Nevada	150 gal (est)	10,000 gal (est.)	100,000 gal (est.)	NR	NR
Carson, California	NR	50,000 gpm	NR	NR	NR
CCWD. California	Varies	Varies	NA	NR	NR
DCWASA	NR	NR	Varies depending on size of conduit or reservoir	NR	NR
Denver, Colorado	Varies	Varies	NR	NR	NR
Elgin, Illinois	~1 MG	~2 MG	NR	NR	NR
Fountain Valley, California	NR	NR	NR	NR	NR
Grants, New Mexico	0.125 MG	0	0	NR	NR
Lewiston, Idaho	50,000 gal (est)	50,000 gal (est)	None	NR	NR
MWD, California	1 A/F	0.5 A/F	0	NR	NR
Orange County, California	NR	NR	NR	NR	NR

(continued)

Table E.3 (Continued)

NTD types, frequency, and quantity

Utility	Hydrostatic Testing of Pipelines	Pipeline Disinfection Test Waters	Disposal of Contaminated Waters in Distribution System	Discharges resulting from system failures, pressure releases, etc.	Emergency Flow (main breaks and leaks)
Philadelphia, Pennsylvania	NR	NR	NR	NR	NR
COP, Arizona	20,000 - 1 MG	20,000 - 1 MG	Usually 1-2 MG / event	NR	NR
PWB, Oregon	1,000 - 100,000 gal	1,000 -100,000 gal	NR	NR	NR
Santa Ana, California	NR	NR	NR	NR	NR
Sioux Falls, South Dakota	10,000 gal	10,000 gal	NA	NR	NR
WSSC, Maryland	NA	20,000 gal	4,500 gal	3,500 gal	90,000 gal

APPENDIX F
SUMMARY OF STAKEHOLDER WORKSHOPS

WORKSHOP OBJECTIVES

Two regional workshops were conducted to identify and discuss issues and approaches to regulate and manage NTDs by water utilities. The workshops' participants included the participating utilities, regulatory agencies, and other stakeholders to discuss NTD issues. The workshops were held in Phoenix, Arizona and Baltimore, Maryland and provided stakeholders opportunities to discuss regulations, barriers to implementing an NTD management program, and other issues.

STAKEHOLDER WORKSHOP 1

Workshop 1 was held on April 20th, 2006 in Phoenix, Arizona. The workshop was attended by regulatory agency representatives from the Los Angeles District Regional Water Quality Board (LADRWQCB) and the ADEQ. Utilities were represented by the COP, Arizona; The City of Mesa (COM), Arizona; MWD, California; PWB, Oregon; GSWC, California, and East Bay Municipal Utility District (EBMUD), California. Each of these utilities has been actively participating in the management of water utility NTDs for a number of years. Workshop 1 was also attended by the AwwaRF Project Manager and two PAC members. The workshop began with an overview of the project, the research approach, and the objectives of the meeting. To familiarize workshop attendees with the project activities, the project team presented a project status report, including NTDs of concern, results of the regulatory and utility surveys, field testing activities at participating utilities, and a development of BMPs for proper management of NTDs. The agenda included discussions on differences in regulations affecting NTDs from state to state, GPs versus IPs, monitoring criteria, and future directions on regulations and management of NTDs.

The participants from the regulatory agencies provided a summary of regulations impacting NTDs in their jurisdictions. The utilities then provided their experiences with managing the NTDs to comply with the applicable regulations. Individual topics, such as sampling location, monitoring requirements, and water quality parameters of concern, were discussed as a group.

The specific discussions from Workshop 1 are summarized below.

REGULATORY PERSPECTIVES

Arizona Department of Environmental Quality

ADEQ utilizes a DGP to regulate NTDs which are not expected to have significant impact on the environment. The permit requires proper management and BMPs for NTDs. The DGP regulates low flow discharges that occur at low frequency and lasts less than 30 days. These discharges have low potential of pollutants which can be further controlled with appropriate BMPs. The DGP permits potable water discharges, subterranean dewatering, hydrostatic testing of pipes and tanks, well development, and some reclaimed water systems. The DGP covers either a single source discharge or an area wide authorization (e.g., municipalities, utilities, reclaimed water providers). A water utility is required to submit to ADEQ an NOI and a BMP plan, which includes expected pollutants and strategies to minimize their impact. The DGP also requires erosion and sediment control and dechlorination prior to disposal of NTDs. Discharge limits have been established for a number of pollutants. Discharge dependent monitoring requirements have also been established. A water utility may alternatively apply for an IP to manage its NTDs.

Los Angeles District Regional Water Quality Control Board

LADRWQCB regulates NTDs under either NPDES GPs or an MS4 permit. A potable water discharge GP regulates well development and maintenance, well drilling and development, pump tests, and well purging for data collection purposes. A hydrostatic test discharge GP regulates pipeline repair and maintenance, hydrostatic testing of pipelines, tanks and reservoirs. An MS4 permit regulates distribution system flushing for maintenance, reservoir maintenance and pipe disinfection test waters and requires implementation of proper BMPs including dechlorination. A utility must decide how an NTD is discharged prior to selecting an applicable permit. A utility must notify the regional board, which may take up to 60 days for permit approval. The application should include documentation of discharges, waste treatment options, sampling and monitoring requirements, and a PPP. Regulated pollutants requiring monthly monitoring include TSS, turbidity, BOD, settleable solids, minerals and chlorine. Pollutants with additional monitoring requirements (weekly first month and monthly thereafter) may include copper, lead, chromium and selected VOCs. In addition, toxicity testing is required. Quarterly submission of reports is required.

Regulations by eight other regional water quality boards in California are similar to the LADRWQCB regulations with minor differences.

WATER SYSTEM PERSPECTIVES

This section briefly describes the water system perspectives on NTDs based on the workshop participants.

East Bay Municipal Utility District

EBMUD operates six WTPs to supply drinking water to its residential and commercial customers. The Central Valley RWQCB regulates NTDs generated at EBMUD. Besides individual pollutants in NTDs, CVRWQCB is concerned about water temperature and erosion. EBMUD has developed a number of BMPs and an erosion control plan. Regulation of individual NTDs is described in the discussion of individual NTDs that follows.

City of Portland

PWB uses surface and ground water to supply potable water to its customers. PWB prefers to discharge NTDs to a storm drain or combined sewer system or retain them in underground storage tanks. Discharge to receiving waters is generally the last option. NTD discharges at PWB are regulated by IPs or MS4 permits, depending on where NTDs are discharged. PWB monitors its discharges for their volume, duration, chlorine and phosphorus, in addition to discharge-specific pollutants.

City of Phoenix

The COP utilizes surface and groundwater to meet the water demands of its customers. Although ADEQ offers a GP, the COP has an IP that regulates specific and non-specific NTDs. The COP monitors these discharges annually and reports the findings to ADEQ. New discharges not covered under the IPs are regulated with an NOI under the DGP.

Metropolitan Water District of Southern California

MWD operates a wholesale water supply system that serves 18 million customers. NTDs include raw water, groundwater, potable water (0.5 to 2.5 mg/L chlorine) and planned and unplanned discharges (hydrant flushing, hydrostatic testing, reservoir and pipeline dewatering, pressure relief valve releases, and well drilling, maintenance and flushing) which are generally less than 500,000 gallons. MWD employs BMPs developed by AwwaRF, California-Nevada AWWA section, and EPA for proper disposal of all NTDs. LADRWQCB and the Santa Ana RWQCB regulate NTDs for MWD.

Golden State Water Company

GSWC, an investor owned water company, serves one million customers with 42 WTPs located in ten counties in California. NTDs include raw surface water, groundwater, and potable water from the distribution system. Seven RWQCBs regulate GSWC NTDs. While the NTD monitoring varies with each regional board, volume, flowrate, and duration of an NTD, TSS, and chlorine are required by all boards. Other parameters include pH, turbidity, TDS, temperature, BOD, and toxicity testing. Effluent limits for regulated water quality parameters vary for each board. Implemented BMPs include sediment and erosion control, dechlorination, and specific treatment of applicable contaminants.

City of Mesa

Similar to COP, COM employs surface and groundwater to meet the potable water needs of its customers. COM utilizes ADEQ's DGP for NTD management. The preferred way of NTD management at COM is to detain the water in open drainage basins, discharge NTDs to sanitary sewers, or use NTDs for irrigation purposes at COM parks.

DISCUSSION OF KEY NTD ISSUES

A facilitated discussion on key issues related to NTDs was conducted and is summarized below.

Distribution System Flushing

Most of the utilities, such as PWB, EBMUD, GSWC, COP, etc., have two types of flushing events: low velocity flushing, which is primarily used for disposal of water at dead ends or high detention time locations, and high velocity flushing (such as unidirectional flushing), which is mostly used for removing biofilm or sediments from pipelines and other conveyance structures. Hydrant flow and close cap testing are conducted to check the functionality of hydrants and result in NTDs. Fire department flushing activities are generally separate from the drinking water utility activities but may be coordinated between the two agencies. EBMUD provides training to fire department personnel on the use of dechlorination techniques for proper disposal of NTDs. Main flushing can result in a substantial volume of water (a six hour flushing at 300 gpm can result in 100,000 gallons). Main breaks can result in discharges related to pressure testing and disinfection (superchlorination). MWD does not operate any hydrants but generates NTDs during repair and maintenance of distribution system mains. The treatment of NTDs depends on whether the water is raw (source) water or potable water. The NTDs are covered in a GP. The COP has an IP for hydrant flushing and prefers to discharge all NTDs to storm sewers. The COP generally takes water quality samples such as THMs for large volume discharges. Fire departments for communities served by GSWC have their own ordinances, and therefore GSWC tries to coordinate any fire department related NTDs to promote environmental stewardship. GSWC practices dechlorination and discharges NTDs as per applicable regional board requirements.

LADRWQCB issues an MS4 permit for distribution system flushing discharges, and dechlorination is required as a BMP. For discharges of more than 75,000 gallons, LADRWQCB requires monitoring for pH and chlorine. A utility must control these discharges to avoid any erosion. In the future, LADRWQCB may regulate these discharges on specific water quality target limits based on NTD volume. Furthermore, TMDLs for specific metals may also be applied to NTDs in the future. A specific dechlorination method may also be specified by LADRWQCB in the future. The San Diego RWQCB regulates the NTD based on the volume - a GP is applicable for discharges greater than 500 gallons and an MS4 permit is applicable for discharges below 500 gallons.

In Arizona, an MS4 permit may be applied. A GP covers a large number of municipalities and a utility may apply for an IP if desired. Under the DGP, a utility has to file an NOI for applicable discharges.

Monitoring Requirements

A few utilities, such as EBMUD, have BMP based monitoring requirements. The COP monitors flushing samples every three months for various water quality parameters including chlorine, THMs, etc. Additional monitoring is required if the receiving stream has applicable constituents of concern.

Best Management Practices

Common BMPs include pH adjustment (if pH levels are high due to corrosion control activity), dechlorination, and discharge of water away from vegetative areas. Other BMPs include street sweeping, public education, and regular field monitoring.

Well Development and Maintenance

Well pump-out may include routine (e.g., start up) and extend (e.g., capacity testing) NTDs. PWB pumps these NTDs to waste due to the potential presence of contaminants. An IP regulates these NTDs, and reporting requirements include total volume, pH, chlorine, and phosphorus and are required because of an ultraviolet (UV) reactor validation test facility. EBMUD has an aquifer storage and recovery (ASR) program, and IPs regulate these discharges. Radon is an issue for EBMUD and is monitored for each event. MWD does not operate any wells. For COP, an IP regulates well development and maintenance NTDs and samples are collected for all planned NTDs. An annual report is submitted to ADEQ. BMPs without any special treatment are practiced.

COM operates 38 wells to produce 75 MGD of potable water. Any NTDs are stored in onsite retention basins. NTD water (that does not reach retention basins) may also be used for the City's irrigation system or discharged to a sanitary sewer. For GSWC, a GP applies to all well development and maintenance NTDs. Different RWQCBs regulate NTDs based on watershed TMDLs which generally result in discharge limits which are one-tenth of potable water MCLs. The pump-out water is held in special tanks until the monitoring results (especially BOD) are available and demonstrate compliance with the regulatory limits. The BMPs are discharge specific and a variable rate well pumping is practiced to comply with regulatory limits. Toxicity tests are also conducted annually.

LADRWQCB regulates well development and maintenance NTDs with a GP. One permit is applicable for a number of wells discharging to the same receiving water. No permit is required for small discharges (< 500 gallons).

An area wide DeMinimus permit regulates well development and maintenance of NTDs in Arizona. The permit also applies if the discharges have different water quality and discharge to a common source. Monitoring requirements include total flow, duration of flow, visual monitoring for oil and grease, and any applicable known contaminants. Erosion control BMPs are specified in the permit. A number of wells can be developed and maintained on the same permit.

Reservoir Maintenance, Tank Drain and Overflows

At PWB, tank cleaning occurs in a rotational, five year frequency and fifteen to twenty tanks are cleaned every year, during either fall or spring seasons. The open reservoirs are maintained once every six months. Applicable BMPs include minimizing the discharge volume by storing the water in compartmentalized tanks and practicing sediment or solid residual containment. PWB has not experienced any tank overflows in the last ten years because of an efficient SCADA system which monitors altitude valves on the tanks.

EBMUD, which operates 155 reservoirs, aims to minimize the NTD volume, and filters the discharge. A truck is used to haul solid residuals and sediments to its WWTP. Approximately five to six reservoirs are maintained every year. Other BMPs followed are proper coordination, dechlorination, erosion control, maintenance of the threshold of sediment mobilization, and biological assessment on the receiving water. The regulating RWQCB requires EBMUD to conduct a "hydromorphological" analysis; however, specific guidance to conduct the analysis is not provided. It is speculated that a discharge exceeding 2,000 gallons can produce a hydromorphological impact. EBMUD also has BMPs based on monitoring requirements for tank overflows, which are rare. These discharges are considered of "emergency nature" and are reported to the RWQCB. No dechlorination is practiced due to the emergency nature of tank overflows.

MWD stores raw water in six reservoirs and discharge of raw water is not an issue. Tank/reservoir overflows are regulated under an IP for the COP. The COP conducts an annual representative monitoring as part of the permit. COM has a low frequency of overflows and has not experienced any reservoir overflows during the past five years. Any overflows are discharged to a sanitary sewer. GSWC collaborates disposal of these NTDs in sanitary sewers with wastewater municipalities due to the potential of sediments.

LADRWQCB regulates these NTDs under the MS4 permit on a case by case basis. ADEQ regulates these NTDs under its DeMinimus permit (single or area wide) and requires monitoring for total flow, duration of flow, chlorine, and sediments for discharges greater than 250,000 gallons.

Hydrostatic Testing, Main Breaks, Repairs and Maintenance

For PWB, main breaks are exempted until someone from the utility arrives at the location. An individual permit regulates blow-offs and water is dechlorinated and discharged to a sanitary sewer. Main disinfection water is also discharged to a sanitary sewer if available. If a sanitary sewer is not available, the disinfection water is dechlorinated and discharged to a storm sewer. Hydrostatic testing water is discharged to a storm drain at a rate of 50 to 300 gpm.

Main breaks occur frequently (at an approximate rate of 300 mains per month) at EBMUD, which is required to report all breaks to the regional board. EBMUD prefers to dispose these NTDs to a sanitary sewer. EBMUD conducts hydrostatic testing and disinfection of mains separately. BMPs include dechlorination and sediment and erosion control. MWD practices dechlorination for these NTDs, which are regulated by the San Diego RWQCB under a GP.

Construction of new mains is regulated under a GP for COP. Main breaks are regulated under an IP. The COP prefers to dispose these NTDs to a sanitary sewer with proper BMPs. COM retains these NTDs in either open retention basins or discharges them to storm drains under the ADEQ GP. NTDs from new mains and hydrostatic testing are reused onsite to settle trenches.

At GSWC, contractors are required to appropriately dispose of the NTDs. An IP requires appropriate BMPs prior to discharge of NTDs to a storm drain. In most of the states, the hydrostatic testing and pipe disinfection activities are performed separately mainly because of the issues associated with handling these discharges. In most cases, disinfection water is dechlorinated before discharge.

No permit is issued by LADRWQCB for main break and repair related discharges, which are generally controlled under the MS4 permit. If water quality is an issue, NTDs are regulated with a designated GP with water quality limitations. ADEQ regulates main breaks on a case-by-case basis and requires notification. Hydrostatic testing is regulated under the DeMinimus permit and requires BMPs which control chlorine and flowrates.

Monitoring of Water Quality Parameters

For the NTDs, most regulatory agencies require monitoring for chlorine, pH, flow, and suspended solids. PWB has an issue with phosphorous and manganese levels. EBMUD has an issue with copper levels due to its high allowable limit in drinking water. Selenium and nitrogen are other constituents which may be critical in the future. Ammonia residuals are not an issue because discharge levels are usually lower than the ambient or target levels.

Sampling Location

Most NTDs are monitored at the point of discharge and utilities try their best to avoid any further contamination of NTDs. Since there is no control by utilities of further contamination of these discharges, utilities prefer to monitor these discharges at the location of the discharge. Most regulatory agencies require sampling at a point of entry to the catch basin, if the discharges are covered under an MS4 permit.

Dechlorinating Agents

Success and failure of different types of dechlorinating chemicals and equipment were discussed. The selected dechlorinating chemicals should not depress DO and pH of the receiving streams. Sodium sulfite, thiosulfate, bisulfite and ascorbic acid are the most commonly used dechlorinating chemicals. Carboys with chemicals are not a preferred choice as they are heavy, difficult to use, and pose disposal issues. Tablets are preferred over carboys, and are just as effective. Ascorbic acid (granular or tablet) is another dechlorination chemical which is being widely used. Although NSF 60 certifies dechlorinating chemicals, a certification is generally not required as the water is considered non-potable as soon as it contacts the ground.

FUTURE REGULATORY DIRECTION AND NTD ISSUES

A discussion on future regulations and related issues was held and is summarized below.

The LADRWQCB representative stated that the current MS4 permit requires utilities to follow BMPs but does not have any conditions on either the type of BMPs used or the final levels achieved. The future regulations may limit the use of certain specific BMPs and might require minimum levels for specified contaminants. Further, future regulations may also include certain mandatory minimum penalties. The ADEQ representative stated that any changes to its DGP are not anticipated in the near future. ADEQ is focusing on promoting regional education to cover all the available permits applicable to NTDs.

STAKEHOLDER WORKSHOP 2

Workshop 2 was held on May 24th, 2006 in Baltimore, Maryland. The workshop was attended by representatives from the Washington Suburban Sanitary Commission (WSSC), Maryland; DCWASA, Washington, D.C.; Midwestern Utility; and the City of Philadelphia, Pennsylvania. Representatives from two regulatory agencies and two other water utilities had agreed to attend but did not participate in the workshop. Workshop 2 followed the same agenda and facilitated discussions similar to Workshop 1.

The specific discussions from Workshop 2 are summarized in the following sections.

Participating Utilities

DCWASA

DCWASA purchases treated water from Washington Aqueduct Authority and distributes to its residential and commercial customers in Washington, D.C. The distribution system consists of old cast iron and lead pipes, which are partially lined. At present, DCWASA is replacing lead lines to improve the water quality. Distributed water contains chloramines and 2.5 to 3.5 mg/L of orthophosphates, which is a concern because it is a nutrient. The DCWASA system is one third combined sewer and two thirds separate sewer which is maintained by the department as well. Although no specific reporting of NTDs is required, DCWASA is regulated by the DC Health Department and the DC Department of the Environment.

WSSC

WSSC supplies potable water to a population of 1.5 million residents in the suburbs of Washington, D.C. NTDs are regulated by the State of Maryland's GP. In 1998, WSSC prepared a PPP which is being updated currently for managing NTDs in its distribution system. WSSC prefers to discharge NTDs to its combined sanitary sewer, if available, before discharging them to receiving streams after chlorination. As part of the GP, pH and temperature are monitored based on the designated use classification of receiving waters. Water is dechlorinated before it is discharged to receiving waters and storm sewers, which are maintained by the two counties served by WSSC.

City of Philadelphia

The Philadelphia Water Department serves about 1.5 million customers and includes 3,300 miles of main, 26,000 hydrants, and 87,000 valves. Sixty percent of the City's sewer system is a combined system and 40% is separate sanitary and storm water system. The water supply infrastructure including five steel tanks, four large standpipes, and three large clear wells and storage reservoirs is inspected every five years The City of Philadelphia replaces 0.8% of its mains every year. PWD is regulated by the Pennsylvania Department of Environmental Control through the administrative codes, BMPs, and dechlorination of NTDs. Zinc orthophosphate is used as a corrosion inhibitor and chloramination is practiced for disinfection.

Midwestern Utility

The Midwestern Utility supplies 1.1 million residential and wholesale customers via two WTPs (surface water 240 mgd and groundwater 40 mgd). The water is supplied to 11 pressure zones using 17 pumping stations and 26 storage tanks via 3,100 miles of pipelines. There are no regulations for NTDs and the utility does not practice any dechlorination.

INDIVIDUAL NTDs

A facilitated discussion on the study NTDs was conducted and is summarized below.

Distribution System Flushing

DCWASA has a routine water main flushing program which is conducted on a daily basis. Hydrants are flushed for 3 to 5 minutes at approximately 300 gpm for flushing and at 50 gpm for sample collection related to water quality complaints. Discharges are dechlorinated with sodium bisulfite, and DCWASA prefers to discharge them to storm sewers. Hydrants, when available, are used for distribution system flushing by WSSC. Blowoffs are used to dewater water mains for maintenance. WSSC prefers to discharge NTDs to the combined sanitary sewer, if available, before discharging them to receiving streams after dechlorination. Water pH can be an issue due to cement lining on the distribution mains. Control of pH is achieved by 24-hour flushing.

In response to water quality issues, particularly THMs and water age, the Philadelphia Water Department practices distribution system flushing. In extreme areas, the Philadelphia Water Department flushes waters in the summer to maintain water quality. There is no permit for NTDs, and the Philadelphia Water Department prefers to discharge NTDs to sanitary sewers and practices dechlorination using ascorbic acid. For Midwestern Utility, low and high velocity flushing is performed for unidirectional flushing and water quality related issues, respectively. Discharges are not dechlorinated but are monitored for chlorine residual and turbidity. There are no regulations for NTDs, and discharges are retained in open ditches or discharged to natural terrain.

Well Development and Maintenance

Except for Midwestern Utility, the other utilities do not operate any wells. For well development and maintenance, Midwestern Utility employs surfactant, hydrochloric acid and chlorination (50 - 100 mg/L). The volume of these discharges is variable and no notification is required. An aeration structure is used for dechlorination purposes and variable volume NTDs are discharged to open ditches.

Reservoir Maintenance, Tank Drain and Overflows

At WSSC, reservoirs are drained once every two years and sodium thiosulfate is used for dechlorinating stored water. Dechlorinated water is discharged to the closest manhole. At DCWASA, dechlorinated reservoir water is discharged to a sanitary sewer. For reservoir maintenance, water is dechlorinated and discharged to the storm sewers. For Midwestern Utility, tanks are drained on an "as needed" basis and discharge volumes range from 10,000 to 200,000 gallons. No monitoring is conducted for these discharges. The utility does not inform the regulatory agency and does not practice dechlorination.

Sediments are either washed out (Midwestern Utility) or are treated and disposed of at the wastewater operations of the utility (WSSC and the Philadelphia Water Department).

To avoid reservoir overflow, all utilities use altitude valves and overflows are rarely encountered.

Hydrostatic Testing, Main Breaks, Repairs and Maintenance

WSSC aims to replace 1% of mains per year, and dechlorination of superchlorinated water for new and repaired pipelines is performed by State certified contractors. For hydrostatic pressure tests, the sanitary sewer is used for discharges. Pipeline repairs at the Philadelphia Water Department are spray-disinfected and flushed without a discharge. At the Philadelphia Water Department, the hydrostatic disinfection water is discharged to a sewer. At Midwestern Utility, hydrostatic and chlorinated water (10 to 25 mg/L) are discharged to sanitary sewers or natural drainage without any dechlorination.

Other NTD Issues

A discussion of other NTD related issues was held and is summarized below:

Monitoring of Water Quality Parameters

For the NTDs, most regulatory agencies require monitoring for chlorine, pH, flow, and TSS. Compositing of samples instead of grab samples would represent the NTD water quality better and efforts should be made to promote this sampling strategy. Some parameters, such as pH, must be taken immediately as grab samples as they can change with time.

Sampling Location

Utilities preferred to monitor these discharges at the location of the discharge and utilization of BMPs to control further pollution of NTDs during their passage on land or other conveyance infrastructure.

Dechlorinating Agents

The currently used dechlorination chemicals perform well for free chlorine and chloraminated NTDs. There is concern about worker safety issues related to use of dechlorination chemicals. There is also concern about the toxicity of receiving waters due to use of dechlorination chemicals.

Workshop participants also expressed concern with leaving the dechlorination of NTDs unattended if the discharges last for extended periods (e.g., several hours).

SUMMARY OF WORKSHOP FINDINGS

Overall, NTDs are regulated more widely in Western states versus the Northeast and Midwest states. In California, nine RWQCBs regulate their jurisdictions with their own version of permits with different conditions. Some water utilities are regulated by more than one regional board and have to follow different permit conditions for the same distributed water. In addition, some regional boards have special requirements, such as "hydromorphological" analysis for the NTDs without any specific guidance to the utility. One regional board regulates BOD in NTDs and a utility has to store the discharge for five days before it can be appropriately disposed off. Unified regulatory criteria in a state would simply the process for the utilities as well as regulatory agencies. There are inconsistences in regulation of NTDs nationwide - California plans to regulate these NTDs more stringently in the future while a number of states do not regulate NTDs at all. GPs are a cost effective way to regulate NTDs.

Most water utilities prefer to discharge NTDs to sewers and discharges to receiving waters is the last option. Dechlorination is commonly practiced by a majority of water utilities due to receiving water standards. Other water quality parameters of concern include pH, TSS, organic contaminants, and metals (iron, copper, selenium). WET assays are generally not required. Dechlorination chemicals work adequately, however, there is a concern on their handling by workers and unattended dechlorination practices. More research is needed on the toxic effects of dechlorination chemicals on receiving waters.

APPENDIX G
HISTORICAL WATER QUALITY DATA SUMMARIES

Table G.1
MWD historical water quality data summary

Parameter	Units	Source Water		Treated Water	
		Min.	Max.	Min.	Max.
PRIMARY STANDARDS					
Combined filter effluent turbidity	NTU	No result	No result	0.05	0.2
Microbiological Constituents					
Total coliform bacteria	%	No result	No result	ND	0.46
Fecal coliform and *E. coli*	+ve/-ve	No result	No result	ND	0.02
Giardia	#/L[1]	No result	ND[2]	No result	No result
Cryptosporidium	#/L	No result	ND	No result	No result
Organic Chemicals					
Pesticides/PCBs[4]	µg/L	ND	ND	ND	ND
Semi volatile organic compounds	µg/L	ND	ND	ND	ND
Volatile organic compounds					
MTBE	µg/L	ND	4.4	ND	3.8
Toluene	µg/L	ND	0.7	ND	4.0
Inorganic Chemicals					
Aluminum	mg/L	ND	2.3	ND	0.2
Antimony	mg/L	ND	ND	ND	ND
Arsenic	mg/L	ND	0.006	ND	0.002
Asbestos	mg/L	ND	ND	ND	ND
Barium	mg/L	ND	0.2	ND	0.1
Beryllium	mg/L	ND	ND	ND	ND
Cadmium	mg/L	ND	0.004	ND	ND
Chromium	mg/L	ND	ND	ND	ND
Copper	mg/L	ND	0.07	ND	ND
Cyanide	mg/L	ND	ND	ND	ND
Fluoride	mg/L	ND	0.49	ND	0.30
Lead	mg/L	ND	ND	ND	ND
Mercury	mg/L	ND	ND	ND	ND
Nickel	mg/L	ND	ND	ND	ND
Nitrate (as N)	mg/L	ND	1.4	ND	1.5
Nitrite (as N)	mg/L	ND	ND	ND	ND
Nitrate and nitrite (as N)	mg/L	ND	1.4	ND	1.5

Table G.1 (Continued)

MWD historical water quality data summary

Parameter	Units	Source Water		Treated Water	
		Min.	Max.	Min.	Ma
Selenium	µg/L	ND	ND	ND	ND
Thallium	µg/L	ND	ND	ND	ND
Radionuclides					
Gross alpha particle activity	pCi/L	ND	10	ND	6.3
Gross beta particle activity	millirems/year	ND	12	ND	7.8
Combined Radium	pCi/L	ND	2.3	ND	2.9
Strontium-90	pCi/L	ND	ND	ND	ND
Uranium	pCi/L	ND	4.7	ND	4.0
Disinfection By-products					
Total trihalomethanes	µg/L	No result	No result	10	89
Haloacetic acids	µg/L	No result	No result	4.1	54
Total chlorine residuals	mg/L	No result	No result	1.5	3.0
Bromate	µg/L	No result	No result	ND	14
SECONDARY STANDARDS					
Chloride	mg/L	34	116	ND	128
Color	CU[3]	2	70	1	4
Iron	mg/L	ND	0.2	ND	ND
Manganese	mg/L	ND	36	ND	ND
Silver	mg/L	ND	ND	ND	ND
Sulfate	mg/L	22	276	27	212
Total dissolved solids	mg/L	174	676	199	574
Turbidity (monthly)	NTU	0.36	90	0.03	0.09
Zinc	mg/L	ND	ND	ND	ND
UNREGULATED PARAMETERS					
Boron	mg/L	0.002	0.2	0.1	0.3
Chromium	mg/L	ND	ND	ND	ND
Vanadium	mg/L	ND	0.007	ND	0.005
Perchlorate	mg/L	ND	0.007	ND	0.006

(continued)

Table G.1 (Continued)

MWD historical water quality data summary

Parameter	Units	Source Water		Treated Water	
		Min.	Max.	Min.	Ma
GENERAL PARAMETERS					
Alkalinity	mg/L	60	137	57	126
Calcium	mg/L	16	80	16	64
Hardness	mg/L	22	325	75	269
Magnesium	mg/L	9	222	8.5	26.5
pH	S.U.	7.6	8.7	8.0	8.6
Potassium	mg/L	2	6	2.1	31
Radon	pCi/L	ND	ND	ND	119
Sodium	mg/L	30	105	37	94
TOC	mg/L	2.2	6.8	1.6	4

1. #/L = number per liter
2. ND = not detected
3. CU = color unit

Table G.2
PWB historical treated water quality data summary

Parameter	Units	Min	Avg.	Max.
Physical characteristics				
pH	pH	7.6	7.9	8.0
Total dissolved solids	mg/L	15	25	33
Color	S.U.	5	10	15
Specific conductance	µmhos/cm@25°C	24	30	36.20
Water temperature	°C	7.7	11.3	16.2
Suspended solids	mg/L	0.5	0.9	1.0
Total solids (@ 180°C)	mg/L	21	28	34
Nutrients				
Nitrate nitrogen (as N)	mg/L	0.01	0.03	0.07
Nitrite nitrogen (as N)	mg/L	<0.005	<0.005	<0.005
Ammonia nitrogen (as N)	mg/L	<0.02	0.02	0.04
Nitrogen, organic (as N)	mg/L	<0.01	<0.01	<0.01
Phosphorus - reactive (as P)	mg/L	<0.003	0.004	0.01
Phosphorus, total (P)	mg/L	<0.005	0.01	0.01
Silica (SiO_2 as Si)	mg/L	3.7	4.1	4.8
Total organic carbon (as C)	mg/L	1.0	1.6	2.0
Anions and cations				
Chloride	mg/L	1.4	1.8	2.1
Fluoride	mg/L	<0.05	<0.05	<0.05
Hardness (as $CaCO_3$)	mg/L	2.9	8.6	14
Sulfate	mg/L	<0.5	<0.5	<1
Alkalinity (as $CaCO_3$)	mg/L	8.1	9.9	13
Hydroxide (as $CaCO_3$)	mg/L	<0.1	<0.1	<0.1

(continued)

Table G.2 (Continued)

PWB historical treated water quality data summary

Parameter	Units	Min	Avg.	Max.
Carbonate (as $CaCO_3$)	mg/L	<0.1	<0.1	<0.1
Bicarbonate (as $CaCO_3$)	mg/L	8	9.9	13
Carbon dioxide, free	mg/L	0.2	0.6	1.3
Carbon dioxide, total	mg/L	7.2	9.3	12
Calcium	mg/L	0.7	2.3	3.8
Magnesium	mg/L	0.3	0.8	1.2
Potassium	mg/L	0.2	1.2	3.8
Sodium	mg/L	2.5	6.1	12
Metals				
Antimony	mg/L	<0.0015	<0.0015	<0.0015
Arsenic	mg/L	<0.0005	<0.0005	<0.0005
Barium	mg/L	<0.001	0.0008	0.006
Cadmium	mg/L	<0.0005	<0.0005	<0.0005
Chromium	mg/L	<0.0005	<0.0005	<0.0005
Copper	mg/L	<0.005	0.002	0.016
Lead	mg/L	NR	NR	NR
Mercury	mg/L	<0.0001	<0.0005	<0.0005
Selenium	mg/L	<0.0005	0.0003	0.002
Aluminum	mg/L	0.02	0.04	0.07
Iron	mg/L	<0.025	0.04	0.09
Manganese	mg/L	<0.005	0.01	0.032
Silver	mg/L	<0.0005	<0.0005	<0.0005
Zinc	mg/L	<0.02	<0.1	<0.1
Nickel	mg/L	<0.002	<0.004	<0.004

Table G.3
City of Phoenix historical treated water quality data summary

Parameters	Units	Max	Average	Min
Alkalinity	mg/L	224	144	83
Antimony	mg/L	<0.005	<0.003	<0.0009
Arsenic	mg/L	0.016	0.005	0.0002
Barium	mg/L	0.14	0.07	0.011
Beryllium	mg/L	<0.001	<0.001	<0.0004
Cadmium	mg/L	0.002	0.001	0.0003
Calcium	mg/L	75	54	33
Calcium hardness	mg/L	188	133	83
Chloride	mg/L	319	134	24
Chromium	mg/L	0.01	0.008	0.001
Copper[1]	mg/L	0.76	0.22	0.001
Fluoride	mg/L	1.6	0.6	0.1
Hardness,(Total)	mg/L	314	228	138
Iron	mg/L	0.7	0.3	0.002
Lead[1]	mg/L	0.03	0.008	0.0002
Magnesium	mg/L	36	24	10.0
Manganese	mg/L	0.07	0.02	0.0003
Mercury	mg/L	< 0.0002	< 0.0002	ND
Nickel	mg/L	0.04	0.01	0.0004
Nitrate	mg/L	1.6	0.700	0.0500
Nitrite	mg/L	< 0.1	< 0.1	< 0.1
pH	S.U.	8.5	7.7	7.0
Selenium	mg/L	< 0.03	< 0.011	ND
Silver	mg/L	0.005	0.002	0.0003
Sodium	mg/L	205	98	23
Sulfate	mg/L	276	138	14
Temperature	°F	106	80	48
Thallium	mg/L	< 0.01	< 0.0022	ND
TDS	mg/L	872	523	254
Zinc	mg/L	0.3	0.1	0.003

1 - Level measured at consumers taps

Table G.4
DCWASA historical treated water quality data summary

Parameter	Units	Min.	Max.	Average
Alkalinity	mg/L	33	120	72
Aluminum	mg/L	0.001	0.2	0.008
Ammonia, Total	mg/L	0.04	1.4	0.9
Ammonia, Free NH_3-N	mg/L	0.02	0.6	0.3
Calcium, Dissolved	mg/L as $CaCO_3$	61	144	106
Calcium, Hardness Total	mg/L as $CaCO_3$	64	150	110
Calcium, Total	mg/L as $CaCO_3$	79	144	111
Chloride	mg/L	16	63	30
Color	Color Units	0	217	11
Copper	mg/L	0.05	0.19	0.11
Dissolved Orthophosphate	mg/L	1.5	3.7	2.5
Fluoride	mg/L	0.6	1.1	0.9
Free Chlorine	mg/L	0.005	1.6	0.1
HPC	CFU/100 mL	0	5700	139
Iron	mg/L	0	1.3	0.06
Monochloramine	mg/L	0.01	4.3	2.9
Nitrate	mg/L	0.59	3.1	1.7
Nitrite	mg/L	0.001	1.8	0.03
ORP	mV	343	655	511
Orthophosphate	mg/L	1.2	5.2	3.2
pH	S.U.	7.2	8.2	7.6
Sulfate	mg/L	20	79	46
TDS	mg/L	36.5	231	160
Temperature	ºC	5.8	31.7	20.3
Total Chlorine	mg/L	0.1	4.5	3.03
Total Hardness	mg/L as $CaCO_3$	102	185	137
UV-254	cm (-1)	0.001	0.43	0.046

Table G.5
CCWD historical treated water quality data summary

Parameter	Units	Average
Aluminum	mg/L	0.06
Ammonia	mg/L	0.5
Antimony	mg/L	0.04
Arsenic	mg/L	0.002
Barium	mg/L	0.1
Beryllium	mg/L	0.0002
Bicarbonate alkalinity	mg/L as $CaCO_3$	70
Bromide	mg/L	0.1
Cadmium	mg/L	0.0007
Calcium	mg/L	20.6
Carbonate Alkalinity	mg/L as $CaCO_3$	2.3
Chloride	mg/L	58.4
Chromium	mg/L	0.003
Color	Color Unit	7
Copper	mg/L	0.013
Cyanide	mg/L	0.03
Fluoride	mg/L	0.8
Hardness	mg/L as $CaCO_3$	95.7
Hydroxide Alkalinity	mg/L as $CaCO_3$	1.0
Iron	mg/L	0.1
pH	S.U.	8.6
Lead	mg/L	0.003
Magnesium	mg/L	11.7
Manganese	mg/L	0.007
MBAS (foaming agents)	mg/L	0.05
Mercury	mg/L	0.0006
Nickel (Furnace)	mg/L	0.005
Nitrate	mg/L	0.8
Nitrite as N	mg/L	0.03
Ortho Phosphate	mg/L	0.2
Potassium	mg/L	2.6
Selenium (Furnace)	mg/L	0.005
Silver	mg/L	0.002
Sodium	mg/L	55.4
Specific conductance	umhos/cm	463
Sulfate	mg/L	58
Thallium (Furnace)	mg/L	0.001
Thiobencarb (Bolero)	µg/L	1.00
Total Alkalinity	mg/L as $CaCO_3$	72
Turbidity	NTU	0.07
Zinc	mg/L	0.05
Disinfection By-Products		
Bromate	µg/L	5.0
Bromochloroacetic acid	µg/L	1.5
Bromodichloromethane	µg/L	8.3

(continued)

Table G.5 (Continued)
CCWD historical treated water quality data summary

Parameter	Units	Average
Bromoform	µg/L	3.3
Chlorine Residual, Total	mg/L	2.7
Chlorodibromoacetic acid	µg/L	1.0
Chloroform	µg/L	6.0
Dibromoacetic acid	µg/L	2.3
Dibromochloromethane	µg/L	8.1
Dichloroacetic Acid	µg/L	2.0
Monobromoacetic Acid	µg/L	1.7
pH, Field	pH	8.7
Temperature, Field	°C	13.2
Total HAAs	µg/L	7.7
Tribromoacetic Acid	µg/L	1.6
Trihalomethanes (Total)	µg/L	25.7

Table G.6
GSWC historical treated water quality data summary

Parameter	Units	Range detected	Average
Turbidity	NTU	0.14 (highest level found)	
Aluminum	mg/L	ND - 0.07	0.01
Arsenic	mg/L	ND - 0.003	ND
Barium	mg/L	ND - 0.15	ND
Fluoride	mg/L	0.1 - 0.7	0.4
Nitrate, as NO3	mg/L	ND - 24	12
Gross alpha activity	pCi/L	ND - 4.8	3
Chlorine	mg/L	0.6 - 2.0	1.6
HAA5	µg/L	ND - 45	26.2
Total THM	µg/L	0.5 - 56.3	39.8
Copper	mg/L	0.22 (90^{th} percentile)	
Lead	mg/L	0.003 (90^{th} percentile)	

Table G.7
AAWC historical treated water quality data summary

Parameter	Units	Sun City		Sun City West	
		Range detected	Maximum	Range detected	Maximum
Arsenic	mg/L	--	0.01	0.005 -0.03	0.03
Barium	mg/L	--	0.06	0.008 - 0.04	0.04
Chromium	mg/L	--	0.02	ND - 0.006	0.006
Fluoride	mg/L	--	0.8	0.4 - 1.8	1.8
Nitrate	mg/L	1.2 - 7.2	7.2	4.0 - 4.2	4.2
Di (2-ethylhexyl) phthalate	µg/L	--	1.4	ND	ND
Gross alpha activity	pCi/L	--	10.1	--	--
Chlorine	mg/L	0.4 - 1.5	0.9 (avg)	0.4 - 1.4	1.0 (avg)
Selenium	µg/L	--	4	2 - 4	4
Dibromochloro-propane	µg/L	ND	ND	ND - 0.005	0.005
Styrene	µg/L	--	3.9	ND	ND
Combined Radium 226/228	pCi/L	ND	ND	ND - 0.4	0.4
Total coliform	(1)	--	4.3	--	1.6
HAA5	µg/L	ND - 6.2	0.6 (avg)	ND - 4.1	0.9 (avg)
TTHM	µg/L	ND - 4.0	1.0 (avg)	ND - 3.5	1.3 (avg)
Copper	mg/L	0.24 (90^{th} percentile)	--	0.10 (90^{th} percentile)	--
Lead	ppb	1 (90^{th} percentile)	--	2 (90^{th} percentile)	--

1. % of total samples positive

APPENDIX H
NTD CASE STUDY MONITORING RESULTS

Table H.1
MWD NTD sampling results

Parameter	Unit	Tank overflow	Tank drain
Bromodichloromethane	µg/L	5.7	5.4
Bromoform	µg/L	6.2	6.1
Chloroform	µg/L	2.4	2.4
Dibromochloromethane	µg/L	12	11
Ammonia-N	mg/L	<0.5	<0.5
Biochemical oxygen demand	mg/L	14	15
Calcium	mg/L	27	27
COD	mg/L	ND	ND
DO	mg/L	10	9.9
E. coli	MPN[1]/100 mL	<2	<2
Fecal coliform	MPN/100 mL	<2	<2
Hardness (as $CaCO_3$)	mg/L	120	120
Magnesium	mg/L	13	13
Oil & grease	mg/L	<3.8	<3.8
pH	S.U.	7.1	7.5
Phosphorus	mg/L	<0.05	<0.05
Residual chlorine	mg/L	2.5	2.5
Sulfide	mg/L	<0.1	<0.1
Temperature	°C	13	13
Total coliform	MPN/100 mL	<2	<2
Total cyanide	mg/L	<0.025	<0.025
TDS	mg/L	290	280
TKN	mg/L	2	3.1
TOC	mg/L	1.9	2
TSS	mg/L	<10	<10
Turbidity	NTD	<1	1.8
Zinc	mg/L	<0.02	0.081

1. MPN = most probable number

Table H.2
P.B. NTD sampling results

Parameters	Well 36 Pimped	Hydrant Flush @Hancock Ct.	Reservoir Overflow @ Halley & 148th	Disinfection Main @ SW 26th & Miles
Arsenic, mg/L	0.001	<0.001	<0.001	<0.001
Ammonia, mg/L	<0.02	0.27	0.28	0.03
BOD_5, mg/L	<2	<2	<2	4
Cadmium, mg/L	<0.001	<0.001	<0.001	<0.001
Calcium, mg/L	24	1.1	1.3	24
COD, mg/L	<5	<5	<5	<5
Cyanide, mg/L	<0.010	<0.010	<0.010	<0.010
DO, mg/L	2.7	10.2	11.5	12.6
E. coli, #/100mL	Absent	Absent	Absent	Absent
Magnesium, mg/L	8.9	0.6	0.5	0.4
Mercury, mg/L	<0.0002	<0.0002	<0.0002	<0.0002
Oil and grease, mg/L	<5	<5	<5	<5
pH, S.U.	7.6	7.5	8.2	11.5
Selenium, mg/L	<0.001	<0.001	<0.001	<0.001
Styrene, µg/L	No result	No result	No result	0.6
Sulfide, mg/L	<0.10	<0.10	<0.10	<0.10
Toluene, µg/L	No result	No result	No result	2.1
Total chlorine, mg/L	<0.1	1	1.3	64
Total coliform, #/100 mL	Absent	Absent	Absent	Absent
TDS, mg/L	140	25	29	320
TKN, mg/L	<0.20	0.3	0.3	0.2
TOC, mg/L	0.86	0.83	0.77	7.2
Total phosphorus, mg/L	0.03	0.01	0.006	0.02
THMs, µg/L	No result	No result	No result	350
Turbidity, NTD	2.3	2.7	0.7	3.4
Xylenes, µg/L	No result	No result	No result	0.7
Zinc, mg/L	<0.1	<0.1	<0.1	0.1

Table H.3
COP NTD sample results

Parameters	Units	Hydrant flush	Reservoir overflow	Well pump out
Ammonia as N	mg/L	<0.2	No result	No result
BOD	mg/L	<20	<2	No result
COD	mgL	<20	<20	No result
Chlorine, total	mg/L	No result	1	No result
E. coli	see note 1	Absent	Absent	Absent
Hardness, total	mg/L	205	324	270
Oil and grease	mg/L	No result	<6	<5.7
pH	S.U.	No result	7.6	No result
Phosphorus, total	mg/L	No result	<0.05	<0.05
Temperature	^{o}C	No result	24	No result
Total Coliform		Absent	Absent	Absent
TDS	mg/L	794	420	528
TKN	mg/L	<1	<1	No result
TOC	mg/L	No result	0.42	No result
TSS	mg/L	<1	<1	<1
Turbidity	NTD	0.05	0.18	No result
VOCs				
Chloroform	µg/L	27	1.0	No result
Bromodichloromethane	µg/L	No result	1.2	No result
Bromoform	µg/L	3.2	1.6	No result
Dibromochloromethane	µg/L	20	1.4	No result
Total THMs	µg/L	79.2	5.2	No result
Metals				
Arsenic	mg/L	0.001	No result	No result
Boron	mg/L	No result	0.09	0.1
Chromium	mg/L	No result	0.004	0.002
Lead	mg/L	No result	0.005	0.005
Selenium	mg/L	No result	<0.004	<0.004
IOCs				
Cyanide	mg/L	No result	<0.025	<.025
Sulfide	mg/L	No result	<0.5	No result

1. Presence/Absence method

Table H.4
DCWASA NTD sample results

Parameters	Units	900 N. F St. NE Hydrant Flush	Fort Reno Reservoir Overflow
VOCs			
Chloroform	µg/L	49.4	41.9
Bromodichloromethane	µg/L	7.70	7.70
Dibromochloromethane	µg/L	0.7	0.08
Bromoform	µg/L	ND	ND
Total THMs	µg/L	57.8	50.4
Microbiological			
E. Coli	see note 1	Absent	Absent
Total Coliform	see note 1	Absent	Absent
Inorganic			
Antimony	mg/L	ND	ND
Arsenic	mg/L	0.0003	0.0004
Barium	mg/L	0.04	0.04
Beryllium	mg/L	ND	ND
Cadmium	mg/L	ND	ND
Lead	mg/L	ND	ND
Mercury	mg/L	ND	ND
Nitrate (as N)	mg/L	1.5	1.9
Nitrite (as N)	mg/L	ND	ND
Selenium	mg/L	0.0005	0.0006
Thallium	mg/L	ND	ND
Radionuclides			
Uranium	mg/L	ND	ND
Disinfectants			
Monochloramine	mg/L	3.2	NA
Free Chlorine	mg/L	0.08	NA
Total Chlorine	mg/L	3.2	3.1
SECONDARY STANDARDS			
Aluminum	mg/L	0.1	0.04
Chloride	mg/L	21.7	23.3
Copper	mg/L	0.02	0.002
Fluoride	mg/L	0.9	1.0
Iron	mg/L	0.1	ND

(continued)

Table H.4 (Continued)
DCWASA NTD sample results

Parameters	Units	900 N. F St. NE Hydrant Flush	Fort Reno Reservoir Overflow
Manganese	mg/L	0.009	0.001
pH	S.U.	7.7	7.7
Silver	mg/L	ND	ND
Sulfate	mg/L	44.3	42.3
TDS	mg/L	NA	170
Zinc	mg/L	0.001	0.001
UNREGULATED			
Cobalt	mg/L	ND	ND
Lithium	mg/L	0.002	0.001
Molybdenum	mg/L	0.001	0.001
Nickel	mg/L	0.001	0.001
Strontium	mg/L	0.1	0.2
Thorium	mg/L	ND	ND
Chromium	mg/L	0.001	0.001
Vanadium	mg/L	0.0008	0.001
Bromide	mg/L	ND	ND
OTHER PARAMETERS			
Total Hardness (as $CaCO_3$)	mg/L	122	137
TSS	mg/L	3.8	0.1
COD	mg/L	<5	<5
BOD	mg/L	<2	<2
DO	mg/L	8.7	8.8
Orthophosphate (as P)	mg/L	0.7	0.8
Orthophosphate (as PO_4)	mg/L	2.3	2.4
Ammonia, total	mg/L	1.1	1.0
Ammonia, free	mg/L	0.4	0.3
Temperature	°C	30.8	36.4

1. Presence/Absence method

Table H.5
CCWD NTD sample results

	Reservoir overflow		Tank drain	
Parameters	**Kirker**	**Cowell**	**Kirker**	**Cowell**
Chlorine, total, mg/L	0.3	0.1	0.4	0.06
E. coli, #/100 ml	No result	No result	No result	<1
Hardness, total, mg/L as $CaCO_3$	No result	No result	88	82
pH, S.U.	8.1	8.3	8.1	8.2
Phosphorus, total, mg/L	<0.01	<0.01	<0.01	<0.01
Total Coliform, #/100 ml	No result	<1	No result	<1
TDS, mg/L	230	210	220	210
TSS, mg/L	No result	<5	No result	<5
Turbidity, NTD	0.1	0.1	0.09	0.1
Metals				
Arsenic, mg/L	<0.002	<0.002	No result	No result
Chromium, mg/L	<0.001	<0.001	No result	No result

Table H.6
GSWC NTD sampling results

Parameters	Units	Reservoir Overflow Columbia Reservoir	Reservoir Overflow Mountain Reservoir	Disinfection Water	Hydrant Drain
Ammonia as N	mg/L	ND	ND	ND	ND
Chlorine, total	mg/L	1.43	0.47	0.79	0.78
COD	mg/L	13	9.7	11	13
DO	mg/L	8.88	9.65	9.75	9.67
BOD	mg/L	ND	ND	ND	ND
Oil and Grease	mg/L	ND	ND	ND	ND
E. coli	see note 1	Absent	Absent	Absent	Absent
Total Coliform	see note 1	Absent	Absent	Absent	Absent
pH	S.U.	7.4	7.7	7.6	7.6
Phosphorus, total	mg/L	ND	ND	ND	No Result
Temperature	^{o}C	19.4	14.4	15	13.3
TDS	mg/L	380	250	260	250
TKN	mg/L	ND	0.62	ND	ND
TOC	mg/L	0.35	ND	ND	0.37
TSS	mg/L	ND	ND	ND	ND
Turbidity	NTD	ND	ND	0.53	2.4
ALL VOCs except THM compounds		ND	ND	ND	ND
Bromodichloromethane	µg/L	ND	2.0	ND	1.6
Bromoform	µg/L	1.1	0.5	ND	ND
Chloroform	µg/L	ND	2.0	ND	1.7
Dibromochloromethane	µg/L	1.1	1.9	ND	1.0
Total THMs	µg/L	2.2	5.2	ND	4
Metals					
Arsenic	mg/L	0.0006	0.0009	0.0006	0.001
Cadmium	mg/L	ND	ND	ND	ND
Chromium	mg/L	0.0006	0.001	0.0008	0.0009
Lead	mg/L	ND	ND	0.002	0.003
Mercury	mg/L	ND	ND	ND	ND
Zinc	mg/L	ND	ND	ND	ND
Inorganic chemicals					
Cyanide	mg/L	ND	ND	ND	ND
Sulfide	mg/L	ND	ND	ND	ND

1. Presence/Absent method

Table H.7
NTD hydrant flush sampling results, AAWC

Parameter	Units	Sun City	Sun City West
Arsenic	mg/L	0.0077	0.025
Barium	mg/L	0.016	0.01
Nickel	mg/L	0.0013	0.008
Strontium	pCi/L	0.399	0.33
Boron	mg/L	ND	0.153
Oil and grease	mg/L	16.5	14.7
Selenium	mg/L	0.003	0.003
TDS	mg/L	357	444
Chromium	mg/L	ND	ND
Cyanide	mg/L	ND	ND
Sulfide	mg/L	ND	ND
Total Coliform	(1)	absent	absent
BOD_5	mg/L	ND	2
COD	mg/L	ND	ND
Phosphorus	mg/L	ND	ND
Total THMs	µg/L	1.7	1.5

1. Presence/Absence test

APPENDIX I
COMPARISON OF NTD DATA ACROSS WATER SYSTEMS

Table I.1
Disinfection water data comparison

Parameter	Units	GSWC	Portland
pH	S.U.	7.60	11.50
TDS	mgL	260	320
TSS	mg/L	ND	ND
Turbidity	NTU	0.53	3.40
BOD_5	mg/L	ND	4
DO	mg/L	9.75	12.6
E. coli	see note 1	Absent	Absent
Total coliform	see note 1	Absent	Absent
COD	mg/L	11	<5
TOC	mg/L	ND	7.20
Phosphorus, total	mg/L	ND	0.02
Chlorine, total	mg/L	0.79	64
Metals			
Arsenic	mg/L	0.0006	<0.001
Chromium	mg/L	0.00076	ND
Lead	mg/L	0.0015	ND
Zinc	mg/L	ND	0.1
VOCs			
Bromodichloromethane	µg/L	ND	--
Chloroform	µg/L	ND	--
Styrene	µg/L	ND	0.6
Total THMs	µg/L	ND	350
Toluene	µg/L	ND	2.1
Xylene (total)	µg/L	ND	0.7

1. Presence/Absence method

Table I.2
Comparison of hydrant flush data

Parameters	Units	AAWC Sun City	AAWC Sun City West	GSWC Miramar/Bonnie Bria	PWB Hancock Ct.	COP	DCWASA
Ammonia, as N	mg/L	No result	No result	ND	0.27	<0.2	1.1
BOD_5	mg/L	ND	2	ND	<2	<20	<5
COD	mg/L	ND	ND	13	<5	<20	<2
Chlorine, total	mg/L	No result	No result	0.78	1	No result	3.1
DO	mg/L	No result	No result	9.67	10.2	No result	8.8
E. coli	see note 1	No result	No result	Absent	Absent	Absent	Absent
Total THMs	µg/L	1.7	1.5	4	No result	79	57.8
pH	S.U.	No result	No result	7.6	7.5	No result	7.7
Phosphorus, total	mg/L	ND	ND	ND	0.01	No result	0.8
Temperature	Deg C	No result	No result	13.33	8.4	No result	30.8
Total Coliform	see note 1	Absent	Absent	Absent	Absent	Absent	Absent
Hardness, total	mg/L	No result	No result	180	No result	205	122
Oil and grease	mg/L	16.5	14.7	ND	<5	No result	No result
Turbidity	NTU	No result	No result	2.4	2.7	0.05	No result
TOC	mg/L	No result	No result	0.37	0.83	No result	No result
TDS	mg/L	357	444	250	25	794	No result
Metals							
Arsenic	mg/L	0.007	0.025	0.001	<0.001	0.001	0.0003
Cadmium	mg/L	No result	No result	ND	<0.001	<2	ND
Chromium	mg/L	ND	ND	0.009	No result	No result	No result
Lead	mg/L	No result	No result	0.003	No result	No result	ND
Mercury	mg/L	No result	No result	ND	ND	<2	ND
Selenium	mg/L	0.003	0.003	ND	<0.001	No result	ND
Zinc	mg/L	No result	No result	ND	<0.1	No result	0.0005
IOCs							
Cyanide	mg/L	ND	ND	ND	<0.01	No result	No result
Sulfide	mg/L	ND	ND	ND	<0.1	No result	No result

1. Presence/Absence method

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Table I.3
Reservoir overflow data comparison

		GSWC		MWD	DCWASA	PWB	CCWD		COP
Parameters	**Units**	**Columbia Reservoir**	**Mountain Reservoir**	**Tank # 2**	**Fort Reno Reservoir**	**148th and Halsen St.**	**Kirker**	**Cowell**	**Well 281 Tank**
Ammonia, as N	mg/L	ND	ND	<0.5	1	0.28	ND	ND	No result
BOD_5	mg/L	ND	ND	14	<2	<2	7	3.5	<2
COD	mg/L	13	9.7	ND	<5	<5	20	20	<20
Chlorine, total	mg/L	1.43	0.47	2.5	3.1	1.1	0.3	0.1	1
E. coli	see note 1	Absent	Absent	<2	Absent	Absent	No result	No result	Absent
DO	mg/L	8.88	9.65	10	8.8	11.5	12	11	ND
Hardness, total	mg/L	220	180	120	137	ND	No result	No result	324
Oil and grease	mg/L	ND	ND	<3.8	ND	<5	5	5	< 6
pH	S.U.	7.4	7.7	7.1	7.7	8.2	8.1	8.3	7.6
Phosphorus, total	mg/L	ND	ND	<0.05	0.8	0.006	<0.01	<0.01	<0.05
Temperature	°C	19.4	13.3	ND	2.4	ND	ND	16.2	24
Total Coliform	N/A	Absent	<2	ND	Absent	Absent	No result	<1	Absent
TDS	mg/L	380	250	290	170	29	230	210	420
TKN	mg/L	ND	0.62	2	No result	0.34	ND	ND	<1
TOC	mg/L	0.35	ND	1.9	No result	0.77	ND	ND	0.42
TSS	mg/L	ND	ND	<10	0.1	ND	No result	<5	<1
Turbidity	NTU	ND	ND	<1	No result	0.7	0.1	0.1	0.18
VOCs									
Bromodichloromethane	µg/L	ND	2	5.7	7.7	ND	14	8.7	1.2
Bromoform	µg/L	1.1	0.5	6.2	ND	ND	4.7	1.6	1.6
Chloroform	µg/L	ND	2	2.4	41.9	ND	9.1	8	1
Dibromochloromethane	µg/L	1.1	1.9	12	0.7	ND	14	6	1.4
Total THMs	µg/L	2.2	5.2	ND	57.8	No result	41.7	24.3	5.2
Metals									
Arsenic	mg/L	0.00055	0.00085	ND	0.004	<0.001	<0.002	<0.002	No result
Chromium	mg/L	0.0006	0.001	ND	0.001	ND	<0.001	<0.001	0.004
Lead	mg/L	ND	ND	ND	ND	ND	No result	No result	0.005
Selenium	mg/L	ND	ND	ND	0.0006	No result	No result	No result	<0.004
Zinc	mg/L	ND	ND	<0.02	0.001	<0.1	No result	No result	No result
IOCs									
Cyanide	mg/L	No result	No result	<0.025	No result	<0.010	No result	No result	<0.025
Sulfide	mg/L	No result	No result	<0.1	No result	ND	No result	<0.025	<0.5

1. Presence/Absence method

Table I.4
Tank drain data comparison

Parameters	Units	MWD Tank # 2 D	CCWD Kirker	CCWD Cowell
Ammonia as N	mg/L	<0.5	ND	ND
BOD_5	mg/L	15	34	NA
COD	mg/L	ND	No result	No result
DO	mg/L	9.9	No result	No result
E. coli	see note 1	<2	No result	<1
Hardness, total	mg/L	120	88	82
Oil and grease	mg/L	<3.8	<5	<5
pH	S.U.	7.5	8.1	8.2
Phosphorus, total	mg/L	<0.05	<0.01	<0.01
Chlorine, total	mg/L	2.5	0.4	0.06
Temperature	°C	13.3	15.9	16.5
Total Coliform	see note 1	<2	No result	<1
TDS	mg/L	280	220	210
TKN	mg/L	3.1	ND	ND
TOC	mg/L	2.0	ND	ND
TSS	mg/L	<10	No result	<5
Turbidity	NTU	1.8	0.09	0.1
VOCs				
Bromodichloromethane	µg/L	5.4	15	8.7
Bromoform	µg/L	6.1	5.3	1.6
Chloroform	µg/L	2.4	10.6	8
Dibromochloromethane	µg/L	11	15.2	6
Total THMs	µg/L	25	46.1	20.9
Metals				
Zinc	mg/L	0.081	ND	ND
Lead	mg/L	No result	ND	ND
IOCs				
Cyanide	mg/L	No result	No result	No result
Sulfide	mg/L	<0.1	No result	No result

1. Presence/Absence method

Table I.5
Well pump out data comparison

Parameters	**Units**	**PWB Well 36**	**COP Well 279**
Ammonia as N	mg/L	<0.02	No result
BOD_5	mg/L	<2	No result
COD	mg/L	<5	No result
Chlorine, total	mg/L	<0.1	No result
DO	mg/L	2.7	No result
E. coli	see note 1	Absent	Absent
Hardness, total	mg/L	No result	270
Oil and grease	mg/L	<5	<5.7
pH	S.U.	7.6	No result
Phosphorus, total	mg/L	0.03	<0.05
Total Coliform	see note 1	Absent	Absent
TDS	mg/L	140	528
TKN	mg/L	<0.20	No result
TOC	mg/L	0.86	No result
TSS	mg/L	No result	<1
Turbidity	NTU	2.3	No result
VOCs			
Total THMs	µg/L	No result	No result
Metals			
Arsenic	mg/L	<0.001	No result
Cadmium	mg/L	<0.001	No result
Chromium	mg/L	No result	<0.002
Lead	mg/L	No result	0.005
Mercury	mg/L	<0.0002	No result
Selenium	mg/L	<0.001	<0.004
Zinc	mg/L	<0.1	No result
IOCs			
Cyanide	mg/L	<0.010	<0.025
Sulfide	mg/L	<0.10	No result

1. Presence/Absence method

APPENDIX J
TOXICITY TESTING RESULTS

RESULTS OF ACUTE AND CHRONIC TOXICITY TESTS

ON

NON-TREATMENT DISCHARGES (NTDs)

Prepared for:

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Submitted by:

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1.0 SAMPLE RECEIPT AND PREPARATION

Grab samples of non-treatment discharges (NTDs) were collected by Narasimhan Consulting Services (NCS) personnel and were delivered to the laboratory for analysis. Samples were held in storage at 4 C until laboratory testing commenced. A chain of custody record accompanied each sample set and the forms are included in this document. Each sample is identified in the Results section (5.0).

2.0 DILUTION WATER

Synthetic freshwater was prepared according to the formulation presented in the table below for invertebrate and vertebrate reference toxicant (quality control) tests. Reagent grade salts were added to de-ionized water to provide the proper chemical composition. Moderately hard synthetic freshwater (MHSF) was used for the vertebrate and invertebrate tests.

	Reagent Added (mg/L)				Final Water Quality*		
Type	$NaHCO_3$	$CaSO_4$2H_20	$MgSO_4$	KCl	pH	Hardness	Alkal.
MHSF	96.0	60.0	60.0	4.0	7.6-7.8	80-100	60-70

* pH as SU; Hardness as mg/L $CaCO_3$; alkalinity as mg/L $CaCO_3$.

Algal culture water was used for the control water in the algal survival and growth reference toxicity tests. The final concentrations of macronutrients and micronutrients in the culture medium are presented below.

ALGAE CULTURE WATER

Macronutrient	Conc., mg/L	Element	Conc., mg/L
$NaNO_3$	25.5	N	4.20
$MgCl_2.6H_20$	12.2	Mg	2.90
$CaCl_2.H_20$	4.41	Ca	1.20
$MgSO_4.7H_20$	14.7	S	1.91
K_2HPO_4	1.04	P	0.186
$NaHCO_3$	15.0	Na	11.0
		K	0.469
		C	2.14
Micronutrient	**Conc., ug/L**	**Element**	**Conc., ug/L**
H_3BO_3	185.	B	32.5
$MnCl_2.4H_20$	416.	Mn	115.
$ZnCl_2$	3.27	Zn	1.57
$CoCl_2.6H_20$	1.43	Co	0.354
$CuCl_2.2H_20$	0.012	Cu	0.004
$Na_2MoO4.2H_20$	7.26	Mo	2.88
$FeCl_3.6H_20$	160.	Fe	33.1
Na_2SeO_4	2.39	Se	0.91

3.0 TEST PROCEDURES

3.1 Toxicity Test Methods

Test methods used for the acute toxicity evaluations are those described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/600/4-90/027F, USEPA EMSL, Cincinnati August 1993).

Procedures used in the chronic assays are those described in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA-812-R-02-013 October 2002.).

Specific tests performed were:

(1) Acute 48-hour static renewal 100 % vs control toxicity test using the cladoceran, *Ceriodaphnia dubia.*

(2) Acute 48-hour static renewal 100 % vs control toxicity test using the fathead minnow, (*Pimephales promelas,*

(3) Chronic static renewal 7-day survival and growth test using *Pimephales promelas.*

(4) Chronic static renewal 7-day survival and reproduction test using *Ceriodaphnia dubia.*

(5) Chronic static 96-hr growth test using *Raphidocelis subcapitata.*

3.2 Preparation of Test Concentrations

The NTD sample and dilution waters were equilibrated at test temperature prior to preparation of test concentrations (for quality control tests) and introduction of test organisms. Undiluted test samples (100 %) were analyzed against a synthetic control for all tests.

3.3 Test Organisms

For acute tests*, P. promelas* were obtained from Aquatic BioSystems, Fort Collins, Colorado, and *C. dubia* (gravid females for providing <24 hr old neonates) were obtained from AC&T stock cultures. Organisms were placed in synthetic moderately hard water and were allowed to acclimate to test conditions (19-21 C) prior to testing. Minnows were fed *Artemia* and TetraMin flakes prior to testing. *Ceriodaphnia* were fed YTC and *R. subcapitata* prior to testing.

For chronic NTD tests, stock cultures of *C. dubia* originally obtained from Aquatic BioSystems (ABS), Fort Collins, Colorado and maintained in the AC&T laboratory, were used to produce neonates. Reproductive age organisms were allowed to acclimate to test temperature and dilution water for a minimum of 48 hours prior to testing. Gravid females were isolated and less than 24 hour old (all within an 8-hour range) *Ceriodaphnia* neonates were used for chronic tests. Organisms were fed a combination of YTC and *Raphidocelis* during the chronic tests only.

Pimephales embryos were obtained from ABS stocks and eggs were hatched during the acclimation period (25 C, moderately hard water). Minnows less than 24- hour old were used for the chronic assays. Fish used in the chronic tests were fed freshly hatched *Artemia* two to three times per day.

Raphidocelis cells were obtained from an in-lab culture originally started from an ABS stock culture. Organisms were removed when log-phase growth conditions were achieved in a sub-culture. Cell density was adjusted to provide approximately 10^4 cells/mL in the test vessels.

3.4 Test Chambers and Organism Loading

Glass vessels were used for all test chambers. The chambers were cleaned per instructions in the referenced USEPA methods manuals. The conditions of the chambers used for the toxicity test are summarized below.

ACUTE TEST CHAMBER CONDITIONS

Chamber*	Solution*	Organisms/		Treat.	Temp.	
Toxicity Test	volume	volume	depth	chamber	Reps.	range
Acute-*C. Dubia*	120	50	3.3	10	5	19-21
Acute-*P. promelas*	600	250	5.0	10	5	19-21

CHRONIC TEST CHAMBER CONDITIONS

Chamber*	Solution*	Organisms/		Treat.	Temp.	
Toxicity Test	volume	volume	depth	chamber	Reps.	range
Chronic-*C. dubia*	30	15	1.6	1	10	24-26
Chronic-*P. promelas*	600	250	5.0	10	4	24-26
Chronic-*R. subcapitata*	150	25	1.5	$2.5X10^5$	4	24-26

* volume in mL, depth in cm.

3.5 End Point of Test

For each NTD acute test, the percent mortality in 100% discharge and control were determined from analysis of five replicate test vessels. A significant difference in organism survival between the control and discharge I was statistically determined using the CETIS statistical program.

For each NTD chronic test, the data was evaluated using CETIS to identify any statistically significant difference between the control and discharge sample with respect to survival, growth, or reproduction.

3.6 Chemical and Physical Measurements

Unless otherwise indicated, all chemical and physical measurements were conducted in accordance with the procedures specified in *Methods for Chemical Analysis of Water and Wastes*, (EPA-600/4-79-020, USEPA EMSL, Cincinnati, March 1983). A list of the analytical procedures is presented below.

SUMMARY OF METHODS FOR CHEMICAL AND PHYSICAL MEASUREMENTS

Parameter	Description	USEPA Method
Temperature	Thermometric	Method 170.1
Dissolved Oxygen	Membrane electrode	Method 360.1
Total Hardness	Titrimetric, EDTA	Method 130.2
pH Electrometric	Method 150.1	
Conductance	Specific conductance	Method 120.1
Total Alkalinity	Titrimetric (pH 4.5)	Method 310.1
Total Chlorine	Colorimetric (DPD) (modified) *	Method 330.5
Ammonia-N	Distillation, titrimetric	Method 350.1

* Performed using Hach Chlorine Test Kit Model 2231.

4.0 QUALITY ASSURANCE

Data were computed using the Comprehensive Environmental Toxicity Information System (CETIS). CETIS is a professional level toxicity data analysis and database software application written and published by Tidepool Scientific Software. CETIS is a Microsoft-Access database application designed to analyze and store toxicity test data in ways useful to both laboratories performing toxicity tests, and researchers, dischargers or governmental regulators working with toxicity test results. CETIS is capable of processing and storing data from freshwater, estuarine, and marine toxicity tests performed on effluent, ambient water, reference toxicants or sediment samples. CETIS is also readily adaptable for use with toxicity tests performed on other types of environmental media or non-standard test designs. The results of tests can be analyzed, stored, and presented in a variety of ways including analytical reports, summary reports and quality control plots.

Test method acceptability criteria were evaluated by the CETIS program and were found be acceptable. There were no significant deficiencies in sample handling, test performance, or reporting. Samples were received intact and within holding time and temperature requirements.

Copper sulfate and cadmium chloride solutions were prepared by AC&T personnel and used as reference toxicants. The solutions were diluted volumetrically with synthetic freshwater to provide test solutions bracketing anticipated effect concentrations. Acceptability of organisms response was determined by comparison to the last 20 reference toxicant data points using the CETIS program. Documentation is presented with the test data.

5.0 RESULTS

5.1 Acute Test Results: Contra Costa (Set 1)

Sample as received:

Parameter	Date analyzed	Method	Result	Unit
Alkalinity	03/28/06	SM 2320B	57.	mg/L as CaCO3
Ammonia-N	03/31/06	EPA 350.2	0.19	mg/L as N
Hardness, total	03/31/06	SM 2340C	92.	mg/L as CaCO3
Conductivity	03/31/06	EPA 120.1	423.	umhos/cm @ 25C
pH	03/28/06	EPA 150.1	7.5 @ 9C	SU

NTD-CC-RD collected 03/27/06 @ 1415 hr

Ceriodaphnia dubia
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

Pimephales promelas
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

NTD-CC-DS collected 03/27/06 @ 1445 hr

Sample as received:

Parameter	Date analyzed	Method	Result	Unit
Alkalinity	03/28/06	SM 2320B	59.	mg/L as CaCO3
Ammonia-N	03/31/06	EPA 350.2	0.20	mg/L as N
Hardness, total	03/31/06	SM 2340C	92.	mg/L as CaCO3
Conductivity	03/31/06	EPA 120.1	444.	umhos/cm @ 25C
pH	03/28/06	EPA 150.1	7.8 @ 9C	SU

Ceriodaphnia dubia
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

Pimephales promelas
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

5.2 Acute Test Results: Portland (Set 2)

NTD-POR-WD collected 03/29/06 @ 1145 hr

Sample as received:

Parameter	Date analyzed	Method	Result	Unit
Alkalinity	04/03/06	SM 2320B	97.	mg/L as CaCO3
Ammonia-N	03/31/06	EPA 350.2	0.11	mg/L as N
Hardness, total	03/31/06	SM 2340C	46.	mg/L as CaCO3
Conductivity	03/31/06	EPA 120.1	219.	umhos/cm @ 25C
pH	03/30/06	EPA 150.1	7.3 @ 9C	SU

Ceriodaphnia dubia
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

Pimephales promelas
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

NTD-POR-DS collected 03/29/06 @ 1215 hr

Sample as received:

Parameter	Date analyzed	Method	Result	Unit
Alkalinity	04/03/06	SM 2320B	81.	mg/L as CaCO3
Ammonia-N	04/06/06	EPA 350.2	0.18	mg/L as N
Hardness, total	03/31/06	SM 2340C	80.	mg/L as CaCO3
Conductivity	03/31/06	EPA 120.1	200.	Umhos/cm @ 25C
pH	03/30/06	EPA 150.1	7.2 @ 9C	SU

Ceriodaphnia dubia
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

Pimephales promelas
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

5.3 Chronic Test Results: Phoenix (Set 3)

NTD-COP-EP collected 04/13/06 @ 1000 hr

Sample as received:

Parameter	Date analyzed	Method	Result	Unit
Alkalinity	04/17/06	SM 2320B	126.	mg/L as CaCO3
Ammonia-N	04/21/06	EPA 350.2	0.13	mg/L as N
Hardness, total	04/20/06	SM 2340C	204.	mg/L as CaCO3
Conductivity	04/17/06	EPA 120.1	1390.	umhos/cm @ 25C
pH	04/13/06	EPA 150.1	7.2 @ 20C	SU

Ceriodaphnia dubia
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

Ceriodaphnia dubia
Control reproduction: 17.1 young/individual
Sample reproduction: 16.1 young/individual

No statistically significant difference in reproduction between control and NTD.

Pimephales promelas
Control survival: 94.0 %
Sample survival: 94.0 %

No statistically significant difference in survival between control and NTD.

Pimephales promelas
Control growth: 0.354 avg weight per individual
Sample growth: 0.373 avg weight per individual

No statistically significant difference in growth between control and NTD.

Raphidocelis subcapitata
Control growth: 0.160 avg optical density per replicate
Sample growth: 0.175 avg optical density per replicate

No statistically significant difference in growth between control and NTD.

NTD-COP-DS collected 04/13/06 @ 1020 hr

Sample as received:

Parameter	Date analyzed	Method	Result	Unit
Alkalinity	04/17/06	SM 2320B	126.	mg/L as CaCO3
Ammonia-N	04/21/06	EPA 350.2	0.78	mg/L as N
Hardness, total	04/20/06	SM 2340C	220.	mg/L as CaCO3
Conductivity	04/17/06	EPA 120.1	1450.	umhos/cm @ 25C
pH	04/13/06	EPA 150.1	7.7 @ 20C	SU

Ceriodaphnia dubia
Control survival: 100.0 %
Sample survival: 100.0 %

No statistically significant difference in survival between control and NTD.

Ceriodaphnia dubia
Control reproduction: 17.1 young/individual
Sample reproduction: 19.4 young/individual

No statistically significant difference in reproduction between control and NTD.

Pimephales promelas
Control survival: 94.0 %
Sample survival: 96.0 %

No statistically significant difference in survival between control and NTD.

Pimephales promelas
Control growth: 0.354 avg weight per individual
Sample growth: 0.384 avg weight per individual

No statistically significant difference in growth between control and NTD.

Raphidocelis subcapitata
Control growth: 0.160 avg optical density per replicate
Sample growth: 0.193 avg optical density per replicate

No statistically significant difference in growth between control and NTD.

AQUATIC CONSULTING & TESTING, INC.

Frederick A. Amalfi, Ph.D.
Laboratory Director

APPENDIX K
DESCRIPTION OF BEST MANAGEMENT PRACTICES

DECHLORINATION SYSTEMS

A portable dechlorination system can be effectively utilized for dechlorinating superchlorinated waters based on the associated volume of water (water main and pipeline and tanks/reservoir dewatering). An example of a portable dechlorination system (utilized by COP) mounted on a trailer for easy transport to an NTD site is displayed in Figures K.1, K.2 and K.3. The system is generally designed to handle flows from pressurized or gravity flow sources, and is capable of neutralizing chlorine residuals ranging from 1 to 300 mg/L using a liquid dechlorination agent. Pressurized flows with adequate flow rates (i.e., flow from water mains) may be fed directly to the dechlorination unit. Should pressurized flow not be available (i.e., feed from a storage tank), a gasoline powered trash pump (operating range between 200 gpm and 700 gpm) may be provided to achieve the required water flow rate for optimum operation of the dechlorination apparatus. The trash pump is equipped with a 75-gallon fuel tank and a suction lift capability of 25 feet.

A liquid dechlorination agent (such as a 30% calcium thiosulfate solution) is used because chlorine residual concentrations will normally be greater than 3 mg/L (between 10 - 200 mg/L). A chlorine tablet system is typically utilized when the chlorine residual concentrations is less than 3 mg/L. Although ascorbic acid or other chemicals may provide adequate dechlorination, the acidic solution (pH = 2) could present handling and transportation concerns. Under normal conditions (a chlorine residual of 10-200 mg/L and a chlorinated water flow rate of 700 gpm), three 55-gallon tanks with Captor should provide sufficient capacity for 24 hours of continuous operation.

Pressurized water sources (i.e., water mains) can be connected directly to the portable dechlorination system via a cam-lock fitting. In this configuration, the water source provides the required flow and system pressure to feed directly to the dechlorination unit. Gravity-flow water sources (i.e., water storage tanks) can be connected to the system via a cam-lock fitting on the suction side of the trash pump. In this application, the trash pump provides the necessary flow and pressure of chlorinated water to the dechlorination unit. The source of water to the dechlorination unit is ultimately determined by the position of a three-way ball valve located on the discharge line of the trash pump, upstream of the unit.

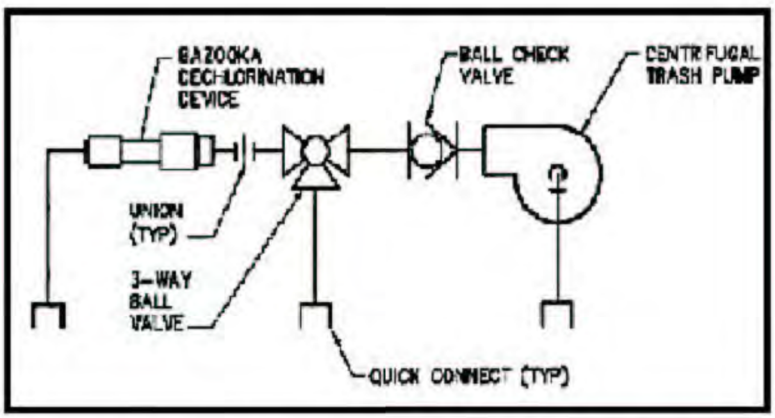

Figure K.1 Schematic of a portable dechlorination system (Arden Industries)

Figure K.2 Trailer mounted portable dechlorination system

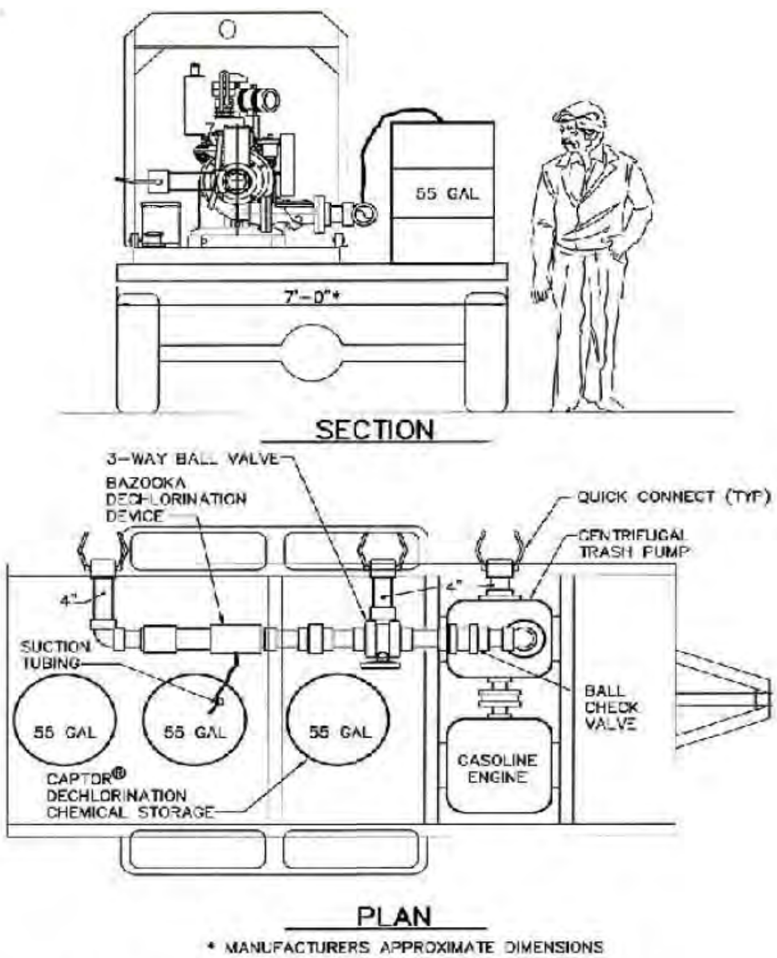

Figure K.3 Components of a portable dechlorination system (Arden Industries)

To meter and disperse the dechlorination chemical, a device such as the dechlorination eductor unit can be utilized. The flow of chlorinated water through the device, which is measured by a pressure gauge, creates a vacuum that draws dechlorinating agent into the flow stream at the required rate. The unit facilitates contact between the chlorinated water and the dechlorinating agent to promote effective and efficient dechlorination. The device can be utilized with a variety of dechlorination chemicals in liquid form. The COP uses calcium thiosulfate (CaS_2O_3) for dechlorinating superchlorinated waters. The chemical flow rate can be adjusted using the associated rotameter rate valve to obtain the dose necessary to neutralize the chlorine residual present in the water. The piping and valves and other components of the portable dechlorination system should be compatible with chlorine and the dechlorination chemical. The components (e.g., pumps) of the portable dechlorination system should be maintained as per manufacturer's requirements and stored properly when not in use.

Dechlorination of NTDs With Normal Levels of Disinfectant

Dechlorination of NTDs with total chlorine levels below 4 mg/L can be achieved with different chemicals using a number of commercial dechlorinating devices as well as using those developed independently by water utilities. Solutions of powder dechlorinating chemicals can be fed with a pump however proper mixing of chemicals with chlorinated water must be ensured. Most commercial dechlorinating devices use the tablet form of dechlorination chemicals.

Sodium sulfite tablets contain 81.3% to 92% sodium sulfite. The disintegration of tablets, or an overdose of sodium sulfite, can deplete dissolved oxygen in receiving waters. However, extensive field tests have indicated that dissolved oxygen depletion is rarely observed (AwwaRF 2001; WSSC, 2006).

Dissolved solid rates and strength of tablets are important factors in selecting a sodium sulfite tablet. Based on stoichiometry, approximately 1.78 parts of sodium sulfite are required per part of chlorine. The impurities in the tablet can increase the dose to 1.93 parts to 2.18 parts. One gram of sodium sulfite tablet can treat from 120 to 136 gallons of water containing 1 mg/L of chlorine. The AwwaRF study (2001) found an approximate 90 percent chlorine reduction at the stoichiometric doses of several dechlorinating chemicals including sodium sulfite and ascorbic acid. Sodium sulfite tablets (5 ounces or 140 gm) are generally sold in pales. In 2006, one pale of 140 tablets (81.3% strength) costs \$147 (\$3.37/pound) while a pale of 155 tablets (92% strength) costs \$153 (\$3.19/pound). Bulk quantities purchased by competitive bidding are expected to lower chemical costs.

Sodium sulfite is a skin, eye, and respiratory system irritant. Ingested sodium sulfite may irritate the gastrointestinal tract and can cause diarrhea, circulatory disturbances, central nervous system depression, and even death at high doses. At high temperatures, or in the presence of acids, sodium sulfite produces sulfur dioxide which is a toxic, corrosive, and hazardous gas. Therefore, sodium sulfite should be used in a well ventilated area. For safe use, a person handling sodium sulfite is recommended to wear natural or synthetic rubber gloves and chemical safety goggles. Reactions with strong oxidation chemicals should be avoided because of their exothermic natures. Due to potential health effects, unattended use of sodium sulfite is not recommended in residential areas, or near schools. Solid sodium sulfite is stable for approximately one year when properly stored in the original container in a cool, dry, and well-ventilated area. The tablets should be stored away from heat sources (temperature greater than 85ºC) or open flames. If exposed to the atmosphere, its effective life is reduced to approximately two months. Presence of moisture reduces its overall effectiveness. Tablets may crumble and become brittle past their recommended shelf life.

Ascorbic acid tablets are commercially available with a concentration of 75% ascorbic acid. Ascorbic acid is a weak organic acid which can be used for dechlorinating water. Based on its Materials Safety Data Sheet, ascorbic acid can be an eye, skin, and respiratory system irritant. Compared to sodium sulfite, there are no harmful effects with ingestion of ascorbic acid. For safe use, a person handling ascorbic acid is recommended to use natural or synthetic rubber gloves and chemical safety goggles. Although the health affects associated with ascorbic acid tablets are relatively minor compared to sodium sulfite tablets, unattended use of ascorbic acid tablets in residential neighborhoods should be decided based on site specific conditions. Proper precautions including warning signs are recommended for unattended use of ascorbic acid tablets. A water utility associated with this project, which has used ascorbic acid tablets for over five years, does not use them unattended and discards any unused tablets properly. Ascorbic acid is stable for up to three years when properly stored in a dry state. It oxidizes rapidly in solution and from exposure to light and the atmosphere, and its stability varies with its solution strength.

While ascorbic acid does not reduce DO in receiving waters, it can reduce pH fractionally due to its fast dissolution in water. Sodium ascorbate is also available, which does not impact the water pH. However, it is available only in granular form. Similar to sodium sulfite tablets, ascorbic acid tablets are prone to disintegration, potentially impacting the pH of receiving waters. Addition of an organic acid may increase total organic content of receiving waters depending on their flowrates. To control possible impacts associated with a rapid dissolution of ascorbic acid tablets, the manufacturer recommends a lower number of tablets compared to sodium sulfite tablets (four versus ten). In addition, a special screen is required to use tablets if used in diffuser.

Based on stoichiometry, approximately 2.48 parts of ascorbic acid are required per part of chlorine. The AwwaRF study (2001) found that approximately three parts of ascorbic acid are required to neutralize one part of chlorine. As a rule of thumb, approximately 75 gallons of water with 1 mg/L of chlorine can be treated with one gram of ascorbic acid tablet (75% product). Ascorbic acid tablets (4 ounces or 115 gm) are generally sold in pales. In 2006, one pale of 140 ascobic acid tablets costs $387 ($10.9/pound). Bulk quantities purchased by competitive bidding are expected to result in lower costs.

Ascorbic acid tablets are expensive (more than 300%) compared to sodium sulfite tablets but have fewer associated health effects and a longer shelf life. With proper precautions and training, either tablet may be used effectively for water dechlorination, however, the faster dissolution of ascorbic acid has restricted its use by some water utilities. Controlled use of both chemicals would minimize associated environmental impacts (reduction in pH and/or DO).

Declorination Devices

Water utilities may select from several commercially available dechlorinating devices. These include diffusers, hose diffusers, neutralizers, mats, and stripping units. In addition, a number of devices have been developed by water utilities (such as WSSC) which have been effectively used by for dechlorination purposes. Each of these devices are described below.

Dechlorination Diffuser

These dechlorinating devices were designed for use with sodium sulfite tablets or a liquid dechlorination chemical. The device is designed with a built-in diffuser for displacement of discharge. The devices are made of steel or aluminum. The steel unit (33 pounds) weighs approximately twice as much as the aluminum unit (17 pounds). Both units consist of a 2 ½-inch NPT coupling (which can be connected to a standard 2 ½-inch fire hydrant or hose), a chamber for directing the water flow, and a chamber which can hold up to 10 dechlorinating tablets. A tablet system is recommended for use with chlorine residual concentrations up to 4 mg/L. The units are designed to treat flow ranging from 200 to 1,250 gpm. For flows less than 200 gpm, a low flow insert is used. Multiple units can be used for treating flows more than 1,250 gpm.

A liquid dechlorinating agent can also be injected with the units using a superdechlorinator kit for chlorine residual concentrations up to 300 mg/L. Figures K.4 displays the dechlorination diffuser devices for dechlorinating water.

Figure K.4 Dechlorination Diffuser Devices (Pollard Corporation)

The superdechlorination kit includes:

- Dechlorination solution injector assembly
- Flow control panel (measures and adjusts the dechlorination chemical flow rate)
- Feed tank mounted on an elevated platform (provides flow rate by gravitational head)
- Pitot gauge (which measures water flow rate)

The manufacturer supplied feed tank is designed to hold seven gallons of dechlorination solution. The feed tank is equipped with a float valve which maintains a constant liquid dechlorinating agent level in the tank and regulates the flow from the holding tank.

Diffuser with Hose Extension

The diffuser with hose extension can be used with any liquid dechlorinating agent and is available in 2½ , 4, and 4½ inch sizes. A chemical feed system is supplied with the device. The dechlorinated water can be dispersed with the hose as shown in Figure K.5. Pressurized water enters the standard tank with chemicals, which are fed back into the chlorinated water.

Figure K.5 Diffuser with Hose Extension (Hydro Flow Products)

Hose Extension with Cage Dechlorinator (WSSC)

WSSC has independently designed a Cage Dechlorinator which can be used with the Hose Diffuser connected to a fire hose (Figure K.6). Dechlorination tablets are placed in nylon bags (15 to 20 tablets) which are placed in the Cage Dechlorinator. Water from the Hose Diffuser contacts with the bag contents and is dechlorinated.

Figure K.6 Hose Extension with Cage Dechlorinator

Dechlorinator Eductor

The Dechlorinator Eductor (Figure K.7) which was utilized in the trailer mounted dechlorination system described above can also be used by itself. The dechlorinator eductor is available in sizes ranging from 3/4-inch to 4-inches and can be customized with the choice of hydrant or flanged fittings. Both tablet and liquid forms of dechlorination chemicals can be used. The tablet system is capable of removing chlorine residuals up to 3 mg/L while the liquid system can remove concentrations up to 300 mg/L. For the tablet version, tablets are enclosed in a canister which attaches directly to the apparatus. As chlorinated water passes through the device, a vacuum is created, and the neutralizing tablet is converted to a liquid state. The chemical flow rate can be adjusted using a rotameter to obtain the chemical necessary to neutralize the chlorine residual present in the water. At higher chlorine residual concentrations (greater than 3 mg/L), a liquid dechlorinating agent can be added directly to the eductor apparatus through suction tubing. No pump is required.

Figure K.7 Eductor with tablet (left) and liquid (right) feed systems

Tablet Dechlorination Chemical Feed Equipment

Tablet Neutralizer

The tablet neutralizer (Figure K.8) was designed for the dechlorination of up to 200 mg/L of chlorinated water from distribution systems, storage reservoirs, and certain industrial applications. The model attaches directly to a 4½ - inch fire hydrant or a blow-off point. A discharge hose connects the device to a full flow diffuser for discharge. The device has an aluminum body construction and standard equipment includes: orifice plates, 0-160 pounds per square inch (psi) pressure gauges, Type D inlet connection, Type A discharge connection, 3/8" x 5' tubing, and a 5" Type A adapter. Orifice plates should be selected based on the required water flow rate. The orifice plates allow a wide flow range to be accommodate by a single unit.

Figure K.8 Tablet Neutralizer dechlorination device (Measurement Technologies)

The tablet neutralizer works on differential pressure principle. When chlorinated water passes through the device, a vacuum is created which draws the dechlorinating agent through the chemical feed solution line into the water. A minimum by-pass pressure of approximately 20 psi is generally required for proper operation of the unit. The vacuum does not vary with flow rate.

Consequently, control of the chemical feed solution can be achieved via the supplied control valve. The unit is fitted with an additional valve and discharge line to provide make-up water. Make-up water is used to mix additional solution in a second container for continuous, high volume flushing operations.

Decolor mats or strips (Figure K.9) are designed to be used with tablet dechlorination chemicals. Both mats and strips have pockets to insert dechlorination tablets. Multiple mats (3 ft. by 4 ft.) or strips (3 ft. by 6 inches) may be required depending upon the width of discharge. An operator can easily observe dissolution of tablets and replace them as needed. Both Decolor mats and strips are relatively cheaper than other dechlorination devices. Mats or strips are securely placed (with stakes) perpendicular to flow.

Decolor Mat or Strip

Figure K.9 Decolor mat (left) and strip (right) with dechlorination chemical tablets

Vessel Dechlorinator

The vessel dechlorinator (Figure K.10) is a round stainless steel device approximately 15 inches in diameter and 24 inches high, and comes with a 2½-inch threaded connection on one side for the inflect flow. The device is placed on a flat surface and dechlorination chemical tablets in plastic nylon bags are enclosed in the unit. There is a screen inside the DECHLORINATION and the chemical bags are placed to cover the screen area. The cover is shut with wing nuts and chlorinated water is passed through the unit.

Figure K.10 Vessel Dechlorinator (Mars Corporation)

Chemical Injector

The chemical injector (Figure K.11) is similar to the tablet neutralizer and can dechlorinate from 0.1 to 300 mg/L of chlorine. It is capable of treating flows from 260 gpm to 1,500 gpm. Chemical injection is controlled by a micro adjustable control knob with incremental marking. The device uses liquid dechlorination chemicals.

Figure K.11 Chemical Injector (Model 1500, Pollard Corporation)

SEDIMENT REMOVAL AND MANAGEMENT

Controlling erosion is important to maintain existing or desired water conveyance paths and to protect the *Waters of the United States* from sediment/erosion pollution. Examples of erosion control best management practices are:

Temporary	Permanent
Temporary diversion dike	Pipe slope drain
Straw bale barrier	Check dam
Silt fence	Erosion protection at structures
	Rock outlet protection
	Channel lining

General Erosion Control Guidelines for Well Pumpout Discharges and Fire Hydrant Flushings

Types of Erosion Issues

Generally, five different types of erosion related issues can occur at a discharge point. Each of these issues and the associated BMPs are presented below:

Splash Erosion Caused by Well Pumpout Discharge to a Concrete Apron. Significant erosion is likely to occur where the well pumpout is discharged directly onto a concrete pad that is in a detention basin or at the entrance to a classic type dry well. The resultant splashing of water caused by the pumpout discharge as it impacts the apron can cause erosion along the perimeter of the concrete apron as shown in Figure K.12. The following repairs and modifications should be incorporated at well sites experiencing this type of erosion:

- At sites where the concrete pad is not located at the entrance of a dry well, the area (soil or granite) surrounding the concrete apron will need to be stabilized to prevent splash erosion from continuing to occur.

- For pumpouts that discharge directly into the center of a concrete apron that surrounds the dry well entrance, the well pumpout discharge pipe should be terminated below the top of the concrete apron elevation to minimize the amount of water splashing out of the system. The pumpout piping may be lowered only if the distance between the top of grating and the end of the pumpout piping is greater than two pipe diameters.

Figure K.12 Erosion caused by well pumpout discharge to retention basin. Concrete pad foundation is being undermined.

Erosion of Conveyance Between Site to Receiving Stream. When the well pumpout or dry well overflow discharges off-site into a storm water conveyance, there may be erosion or sediment transport occurring within the conveyance or at the point where the flows exit the site. Bank protection using filter fabric and a gabion/riprap type protection should be used within the conveyance or in the transition area between the site and the conveyance. The filter fabric and the gabion/riprap type protection will stabilize these conveyances. The protection should spread the discharges at the outlet location to reduce the outlet velocities to acceptable levels and to ease the transition into the receiving stream. Refer to Figure K.13 for a detail of this modification.

Erosion Due to Fire Hydrant Flushings. The practice of regularly exercising and flushing the fire hydrants may cause erosion at the point of impact between the flushed water and the ground. Erosion is usually caused when the fire hydrant is flushed into a dry wash, natural conveyance, or other unimproved conveyance, as shown in Figure K.14. Bank protection and/or energy dissipation is needed to reduce the erosion potential of the exercised water. A gabion/riprap blanket with filter fabric protection is required to transition these flows to the receiving wash. The conveyance path to the receiving stream may also require erosion protection. Refer to Figure K.15 for a detail of this modification.

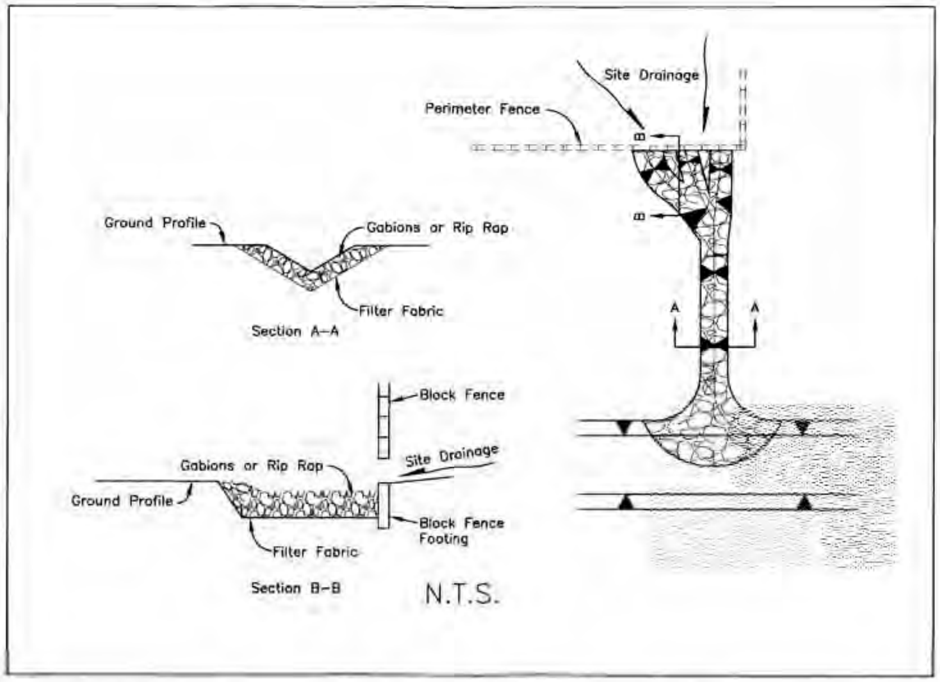

Figure K.13 Erosion control for receiving stream discharges

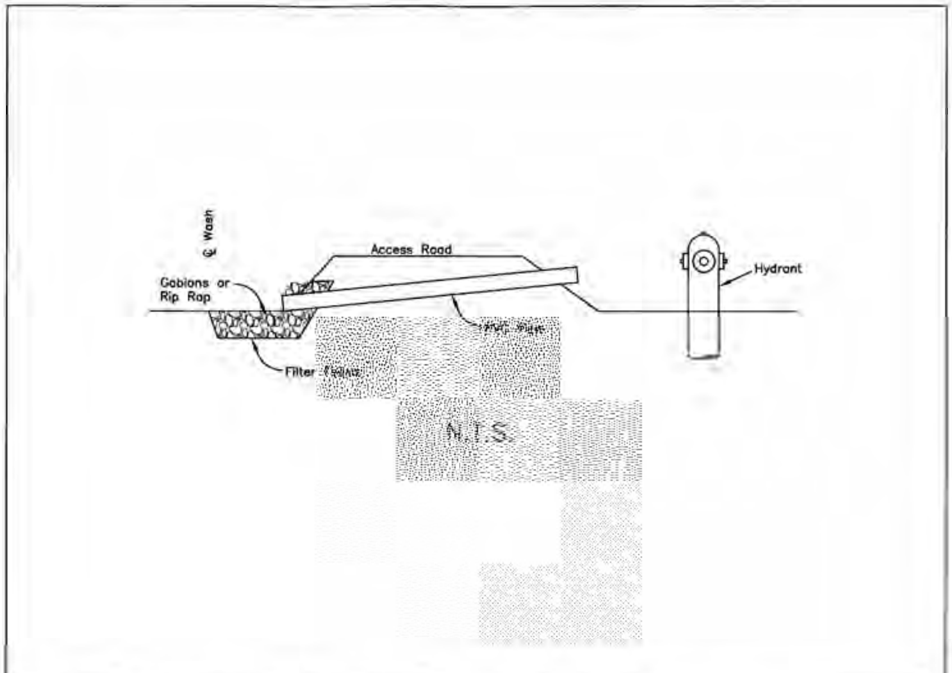

Figure K.14 Erosion control for fire hydrant discharges

Figure K.15 A pipe under the road conveys fire hydrant flushing water to the opposite side of the road. Flushing water has eroded the bank of the access road at the point of discharge into the wash.

Temporary Erosion Control BMPs

Temporary BMPs are used to control potential erosion caused by both planned and accidental events. For planned activities, the temporary BMPs should be in place before the activity begins. Examples of planned activities are extended well pumpouts, hydrant flushings, hydrostatic test water discharges following new water main construction, and discharges of highly chlorinated water following disinfection (highly chlorinated water must be dechlorinated prior to discharge). For accidental activities, the BMPs should be applied as soon as the erosion-causing event is observed. Temporary controls should be removed after the planned or unplanned discharge event is completed.

Temporary Diversion Dikes. Temporary diversion dikes direct runoff to a sediment trapping device or stabilized outlet in order to reduce the potential for erosion (see Figure K.16). They can be used to divert clear water and sheet flows away from unprotected slopes and disturbed areas.

Applications. Temporary diversion dikes are constructed along the top of an erodible fill or cut slope or upstream of a disturbed area that has erosion potential. They should remain in place until the disturbed area is permanently stabilized and must maintain the historic inflow and outflow conditions and drainage pattern.

Limitations. Temporary diversion dikes should be limited to drainage areas of less than 10 acres and less than 5 percent slopes. Permanent erosion control BMPs should be used for larger and steeper areas. Diverted flows may not cause flood damage to new or adjacent areas.

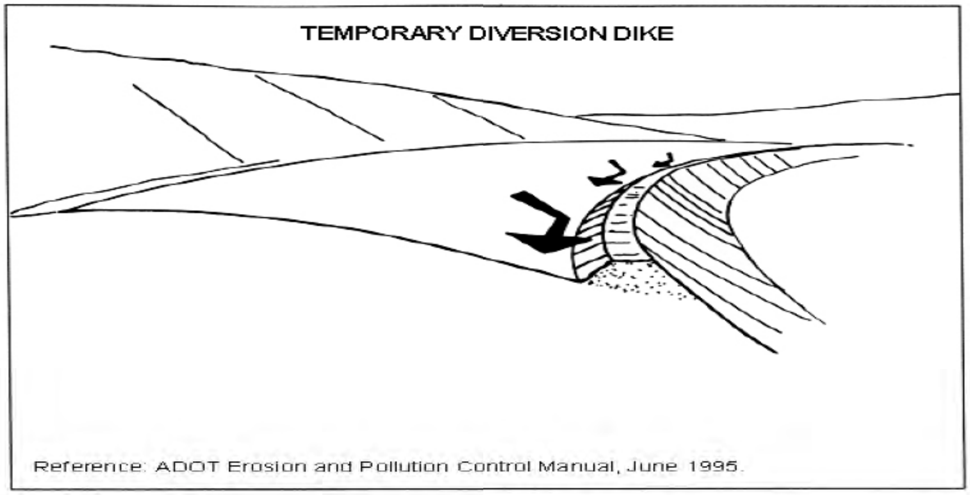

Figure K.16 Temporary diversion dike

Straw Bale Barrier. Straw bale barriers (Figure K.17) are used to reduce the run velocity and allow the deposition of transported sediment load behind the straw bale barrier. It is used where erosion could occur from sheet flow.

Applications. Straw bale barriers are placed downstream of erodible areas. They should remain in place until the disturbed area is permanently stabilized and must maintain the historic outflow conditions and drainage pattern.

Limitations. Straw bale barriers should not be used for extended periods of time because they will decompose. They should be limited to drainage areas of less than 1 acre and less than 2 percent slopes. Permanent erosion control BMPs should be used for larger and steeper areas. Diverted flows may not cause flood damage to new or adjacent areas. Constant maintenance is required.

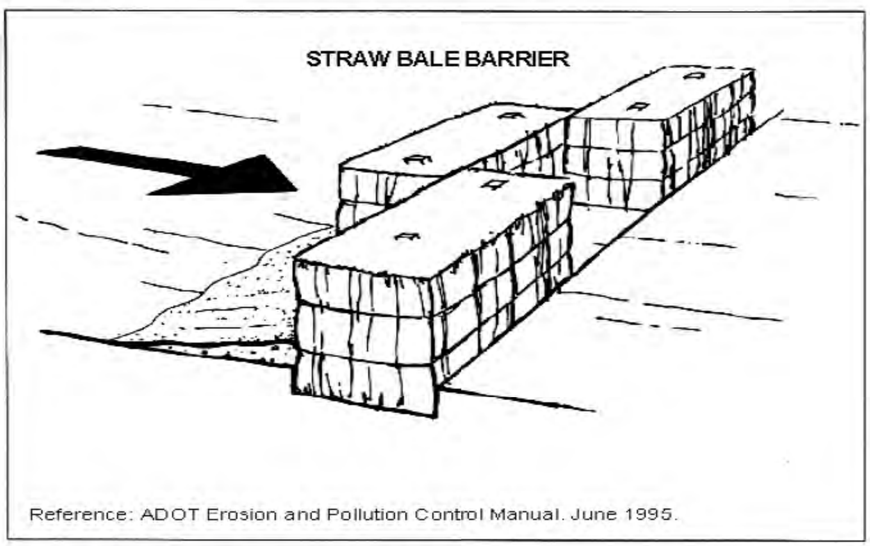

Figure K.17 Straw bale barrier

Silt Fence. Silt fences are used to intercept and detain small amounts of sediment from disturbed areas (see Figure K.18). They are used at locations upstream of where flows concentrate.

They create a temporary sedimentation pond on the upstream side of the fence and causes temporary flooding.

Applications. Silt fences are usually constructed downstream of a disturbed area that has erosion potential. They should remain in place until the disturbed area is permanently stabilized and must maintain the historic outflow conditions and drainage pattern.

Limitations. Silt fences should be limited to drainage areas of less than 1 acre, flows of less than 0.5 cfs and depths greater than 1.5 feet. Permanent erosion control BMPs should be used for larger areas, greater flows, and greater depths. Detained runoff flows may not cause flood damage to new or adjacent areas.

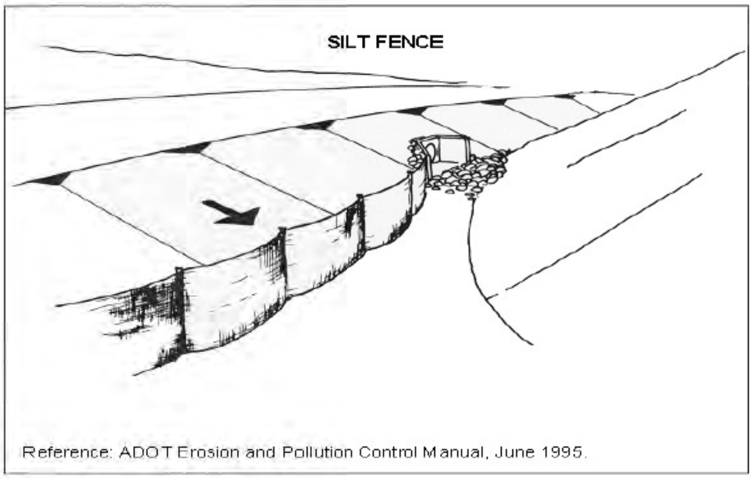

Figure K.18 Silt fence

Permanent BMPs

Permanent BMPs are constructed before an activity to prevent anticipated erosion. These BMPs are permanent and require regular maintenance to insure their ability to function as desired during an erosion event.

If erosion has occurred in a minor area that is impacted by concentrated storm water runoff or well pumpouts and it is probable that future runoff events will continue to cause erosion damage, then permanent erosion control BMPs should be implemented. Permanent control measures must be regularly maintained throughout the life of the project.

Pipe Slope Drain. Pipe slope drains are used to convey concentrated runoff down erodible slopes. They are used in conjunction with temporary and permanent diversion berms, dikes or swales and can be used as an emergency spillway for sediment basins (see Figure K.19).

Applications. Pipe slope drains are constructed to prevent slope erosion by concentrated runoff down the slope. They are used in conjunction with a permanent diversion dike along the top of an erodible fill or cut slope. They must maintain the historic outflow conditions and drainage pattern.

Limitations. Pipe slope drains should be limited to drainage areas of less than five acres and where the pipe drain will not be clogged by large storms. It also requires dissipation of high velocity flows at the pipe outlet. Other permanent erosion control BMPs should be used for larger areas and where greater flows are anticipated. Diverted flows may not cause flood damage to new or adjacent areas.

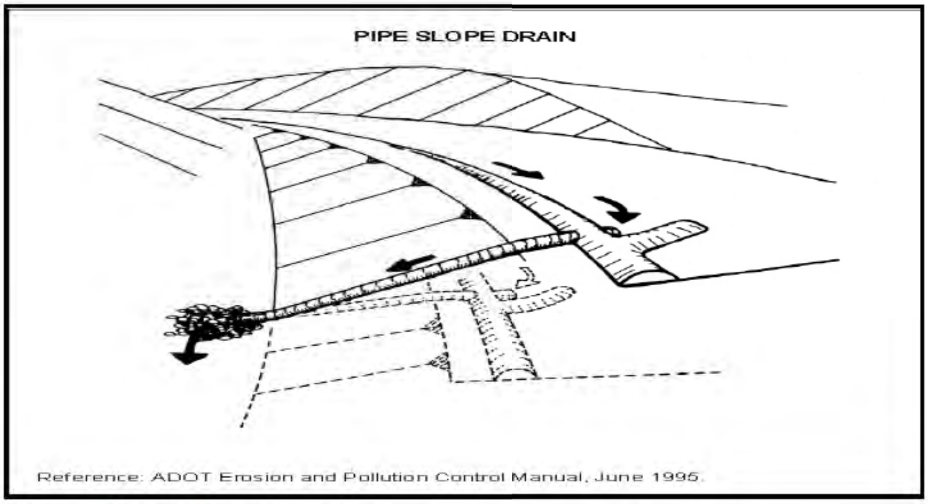

Figure K.19 Pipe slope drain

Check Dam. Check dams can be used as temporary or permanent erosion control measure to reduce velocity and capture sediment (see Figure K.20). Their use is usually limited to small channels with less than a one-acre drainage area.

Applications: Check dams are usually constructed along a drainage swale or channel. They are used to reduce the velocity in small channels and temporary swales. They must be maintained regularly and maintain the historic outflow conditions and drainage pattern.

Limitations: Temporary diversion dikes should be limited to drainage areas of less than 10 acres and should not be used in larger streams or washes that have continuous flow or have velocities that would erode the check dam.

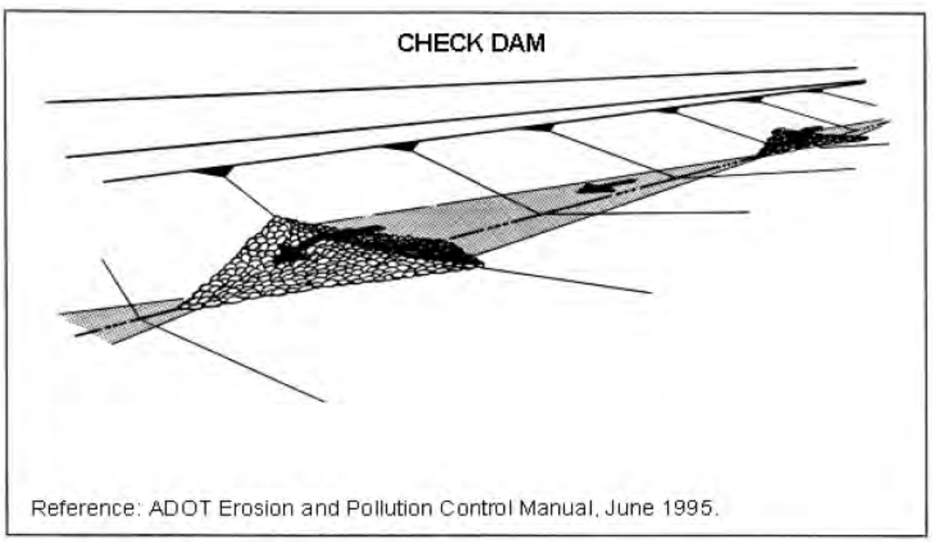

Figure K.20 Check dam

Erosion Protection at Structures

Channel and Culvert Outlet Protection. The outlets of culverts and structurally lined channels are locations of critical erosion potential (see Figure K.21). Rock riprap or some other measure is required to absorb the energy of the flow, as well as reduce the flow velocity before discharging it the receiving water.

Applications: Channel and culvert outlet protection is constructed at the downstream end of a culvert and within a channel that has erosion potential. It should remain in place until the erosion hazard is stabilized and must maintain the historic flow conditions and drainage patterns in the receiving channel. Rock size should be increased for high velocity flows.

Limitations: Channel and culvert outlet protection must be maintained regularly and may be eroded by large storms. The availability of rock large enough to withstand the anticipated velocities may be a limitation. Grouted or wire-tied systems can minimize maintenance requirements. Flows may not cause flood damage to new or adjacent areas.

Soil Interfaces at Concrete and Metal Surfaces. Soil interfaces between metal surfaces and bare soil are susceptible to erosion. It is necessary to install gravel, rock riprap or some other erosion protection to provide a transition from the hard surfaces to the soil (see Figure K.22).

Applications. Soil interfaces at concrete and metal surfaces are areas where runoff can concentrate and cause erosive flows. These are areas of minor erosion, but can be a source of unnatural sediment inflow. Culvert inlets and outlets, and concrete pads and linings, are areas of concern. BMPs must be maintained and remain in working order. They must maintain the historic outflow conditions and drainage pattern.

Limitations. Soil interfaces at concrete and metal surfaces should be inspected regularly, especially after a significant rainfall event. Large storms may damage or remove the rock riprap at these interfaces and must be replaced. Grouted or wire-tied rock can minimize the maintenance requirements. Flows may not cause flood damage to new or adjacent areas.

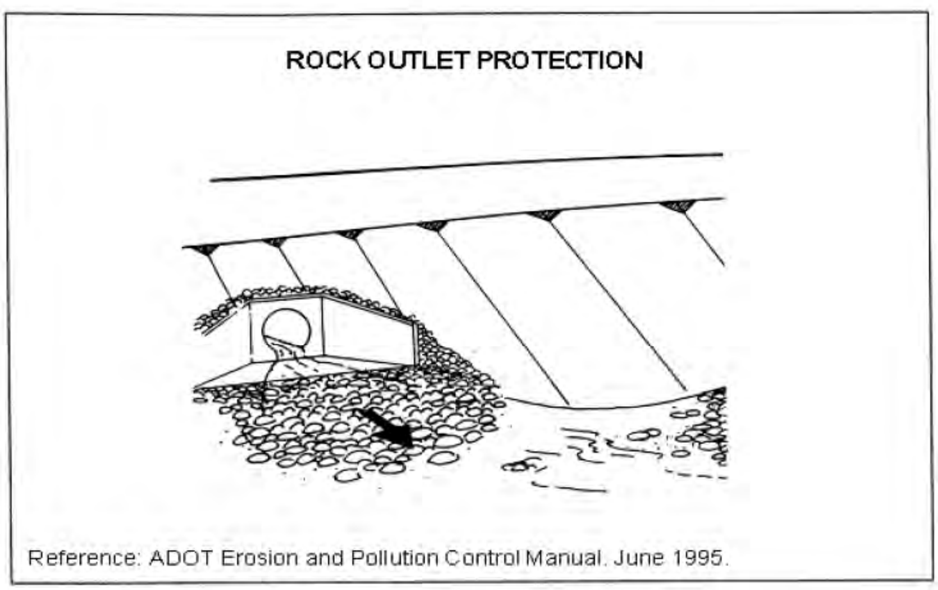

Figure K.21 Rock outlet protection

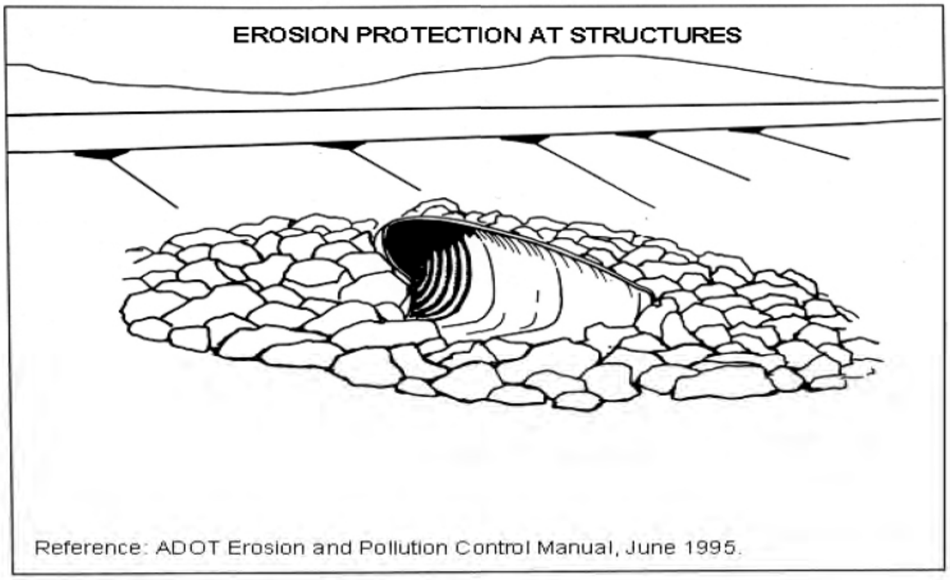

Figure K.22 Erosion protection at surfaces

Lining Channels. Where the slope of a wash, channel or stream produces runoff velocities that can cause erosion of the stream banks or invert, the channel needs to be protected by a permanent BMP such as channel lining (See Figure K.23). Table K.1 dentifies allowable velocities for typical soil types. Where the runoff velocity exceeds these maximum allowable velocities the channel, the wash or stream needs to be lined.

Table K.1
Allowable velocities for erodible channel linings

Soil type (without vegetation)	Allowable velocities (ft/sec)
Find sand & sandy loam	2.5
Silt loam	3.0
Ordinary firm loam and alluvial silts (noncolloidal)	3.5
Fine gravel, stiff clay, graded loam to cobbles, and alluvial silts (colloidal)	5.0
Graded silt to cobbles and cobbles	5.5
Coarse gravel	6.0

Note: For sinuous channels multiply allowable velocity by: 0.95 for slightly sinuous; 0.90 for moderately sinuous; and 0.80 for highly sinuous.

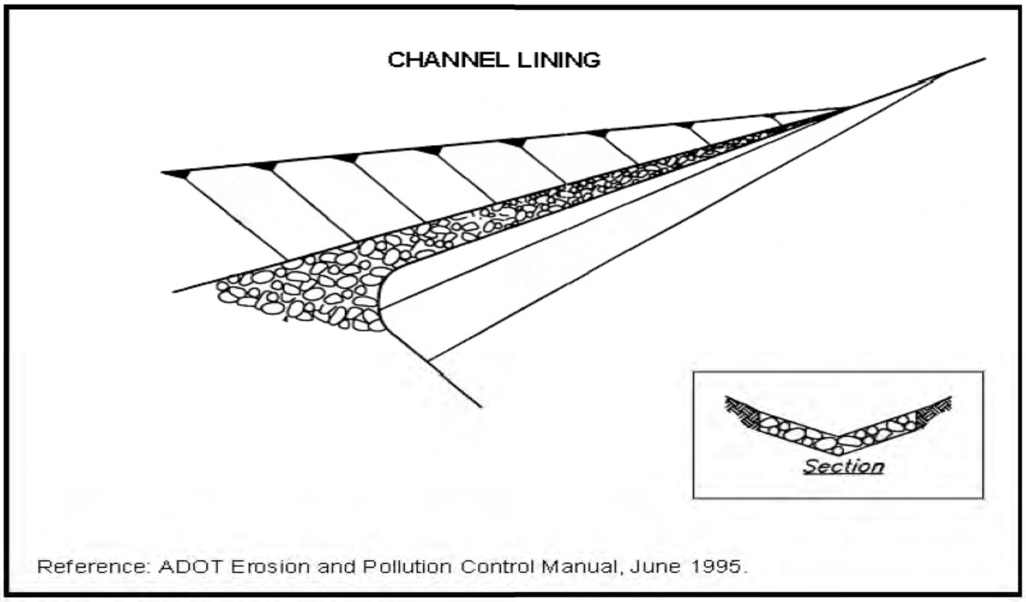

Figure K.23 Channel lining

Trap Sediment Before It Leaves the Right-of-Way

The objective of sediment control is to trap soil that has already been eroded, as opposed to erosion control which is the prevention or reduction of the wearing away and transport of soil.

It is preferable to provide erosion control instead of sediment control, especially since erosion control reduces sediment problems at their source. Even though sediment controls can be constructed to trap eroded soils, the suspended particles are difficult to settle out, particularly with fine silts and clays. These eroded soils are not easily replaced and the underlying soil that remains is less likely to be able to support plant life.

It is important to note that regular maintenance of any sediment trapping method is necessary in order for them to operate effectively. This includes removing accumulations of sediment and making necessary repairs and adjustments.

Temporary Soil Stockpiles. Sediment trapping is necessary at soil stockpiles because they are not compacted and tend to erode easily. A diversion dike can be constructed around the basin of stockpiles to trap the sediment. Straw bales or silt fencing can be provided at the low point in the dike to drain runoff and filter out the sediment.

Implement, Inspect and Maintain Pollution Controls

Proper implementation, inspection, and maintenance of pollution control measures are essential to achieve the goals of erosion and sediment control. Site inspections before, during, and after rainstorms, and planned or unplanned discharge events will help considerably in identifying necessary erosion controls. Repairs must be made as soon as possible after damaging discharge events.

Since many temporary controls can be easily damaged during construction activities, heavy rainstorms, or extended discharges, inspections should be conducted before the planned activity to identify damaged or potential problem areas. For example, a temporary diversion dike that has been inadvertently breached by construction equipment could result in concentrated storm water flowing down an embankment slope, which could produce more erosion than what would have occurred without the dike.

Based on the results of the annual inspection and review of the installed BMPs, it is recommended to refine or modify the generic and site-specific BMPs as necessary to reflect changed site conditions or technological improvements.

For each instance that a temporary or permanent BMP is utilized, document the situation and effectiveness of the utilized erosion control measure. Installed permanent control measures should be inspected annually to identify potential problems and to evaluate the long-term effectiveness of the BMP. Document all maintenance activities for each of the installed permanent erosion control measures. Maintain a central file, organized by year for each year of the project, that contains all of the event specific documentation for each installed temporary and permanent erosion control measure. An annual review should be conducted on a site specific basis of all temporary and permanent BMPs utilized for the previous year. The effectiveness of each BMP will be evaluated during the annual review. Based on this annual review, the generic and site-specific BMPs will be refined to reflect changing site conditions and technological advancements.

Comparison of Temporary and Permanent Erosion Protection Measures

Temporary erosion protection measures are best used on a 'one event' basis. When an area or a stream needs to be protected from erosive elements during a single event, then temporary erosion control measures should be employed. All temporary erosion protection measures must be in place before the event, must be maintained in proper working order throughout the time period of the event or series of events, and removed at the end of the event. Only remove the measure after the potential erosion event has past and the area is considered stabilized and safe from future storm events causing erosion damage. When erosion is observed and is actively delivering sediment to a natural wash, a temporary erosion protection measure should be employed immediately to minimize the erosive action.

When the recurrence of the activity is likely, then a permanent erosion control measure should be applied. Permanent erosion protection measures are used to prevent erosion over an extended period of time. The permanent erosion protection measures must be maintained throughout the life of the project.

Erosion Control BMPs for Non-Facility Specific Discharges

If the de-chlorinated NTD water originates in a paved, curbed and guttered street section, the water should be discharged into the curb and gutter of the paved street. These flows will then follow the route of normal pavement drainage. If the de-chlorinated NTD water originates within 100 feet of a paved, curbed and guttered street section, a hose should be used from the source water to the curb and gutter of paved street. These flows should be discharged into the curb and gutter of the street and will then follow the route of normal pavement drainage. If the de-chlorinated NTD water originates in an area where discharging into the curb and gutter of a paved street is impractical, a fog nozzle should be used to disperse the water over a large area to eliminate the opportunity for concentrated flows to occur. These flows will then evaporate or infiltrate into the soil. If the fog nozzle clogs frequently (most likely during preliminary water main flushings prior to disinfection tests), remove the nozzle and apply alternate temporary erosion control at the point of discharge. For isolated sites, construct temporary washout areas with diversion dikes, temporary earthen berms, or excavated pits that will be later backfilled. Locate these away from storm drains, open ditches, or *Waters of the U.S.* Make sure water leaves the site at non-erosive velocities.

Remedial Repair Measures for Eroded Areas

If there is evidence that an unplanned, unscheduled water discharge event has caused removal of the soil or vegetation at the location of the originating water or along its flow path, remediation needs to take place. If the erosion is a minor area that is not impacted by concentrated storm water runoff, the topsoil should be replaced and compacted to its original condition prior to the discharge event.

If the erosion is a minor area that is impacted by concentrated storm water runoff and it is probable that future runoff events will continue to cause erosion damage, then a permanent erosion control BMP should be implemented. If the erosion has impacted a major area, then an Engineer should visit the site and propose appropriate erosion control measures.

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1P-3C-91187-10/07-NH

WATER-BASED FIRE PROTECTION SYSTEMS DISCHARGE BEST MANAGEMENT PRACTICES MANUAL

California State Fire Marshal

In cooperation with

Division of Water Quality
Storm Water Section

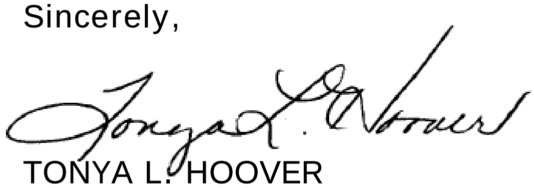
September 2011

Message from the Acting State Fire Marshal

On behalf of CAL FIRE – Office of the State Fire Marshal (OSFM) I am pleased to present the **Water-Based Fire Protection Systems Discharge Best Management Practices Manual**. The extensive discussions, analysis, and expertise resulting in these recommendations and best management practices (BMP) are essential to a balanced and appropriate approach for the proper processing of water discharged from a fire protection system. The testing and flushing of these life safety systems are important to the continued efforts to protect the citizens of California. The Task Force hopes that these BMP will be embraced at both regional and local levels providing a consistent application.

The OSFM would like to extend a sincere gratitude to Co-Chairs: James Parsegian; Deputy State Fire Marshal III, Fire Engineering Division, James Carver, Fire Marshal, El Segundo Fire Department, and Bruce Lecair, West Coast Regional Manager, National Fire Sprinkler Association and to each of the members and organizations for their dedication and commitment to this important project. We appreciate the participants' willingness to share their time, energy, and talent; particularly during these very busy and difficult fiscal times. Through our partnerships we will continue to move fire and panic safety initiatives forward, providing a safer working environment for emergency responders and a safer environment for all those who live in and/or visit the State of California.

Sincerely,



TONYA L. HOOVER
Acting State Fire Marshal

Acknowledgements

This Best Management Practices Manual was developed through the accumulation of research, analysis, and collaborative efforts of the many disciplines involved with the State Fire Marshal Water Discharge for Fire Protection Task Force.

Included in those efforts are (in alphabetical order) the: Allan Automatic Sprinkler Corporation of Southern California, California State Water Resources Control Board, City of Beverly Hills Waste Water Treatment Program, City of El Segundo Fire Department, City of Healdsburg Fire Department, City of Torrance Fire Department, East Bay Municipal Utilities District, National Automatic Sprinkler Industry Promotion, National Fire Sprinkler Association, Northern California Fire Prevention Officers Association, Paraclete Fire Safety Incorporated, Riverside County Fire Department, Sonoma County Permit and Resource Management Department, and Southern California Fire Prevention Officers Association.

Water Discharge for Fire Protection Task Force Members

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James Carver, Co-Chair, City of El Segundo Fire Department
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Allen Quirk, Paraclete Fire Safety Incorporated
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William R. Kirkpatrick, East Bay Municipal Utilities District

Table of Contents

Executive Summary

In response to a request by the National Fire Sprinkler Association, the State Fire Marshal convened a Water Discharge for Fire Protection Task Force under the State Fire Marshal Automatic Extinguishing Systems Advisory Committee to review and develop a guideline for the discharging water from fire protection systems. The task force was established with representatives from various agencies and organizations which included both government and industry. The purpose of the Task Force was to develop a set of Best Management Practices for Contractors State License Board licensed contractors, State Fire Marshal licensed companies and the fire service; to discharge water from a fire protection systems and to provide guidance regarding the practices to control possible contamination of California waters when maintaining fire suppression systems.

Overview

This manual is intended to give persons discharging water (Discharger) from a water-based fire protection system and the municipal separate storm sewer system (MS4) operators a common set of best management practices (BMP) for the proper processing of water discharged from a fire protection system.

The types of discharge covered in this manual are associated with:

- Water-based fire protection system acceptance testing.
- Periodic water-based fire protection system testing and maintenance.
- Fire hydrant testing.
- Water-based fire protection system leaks and emergency repairs.

Purpose and Scope

The purpose of this document is to provide a set of BMP to affected parties in the State of California with a range of procedures for mitigating the discharge of water from a fire protection system to municipal storm sewer systems in a manner consistent with the protection of life property and the environment. It is not to provide a day-to-day field manual for dischargers but rather a set of options (tools) from which dischargers and local agencies may select and customize for their particular needs and settings. Dischargers are encouraged to contact the operator of the receiving MS4 system to discuss any specific discharge requirements.

Part 1: Participants

1. Fire Departments are responsible for protecting life and property from fire. Fire Departments periodically discharge water into the MS4. While emergency fire flows are exempted from permitting, non-emergency discharges may be regulated in some regions.

2. MS4 are built, maintained, and/or operated by a wide range of agencies such as municipalities, counties, flood control districts, and road/transportation departments. They must abide by and enforce the Clean Water Act, the Porter-Cologne Act, and the Storm Water Rule. Most Regional Water Quality Control Boards (RWQCB) and the U.S. Environmental Protection Agency (EPA) issue MS4 permits; most MS4 operators must have an MS4 permit. MS4 permits require agencies to legally ban and prevent all illicit discharges of non-storm water from entering their MS4. Water collected by MS4 is ultimately discharged into the waters of California.

3. The State Water Resources Control Board (SWRCB) and the various RWQCB are charged with the protection of the waters of California and enforcement of the Clean Water Act, the Porter-Cologne Act, and the Storm Water Rule. This is accomplished by the issuance and enforcement of National Pollution Discharge Elimination System (NPDES)/Waste Discharge Requirements (WDR) permits, including MS4 permits for most MS4 operators and in some cases WDR for Community Water Systems (CWS) discharging into MS4.

4. Dischargers include California State Fire Marshal (CSFM) SFM A license Concern, as well as Contractors State Licensing Board (CSLB) Type A, C-16, C-34, and C-36 licensees who perform testing and maintenance of water-based fire protection systems as required by the California Fire Code. Carrying out these activities requires periodic and prescribed discharges into MS4. The activity and concerns/contactors approved for those activities are as follows.

   a. For water-based fire protection acceptance testing:
      - Underground – Type A, C-16, C-34 and C-36 only
      - Above Ground – C-16 only
      - Water Flow – C-10 (limited to water flow only)

   b. For periodic water-based fire protection system testing and maintenance:
      - Underground – C-16 only
      - Above Ground – C-16 only
      - Water Flow – C-10 (limited to water flow only)

  - SFM A license Concern (Limited to testing and maintenance)

c. For fire hydrant testing:
  - Underground – Type A, C-16, C-34 and C-36 only
  - Above Ground – C-16 only
  - SFM A license Concern (Limited to testing and maintenance)

d. For water-based fire protection system leaks and emergency repairs:
  - Underground – Type A, C-16, C-34 and C-36 only
  - Above Ground – C-16 only
  - Water Flow – C-10 (limited to water flow only)
  - SFM A license Concern (Limited to testing and maintenance)

Note: Fire Departments may conduct testing of any water based fire protection system.

Part 2: Notification and Record Keeping

This document covers discharges to the municipal storm sewer system, not the sanitary sewer system. If it becomes necessary to discharge to the sanitary sewer system, written permission or a permit is typically required from the local sanitary sewer authority. When using this manual, a discharge is water which comes from a single location and project. If a Discharger releases water from a given location and a given project in a series of related events, these events are considered one discharge.

1. Notification and Recordkeeping

   a. A single discharge of less than 1,500 gallons – Discharger does not need to give prior notification.
   b. A single discharge equal to or greater than 1,500 gallons but less than 10,000 gallons – Discharger does not need to give prior notification for any single discharge, but would need to maintain records of those discharges.
   c. A single discharge equal to or greater than 10,000 gallons – Discharger does need to give prior notification and maintain records of the discharge.

2. Prior Notification

   Dischargers should notify the MS4 agency/operator not less than 24 hours prior to any planned discharge and as soon as possible after any emergency discharge. The method of notification must be by one of the four options listed below:

a. Telephone call
b. A fax transmission
c. An email
d. In person

Note: The large majority of single discharge events from existing building water-based fire protection systems are drain and fill tests which are small in volume falling at or below 1500 gallons based on building and system size. Reporting and recordkeeping (though the latter is often done as a matter of practice by licensed Dischargers) would yield a significant additional administrative and cost burden on all parties.

3. Recordkeeping

Records should be kept utilizing the sample form provided in **Appendix C** of this manual. The sample form should be completed in either black or blue ink. Records of discharges should be retained for a minimum of five years. Records must be made available for review by the MS4 and/or RWQCB and must provide the following information:

a. Information for all discharges greater than 1,500 gallons
b. Name of Discharger
c. Date of notification (if equal to or greater than 10,000 gallons) or emergency
d. Method of notification (if equal to or greater than 10,000 gallons) or emergency
e. Location of discharge
f. Date of the discharge
g. Time of the beginning and end of the discharge
h. Duration of the discharge (minutes)
i. Flow rate (gallons per minute)
j. Total number of gallons discharged
k. Type of dechlorination “chemicals” used
l. Concentration of chlorine measured after dechlorination including time of sampling and description of sampling location
m. Type of sediment controls used

Note: When exact flows, volumes, and length of discharge are not available the discharger needs to estimate the values.

FIRE SPRINKLER
WATER DISCHARGE SUMMARY

Event Total Gallons	Notification MS4	De-Chlorination	Sediment and Debris Control: Within Piping System	Sediment and Debris Control: Exterior Surface	Chemical Testing	Record Keeping
≤ 1,500	Not Required	Not Required	Not Required	**	***	Not Required
> 1,500 ≤ 10,000	Not Required	*	**	**	***	Required
> 10,000	Required	*	**	**	***	Required

* *Required if discharge is to enter storm drain system and water is fresh.*
** *Required if debris exists and together with discharge will enter storm drain system*
*** *Required if it has been determined that chemical additives are within piping system.*

Part 3: Flow and Volume Determination

Dischargers need to determine the flow and volume of the discharge.

1. Flow is determined by one of the following methods:

    a. Attaching a flow meter to the discharge opening and reading the displayed value
    b. Measuring the pressure from a pressure gauge and then using the table or formulas found at the end of **Appendix B**
    c. Where "a" or "b" are not applicable, measure the velocity (V) using a floating object and measure or calculate the cross-sectional area (A) of flowing water. (V x A = flow rate [e.g., V = 2 ft/sec and A = 1.5 ft^2; Flow = 3 ft^3/sec or 1,347 gal/min])

2. Volume is determined by multiplying the flow (e.g., gallons/minute) by the duration of the discharge (minutes).

Part 4: Safety Considerations

Dischargers need to take the following precautions before flow testing a hydrant:

1. Ensure water will flow into nearby drain inlets as intended.

2. Ensure drain inlets are open and free of debris.

3. Ensure flowing water will not cause flooding or damage to adjacent properties.

4. Ensure water flow trajectory will not impact nearby vehicles, equipment, or pedestrian traffic.

5. Ensure water flow does not create slick or unsafe conditions.

Note: Do not conduct the test if any unsafe condition exists or would be created. If in doubt, do not conduct the test and notify the building owner and MS4 operator if prior notification was made.

Part 5: Discharge into Sensitive Areas

Sensitive areas are those that may present a potential problem or hazard to the environment. Use best judgment in analyzing each area. Address the following concerns when evaluating whether to test the hydrant.

1. Ensure road surfaces are free of debris that may flow into the drain inlets or nearby sensitive areas.

2. Ensure curbs or ditches are adequate to handle the flow without creating a buildup of silt which cannot be contained and removed.

3. Ensure water flows will be free of potential contaminants such as oil, contaminated soils, etc.

4. Ensure water does not cause erosion.

Note: Do not test the hydrant if any of the above or any other condition may adversely impact the area. If in doubt, do not test and notify the building owner and MS4 if prior notification was made. If a problem does arise, such as a major erosion or siltation of nearby creeks, discontinue testing and notify the MS4 immediately.

Part 6: Water Discharge Mitigation

1. Conduct flows for the shortest duration possible. MS4 may limit maximum flow rate to storm sewer.

2. Remove all debris from the curb and gutter before initiating flushing.

3. If chlorine residual is a concern, use dechlorination. Many, if not most, testing and maintenance discharges will not have chlorine residual due to the age of the water in the system. If CWS water is introduced during testing and then discharged, it will require dechlorination.

4. Whenever possible and when safe to do so without causing damage or erosion, contain flows onsite by directing the water to landscaped or green areas.

5. When practicable and with the permission of the local sewer agency, divert sprinkler system discharge to the sewer. The local sewer agency may have additional conditions.

6. Assess the following prior to any partial or full discharge of water from a vault, substructure or building fire system into the street or storm drain system.

   a. Ensure the water is not cloudy, discolored and/or has no unusual odor.
   b. Ensure the Fire Protection System water does not have chemical additives. If it has been determined that chemicals have been added to the fire protection system the following actions must be taken:

   Note: The following conditions may require testing by an accredited laboratory for cloudiness, discoloration and odors (sewage, chemicals, solvents, gasoline, etc.). Turbid water due to rust and musty stagnation would be subject to BMP for containment and sediment control.

      i. The water should be tested by an approved testing facility to determine the chemical and the proper treatment.
      ii. Upon completion of the chemical report of the water test, the results should be submitted to the MS4 regulator to determine the approved discharge method and location of the water discharge. Examples of the discharge location may be storm drains, sewage system or to an approved treatment facility or plant.
      iii. If chemicals are to be reintroduced into a system, proper signage should be provided for guidance.

7. Dechlorination – The MS4 General NPDES Permit requires all waters discharged must be dechlorinated before entering a storm drain. Failure to follow this procedure could result in death of aquatic animals and legal liability. Methods of dechlorinization include using aeration

and/or other appropriate means such as infiltration to the ground, bags, diffusers, and at sediment traps in drop inlets where controllable.

Dechlorination Equipment

a. Bags – Consisting of a mesh bag into which large tablets of dry chemical are placed to react with residual chlorine to remove it from the water
b. Flow Meter (optional)
c. Pressure Gauge
d. Pitot Tube
e. Dechlorination chemicals
    i. Sodium Sulfite
    ii. Sodium Bisulfate
    iii. Sodium Thiosulfate
    iv. Ascorbic Acid
f. Diffusers – Mechanical devices which are placed on the end of the discharge point which automatically mixes the discharged water with either dry or wet dechlorination chemicals. A wide variety of diffusers are available.
g. Chlorine Residual Test Kits
    i. Test Strips – Are dipped into the water; the color of the strip changes depending on the concentration of the chlorine. A comparator on the package allows for the determination of the chlorine concentration.
    ii. Color Wheels – A square clear plastic container that holds about 10 milliliters of water. Chemicals are added to produce a pink color. A wheel attached to the plastic container has different shades of pink which correspond to different concentrations of chlorine. The wheel can be turned so that the shade of pink of the water sample can be matched to the corresponding chlorine concentration.
    iii. Electronic Colorimeters – Devices consisting of a glass or plastic cell and a hand-held electronic colorimeter. A sample of water is placed in the cell and chemicals are added which produce a pink color. A second cell has a water sample with no chemicals added. The cell with no chemicals is placed into the colorimeter and the device measures the intensity of color. This is then assigned a value of zero. The cell that had chemicals added is then placed in the colorimeter and the device measures the intensity of the color and then converts that intensity into a concentration of chlorine or chloramines on a display.

Note: Chlorine Residual Test Kits–In order to determine if the dechlorination process removes the disinfectant, it is necessary to test the water.

8. Sediment Control – The MS4 General NPDES Permit requires all Dischargers to minimize sediments and other debris entering a storm drain. Failure to follow this procedure could result in adverse impacts to aquatic animals, obstruction of flood control facilities, flooding, and legal liability.

   a. There are a wide variety of equipment that may be used for sediment control and clean-up depending upon the requirements of the specific site where discharges might occur **(see Appendix D for pictures of examples)**.
      i. Wattles
      ii. Sand Bags
      iii. Gravel bags
      iv. Mats
      v. Booms
      vi. Barricades
      vii. Silt Fencing
      viii. Hay Bales
      ix. Hoses
      x. Filters
      xi. Debris Storage
      xii. Brooms
      xiii. Shovels
      xiv. Rakes
      xv. Vacuum Truck or Wet/Dry Vacuum

   b. Procedure – As an example place gravel or sand filled bags to form dams across (perpendicular to) the flow path and curb with the end of the dam (furthest from curb) curving slightly upstream. Dam height, length, the number of bags used and the interval between dams will vary depending upon site conditions and the resources available. It is recognized that there will be some circumstances where steep topography and/or high flow rates will preclude effective sediment removal using any of the current technologies. The following criteria should be used to determine bag placement:
      i. Dam Height – The height of each dam should be slightly less than the height of the curb or other retaining structure that is acting to channel the flow. If it is equal to or higher than the curb, flow will be diverted onto the sidewalk and cause flooding.

ii. Dam Length – The longer the dam, the greater the ponding area and the better the retention, which allows the sediment to drop out. However, dam length is limited by the number of bags available, traffic flow considerations and potential for flooding of property, bags and ponded water should not extend outside of coned areas into traffic lanes or onto private property.

iii. Number of Dams and Distance between Dams – In general, the greater the number of dam locations between the discharge source and entry into storm drains or receiving waters, the greater the retention of sediment. A minimum of two dams should be used in all cases. The interval between dams must shorten as the ground surface gradient (slope) increases to maintain equivalent sediment removal rates.

iv. When the discharge is complete, allow any water that is ponded behind the dams to be drained. Be sure storm drain inlet is protected. Shovel up as much sediment as possible. Move one of the dams to a location immediately upstream of the storm drain or to the point where the flow enters receiving waters to provide sediment control for discharge cleanup. If possible, clean the flow path and upstream dams to remove residual sediment from the street. Retrieve all dam materials and store in appropriate location.

9. Determine Flow Path

Determine the flow path of the discharge from the point of release to the inlet of a storm drain.

a. Procedures: Evaluate and determine the appropriate BMP to use.
   i. Isolate the riser or control valve prior to draining
   ii. Evaluate the release volume and character. Compare with the release point and conveyance
b. Inspect the flow path to ensure the flow path is clear and unobstructed allowing water to flow to the storm drain. Consider the following:
   i. The maximum flow rate that will not cause erosion or scouring of any exposed ground in the flow path
   ii. The flow path must offer adequate capacity to allow the flow to move quickly to the storm drain without undesirable flooding or pooling. There must be nothing in the path that would interfere with the dechlorination process or hinder the analysis of the chlorine level. Whether the flow path is paved or unpaved, permeable or

impermeable, the flow must not inappropriately scour the surface. The discharge must not damage either pavement or neighboring property or impact vehicle or pedestrian traffic

iii. Permeable and natural surfaces are much more subject to scouring and erosion and thus cannot support higher velocities and require more robust sediment control equipment.

If there are large areas of permeable or natural surfaces where scouring and mobilization of sediments are possible, hoses may be used to move the discharge point away from these areas to an area better able to support the anticipated flow or temporary mats or channels may be installed to protect the area

c. Alignment of the discharge point can have important implications. Whether the discharge point is a diffuser or a hose or a pipe, it must be placed in such a way that it does not undercut pavement or erode soils. The force with which the water is hitting the surface should be minimized by adjusting the flow.
   i. Record the time of the beginning of the discharge.
   ii. Begin the flow slowly, increasing flow gradually so as not to damage any equipment or property.
   iii. Inspect the discharge path as the flow increases. Make sure that no scouring, erosion, or undercutting of pavement is occurring. If concerns arise immediately take corrective action which could include:
      1. Reduce the flow rate of the discharge.
      2. Adjust the angle of the discharge.
      3. Stop discharge altogether.

d. Prepare the flow path for discharge. Remove materials that may obstruct or divert discharge flow from the discharge point to the entrance. Also remove any materials that may interfere with the dechlorination process or clog the sediment control equipment.
   i. Place the dechlorination and sediment control equipment between the point of release and the entry to the storm drain. Impermeable and engineered surfaces can generally support higher velocities and require less robust sediment control equipment or angle of the discharge.
   ii. Add the dechlorination chemical to the equipment.
   iii. Measure the chlorine concentration at a point prior to the inlet to the storm drain. If chlorine residual is present, take steps to reduce this concentration, including but not limited to:
      1. Make adjustments to the dechlorination equipment

to increase the amount of chemical being added.
2. Reduce the flow of the discharge.
3. Add more chemical to the storage vessel.
4. Reduce flow slowly and remove equipment.
5. When the discharge is complete, record the time and determine the volume discharged.
6. Clean up all debris and sediments in the flow path and trapped by the control equipment.

10. Drain Inlet Protection – Drain Inlet Filter Bag
Before the drain event, check to be sure the fire protection system discharge does not interfere with or delay repairs or corrective actions undertaken by the MS4 agency.

a. Procedure: Evaluate and determine appropriate BMP to use. Place bags to either completely or partially surround drain inlet. The number of bags used will vary depending upon site conditions and the resources available. Protection should be installed around all affected drain inlets within reason. Several bags may need to be stacked on top of each other to produce the desired protection. Remove grate from drain inlet and ensure that it is clear and clean of debris. Place filter bag insert so that edges are secured when grate is replaced. Periodically inspect and adjust bags. Because filter bags clog quickly, pay particular attention to water backing up around the drain inlet. Either replace the bags frequently or adjust upstream sediment dams to provide more sediment removal prior to drain inlet.
b. When the discharge is complete, allow any water that is ponded behind the dams to drain. Clean the flow path and upstream dams to remove residual sediment from the street. Retrieve all control equipment and remove temporary drain inlet bag.

Part 7: Water Discharge Awareness Course

The CFSM developed a sample course outline for this BMP manual. This part presents an overview of a joint effort to inform the water-based fire protection system contractors, business concerns and the fire service of these guidelines and provisions. The outline is intended to assist dischargers in developing a training plan for their employees to ensure compliance with local, state and federal law dealing with the waters of California.

1. The BMP outlined in this document are essential elements for a contractor and/or business concern to be aware of and to utilize in the day-to-day business company operations when discharging fire protection system waters. The Awareness Level Training Course will help ensure that the procedures outlined in this set of BMP are utilized

(see Appendix E).

2. The Water Discharge for Fire Protection Systems Awareness Level Course will provide the student with:

    a. An awareness of the Water-Based Discharge for Fire Protection Systems BMP document and to become familiar with the water discharge requirements as they relate to water-based fire protection systems during the flowing of water for testing, draining, and maintenance of these systems.
    b. An awareness of the necessary records, forms, and notification procedures deemed necessary to be in compliance with the various federal, state, regional, and local laws, regulations, and procedures relevant to the discharge of water.
    c. An awareness of safety considerations, testing procedures, control equipment, clean-up equipment, and drain inlet protection.
    d. An awareness and understanding of the need to identify the volume/quantity of water to be discharged during periodic flow testing and maintenance procedures and to recognize the thresholds which reflect the different levels of notifications and/or protocol.
    e. An awareness of the federal, state, regional, and local law, regulations, and procedures relevant to the discharge of water into the lands, streets, storm drains, sewers, streams, creeks, rivers, lakes, bays, and oceans.
    f. An awareness of the various federal, state, regional, and local agencies which are assigned the roles of enforcing these laws, regulations, and procedures and to understand the various acronyms associated with these agencies.

Appendix A
Regional Water Quality Control Board Contact List

The boundary information and general contact information for the nine Regional Water Quality Control Boards may be found at the following website:

http://www.waterboards.ca.gov/waterboards_map.shtml

Storm Water Contacts

Region 1 (Santa Rosa)
John Short
(707) 576-2065

Region 2 (San Francisco Bay)
Shin-Roei Lee
(510) 622-2376

Region 3 (San Luis Obispo)
Phil Hammer
(805) 549-3882

Region 4 (Los Angeles)
Ivar Ridgeway
(213) 620-2150

Region 5 (Fresno)
Dale Harvey
(559) 445-6190

Region 5 (Sacramento)
Diana Messina
(916) 464-4828

Region 5 (Redding)
George Day
(530) 224-4859

Region 6 (South Lake Tahoe & Victorville)
Lauri Kemper
(530) 542-5436

Region 7 (Palm Desert)
John Carmona
(760) 340-4521

Region 8 (Santa Ana)
Michael Adackapara
(951) 782-3238

Region 9 (San Diego)
David Barker
(858) 467-2989

Appendix B

Typical Discharge Types and Volume Ranges for Example Buildings

TABLE A

DISCHARGE TABLE FOR CIRCULAR OUTLETS
(Outlet pressure measured by pitot gauge)

Outlet/Pitot Pressure (psi)	Outlet Diameter in Inches							
	2-1/4"	2-3/16"	2-3/8"	2-7/16"	2-1/2"	2-9/16"	2-5/8"	2-11/16"
	(gpm)							
1	136	144	151	160	168	176	185	194
2	192	203	214	226	237	249	262	274
3	235	249	262	276	291	305	320	336
4	272	287	303	319	336	353	370	388
5	304	321	339	357	375	394	414	434
6	333	352	371	391	411	432	453	475
7	360	380	401	422	444	466	489	513
8	384	406	428	451	475	499	523	548
9	408	431	454	479	503	529	555	582
10	430	454	479	504	531	557	585	613
11	451	476	502	529	557	585	614	643
12	471	497	525	553	581	611	641	672
13	490	518	546	575	605	636	667	699
14	509	537	567	597	628	660	692	726
15	526	556	587	618	650	683	716	751
16	544	574	606	638	671	705	740	776
17	560	592	624	658	692	727	763	799
18	577	609	642	677	712	748	785	823
19	592	626	660	695	731	768	806	845
20	608	642	677	713	750	788	827	867
21	623	658	694	731	769	808	848	889
22	637	673	710	748	787	827	868	910
23	652	689	726	765	805	845	887	930
24	666	703	742	781	822	864	906	950
25	680	718	757	798	839	881	925	970
26	693	732	772	813	856	899	943	989
27	706	746	787	829	872	916	961	1008
28	719	760	801	844	888	933	979	1026
29	732	773	815	859	904	949	996	1044
30	744	786	829	874	919	966	1013	1062
31	757	799	843	888	934	982	1030	1080
32	769	812	857	902	949	997	1046	1097
33	781	825	870	916	964	1013	1063	1114
34	793	837	883	930	978	1028	1079	1131
35	804	849	896	944	993	1043	1094	1147
36	815	861	909	957	1007	1058	1110	1163
37	827	873	921	970	1021	1072	1125	1179
38	838	885	934	983	1034	1087	1140	1195
39	849	897	946	996	1048	1101	1155	1211
40	860	908	958	1009	1061	1115	1170	1226

Outlet Nozzle Coefficient = 0.90

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TABLE A

DISCHARGE TABLE FOR CIRCULAR OUTLETS (Outlet pressure measured by pitot gauge)								
Outlet/Pitot Pressure (psi)	Outlet Diameter in Inches							
	2-1/4"	2-3/16"	2-3/8"	2-7/16"	2-1/2"	2-9/16"	2-5/8"	2-11/16"
	(gpm)							
41	870	919	970	1021	1074	1129	1185	1242
42	881	930	981	1034	1087	1142	1199	1257
43	891	941	993	1046	1100	1156	1213	1272
44	902	952	1004	1058	1113	1169	1227	1286
45	912	963	1016	1070	1126	1183	1241	1301
46	922	974	1027	1082	1138	1196	1255	1315
47	932	984	1038	1094	1150	1209	1268	1329
48	942	995	1049	1105	1163	1221	1282	1343
49	951	1005	1060	1117	1175	1234	1295	1357
50	961	1015	1071	1128	1186	1247	1308	1371
51	971	1025	1081	1139	1198	1259	1321	1385
52	980	1035	1092	1150	1210	1271	1334	1398
53	989	1045	1102	1161	1222	1283	1347	1412
54	999	1055	1113	1172	1233	1295	1359	1425
55	1008	1065	1123	1183	1244	1307	1372	1438
56	1017	1074	1133	1194	1256	1319	1384	1451
57	1026	1084	1143	1204	1267	1331	1397	1464
58	1035	1093	1153	1215	1278	1343	1409	1477
59	1044	1103	1163	1225	1289	1354	1421	1489
60	1053	1112	1173	1236	1300	1366	1433	1502
61	1062	1121	1183	1246	1311	1377	1445	1514
62	1070	1130	1192	1256	1321	1388	1457	1527
63	1079	1140	1202	1266	1332	1399	1468	1539
64	1087	1149	1211	1276	1342	1410	1480	1551
65	1096	1157	1221	1286	1353	1421	1491	1563
66	1104	1166	1230	1296	1363	1432	1503	1576
67	1112	1175	1240	1306	1373	1443	1514	1587
68	1121	1184	1249	1315	1384	1454	1525	1599
69	1129	1193	1258	1325	1394	1464	1537	1611
70	1137	1201	1267	1335	1404	1475	1548	1622
71	1145	1210	1276	1344	1414	1485	1559	1634
72	1153	1218	1285	1353	1424	1496	1570	1645
73	1161	1227	1294	1363	1434	1506	1581	1657
74	1169	1235	1303	1372	1443	1516	1591	1668
75	1177	1243	1311	1381	1453	1527	1602	1679
76	1185	1252	1320	1391	1463	1537	1613	1690
77	1193	1260	1329	1400	1472	1547	1623	1702
78	1200	1268	1337	1409	1482	1557	1634	1713
79	1208	1276	1346	1418	1491	1567	1644	1723
80	1216	1284	1354	1427	1501	1577	1655	1734

Outlet Nozzle Coefficient = 0.90

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TABLE A

DISCHARGE TABLE FOR CIRCULAR OUTLETS
(Outlet pressure measured by pitot gauge)

Outlet/Pitot Pressure (psi)	Outlet Diameter in Inches (gpm)							
	2-1/4"	2-3/16"	2-3/8"	2-7/16"	2-1/2"	2-9/16"	2-5/8"	2-11/16"
81	1223	1292	1363	1436	1510	1587	1665	1745
82	1231	1300	1371	1444	1519	1596	1675	1756
83	1238	1308	1380	1453	1529	1606	1685	1767
84	1246	1316	1388	1462	1538	1616	1695	1777
85	1253	1324	1396	1471	1547	1625	1706	1788
86	1260	1331	1404	1479	1556	1635	1716	1798
87	1268	1339	1412	1488	1565	1644	1725	1809
88	1275	1347	1421	1496	1574	1654	1735	1819
89	1282	1354	1429	1505	1583	1663	1745	1829
90	1289	1362	1437	1513	1592	1672	1755	1840
91	1297	1370	1445	1522	1601	1682	1765	1850
92	1304	1377	1453	1530	1609	1691	1774	1860
93	1311	1385	1460	1538	1618	1700	1784	1870
94	1318	1392	1468	1546	1627	1709	1794	1880
95	1325	1399	1476	1555	1635	1718	1803	1890
96	1332	1407	1484	1563	1644	1727	1813	1900
97	1339	1414	1491	1571	1653	1736	1822	1910
98	1345	1421	1499	1579	1661	1745	1831	1920
99	1352	1428	1507	1587	1670	1754	1841	1929
100	1359	1436	1514	1595	1678	1763	1850	1939
101	1366	1443	1522	1603	1686	1772	1859	1949
102	1373	1450	1529	1611	1695	1780	1868	1958
103	1379	1457	1537	1619	1703	1789	1877	1968
104	1386	1464	1544	1627	1711	1798	1887	1977
105	1393	1471	1552	1634	1719	1806	1896	1987
106	1399	1478	1559	1642	1728	1815	1905	1996
107	1406	1485	1566	1650	1736	1824	1914	2006
108	1412	1492	1574	1658	1744	1832	1922	2015
109	1419	1499	1581	1665	1752	1841	1931	2024
110	1425	1506	1588	1673	1760	1849	1940	2034
111	1432	1513	1595	1681	1768	1857	1949	2043
112	1438	1519	1603	1688	1776	1866	1958	2052
113	1445	1526	1610	1696	1784	1874	1966	2061
114	1451	1533	1617	1703	1792	1882	1975	2070
115	1458	1540	1624	1711	1799	1890	1984	2079
116	1464	1546	1631	1718	1807	1899	1992	2088
117	1470	1553	1638	1725	1815	1907	2001	2097
118	1476	1560	1645	1733	1823	1915	2010	2106
119	1483	1566	1652	1740	1830	1923	2018	2115
120	1489	1573	1659	1747	1838	1931	2026	2124

Outlet Nozzle Coefficient = 0.90

TABLE A

DISCHARGE TABLE FOR CIRCULAR OUTLETS
(Outlet pressure measured by pitot gauge)

Outlet/Pitot Pressure (psi)	Outlet Diameter in Inches 2-1/4"	2-3/16"	2-3/8"	2-7/16"	2-1/2"	2-9/16"	2-5/8"	2-11/16"
	(gpm)							
121	1495	1579	1666	1755	1846	1939	2035	2133
122	1501	1586	1673	1762	1853	1947	2043	2142
123	1507	1592	1679	1769	1861	1955	2052	2151
124	1513	1599	1686	1776	1868	1963	2060	2159
125	1520	1605	1693	1783	1876	1971	2068	2168
126	1526	1612	1700	1790	1883	1979	2077	2177
127	1532	1618	1707	1798	1891	1987	2085	2185
128	1538	1624	1713	1805	1898	1994	2093	2194
129	1544	1631	1720	1812	1906	2002	2101	2202
130	1550	1637	1727	1819	1913	2010	2109	2211
131	1556	1643	1733	1826	1920	2018	2117	2219
132	1562	1649	1740	1833	1928	2025	2125	2228
133	1567	1656	1746	1840	1935	2033	2133	2236
134	1573	1662	1753	1846	1942	2041	2141	2245
135	1579	1668	1760	1853	1950	2048	2149	2253
136	1585	1674	1766	1860	1957	2056	2157	2261
137	1591	1680	1772	1867	1964	2063	2165	2270
138	1597	1687	1779	1874	1971	2071	2173	2278
139	1602	1693	1785	1881	1978	2078	2181	2286
140	1608	1699	1792	1887	1985	2086	2189	2294
141	1614	1705	1798	1894	1992	2093	2197	2303
142	1620	1711	1805	1901	1999	2101	2204	2311
143	1625	1717	1811	1907	2007	2108	2212	2319
144	1631	1723	1817	1914	2014	2115	2220	2327
145	1637	1729	1824	1921	2021	2123	2228	2335
146	1642	1735	1830	1927	2027	2130	2235	2343
147	1648	1741	1836	1934	2034	2137	2243	2351
148	1653	1747	1842	1941	2041	2145	2251	2359
149	1659	1752	1848	1947	2048	2152	2258	2367
150	1665	1758	1855	1954	2055	2159	2266	2375
151	1670	1764	1861	1960	2062	2166	2273	2383
152	1676	1770	1867	1967	2069	2173	2281	2391
153	1681	1776	1873	1973	2075	2181	2288	2398
154	1687	1782	1879	1979	2082	2188	2296	2406
155	1692	1787	1885	1986	2089	2195	2303	2414
156	1698	1793	1891	1992	2096	2202	2311	2422
157	1703	1799	1897	1999	2102	2209	2318	2430
158	1708	1805	1903	2005	2109	2216	2325	2437
159	1714	1810	1910	2011	2116	2223	2333	2445
160	1719	1816	1916	2018	2122	2230	2340	2453

Outlet Nozzle Coefficient = 0.90

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FORMULAS

Use the following formula to calculate the "observed" or measured flow rate based on the pitot measurement:

$$Q_f = 29.83\ d^2 C\sqrt{P_o} \qquad (1)$$

Where:

Q_f	=	measured flow rate (gpm)
d	=	inside diameter of flow outlet or stream diameter (inches)
P_o	=	pitot measurement (psi)
C	=	coefficient of discharge*

* Use the typical value of 0.90 for the coefficient of discharge.

Sample calculation:

P_o	=	Pitot measured in the field	=	35 psi
C	=	coefficient of discharge	=	0.90
d	=	inside diameter of flow	=	2.5 inches

$$Q_f = 29.83 \times 2.5^2 \times 0.90 \times \sqrt{P_o}$$

$$= 167.8 \times \sqrt{35}$$

$$= 167.8 \times 5.9$$

$= 992.7$ or 993 gpm (see Table A for comparison)

TABLE B
Typical Discharge Types for Buildings that Require Testing by the California State Fire Marshal

Table 5.1 Summary of Sprinkler System Inspection, Testing, and Maintenance

Item	Activity	Frequency	Reference
Gauges (dry, preaction, and deluge systems)	Inspection	~~Weekly/monthly~~ Quarterly	5.2.4.2, 5.2.4.3
Control valves	Inspection	~~Weekly/monthly~~ Quarterly	Table 12.1
Alarm devices	Inspection	Quarterly	5.2.6
Gauges (wet pipe systems)	Inspection	~~Monthly~~ Quarterly	5.2.4.1
Hydraulic nameplate	Inspection	Quarterly	5.2.7
Buildings	Inspection	Annually (prior to freezing weather)	5.2.5
Hanger/seismic bracing	Inspection	Annually	5.2.3
Hanger/seismic bracing in accessible concealed spaces	Inspection	5 Years	5.2.3.3
Pipe and fittings	Inspection	Annually	5.2.2
Pipe and fittings in accessible concealed spaces	Inspection	5 Years	5.2.2.3
Sprinklers	Inspection	~~Annually~~ Quarterly	5.2.1
Sprinklers in accessible concealed spaces	Inspection	5 Years	5.2.1.1.4
Spare sprinklers	Inspection	~~Annually~~ Quarterly	5.2.1.3
Fire department connections	Inspection	Quarterly	Table 12.1
Valves (all types)	Inspection		Table 12.1
Alarm devices	Test	~~Quarterly/semiannually~~ Annually	5.3.3
Main drain	Test	Annually	Table 12.1
Antifreeze solution	Test	Annually	5.3.4
Gauges	Test	5 years	5.3.2
Sprinklers — extra-high temperature	Test	5 years	5.3.1.1.1.3
Sprinklers — fast response	Test	At 20 years and every 10 years thereafter	5.3.1.1.1.2
Sprinklers	Test	At 50 years and every 10 years thereafter	5.3.1.1.1
Valves (all types)	Maintenance	Annually or as needed	Table 12.1
Obstruction investigation	Maintenance	5 years or as needed	13.2.1, 13.2.2
Low point drains (dry pipe system)	Maintenance	Annually prior to freezing and as needed	12.4.4.3.3

Table 6.1 Summary of Standpipe and Hose Systems Inspection, Testing, and Maintenance

Item	Activity	Frequency	Reference
Control valves	Inspection	~~Weekly/monthly~~ Quarterly	Table 12.1
Pressure regulating devices	Inspection	Quarterly	Table 12.1
Piping	Inspection	~~Quarterly~~ Semi-Annually	6.2.1
Hose connections	Inspection	~~Quarterly~~ Semi-Annually	Table 12.1
Cabinet	Inspection	~~Annually~~ Semi-Annually	NFPA 1962
Hose	Inspection	~~Annually~~ Semi-Annually	NFPA 1962
Hose storage device	Inspection	~~Annually~~ Semi-Annually	NFPA 1962
Alarm device	Test	~~Quarterly~~ Annually	Table 12.1
Hose nozzle	Test	Annually	NFPA 1962
Hose storage device	Test	~~Annually~~ 5 years	NFPA 1962
Hose	Test	5 years/3 years	NFPA 1962
Pressure control valve	Test	5 years	Table 12.1
Pressure reducing valve	Test	5 years	Table 12.1
Hydrostatic test	Test	5 years	6.3.2
Flow test	Test	5 years	6.3.1
Main drain test	Test	Annually	Table 12.1
Hose connections	Maintenance	Annually	Table 6.2.2
Valves (all types)	Maintenance	Annually/as needed	Table 12.1

NOTE: — Strikeout items are not applicable in California
Shaded (screened) items are California amendments

Table 7.1 Summary of Private Fire Service Main Inspection, Testing, and Maintenance

Item	Activity	Frequency	Reference
Hose houses	Inspection	Quarterly	7.2.2.7
Hydrants (dry barrel and wall)	Inspection	Annually and after each operation	7.2.2.4
Monitor nozzles	Inspection	Semiannually	7.2.2.6
Hydrants (wet barrel)	Inspection	Annually and after each operation	7.2.2.5
Mainline strainers	Inspection	Annually and after each significant flow	7.2.2.3
Piping (exposed)	Inspection	Annually	7.2.2.1
Piping (underground)	Inspection	See 7.2.2.2	7.2.2.2
Monitor nozzles	Test	Flow annually (range and operation)	7.3.3
Hydrants	Test	Flow annually	7.3.2
Piping (exposed and underground)	Flow test	5 years	7.3.1
Mainline strainers	Maintenance	Annually and after each operation	7.4.2
Hose houses	Maintenance	Annually	7.4.5
Hydrants	Maintenance	Annually	7.4.3
Monitor nozzles	Maintenance	Annually	7.4.4

Table 8.1 Summary of Fire Pump Inspection, Testing, and Maintenance

Item	Activity	Frequency	Reference
Pump house, heating ventilating louvers	Inspection	Weekly	8.2.2(1)
Fire pump system	Inspection	Weekly	8.2.2(2)
Pump operation			
No-flow condition	Test	Weekly	8.3.1
Flow condition	Test	Annually	8.3.3.1
Hydraulic	Maintenance	Annually	8.5
Mechanical transmission	Maintenance	Annually	8.5
Electrical system	Maintenance	Varies	8.5
Controller, various components	Maintenance	Varies	8.5
Motor	Maintenance	Annually	8.5
Diesel engine system, various components	Maintenance	Varies	8.5

Table 9.1 Summary of Water Storage Tank Inspection, Testing, and Maintenance

Item	Activity	Frequency	Reference
Condition of water in tank	Inspection	Monthly/quarterly*	9.2.1
Water temperature	Inspection	Daily/weekly*	9.2.4
Heating system	Inspection	Daily/weekly*	9.2.6.6
Control valves	Inspection	~~Weekly/monthly~~ Quarterly	Table 12.1
Water — level	Inspection	Monthly/quarterly	9.2.1
Air pressure	Inspection	Monthly/quarterly	9.2.2
Tank — exterior	Inspection	Quarterly	9.2.5.1
Support structure	Inspection	Quarterly	9.2.5.1
Catwalks and ladders	Inspection	Quarterly	9.2.5.1
Surrounding area	Inspection	Quarterly	9.2.5.2
Hoops and grillage	Inspection	Annually	9.2.5.4
Painted/coated surfaces	Inspection	Annually	9.2.5.5
Expansion joints	Inspection	Annually	9.2.5.3
Interior	Inspection	5 years/3 years	9.2.6
Check valves	Inspection	5 years	Table 12.1
Temperature alarms	Test	Monthly*	9.2.4.2, 9.2.4.3
High temperature limit switches	Test	Monthly*	9.3.4
Water level alarms	Test	Semiannually	9.3.5
Level indicators	Test	5 years	9.3.1
Pressure gauges	Test	5 years	9.3.6
Automatic Filling Device	Test	5 years	9.3.7
Water level	Maintenance	—	9.4.1
Drain silt	Maintenance	Semiannually	9.4.5
Control valves	Maintenance	Annually	Table 12.1
Embankment-supported coated fabric (ESCF)	Maintenance	—	9.4.6
Check valves	Maintenance	—	12.4.2.2

*Cold weather/heating season only.

NOTE: — Strikeout items are not applicable in California
Shaded (screened) items are California amendments

Table 11.1 Summary of Foam-Water Sprinkler System Inspection, Testing, and Maintenance			
Item	**Activity**	**Frequency**	**Reference**
Manual actuation device(s)	Test	Annually	11.3.5
Water supply flow test	Test	See Chapter	4 11.2.6
Discharge device obstruction	Test	Annually	11.3.3.6

Table 12.1 Summary of Valves, Valve Components, and Trim Inspection, Testing, and Maintenance			
Item	**Activity**	**Frequency**	**Reference**
Main Drains	Test	Annually	12.2.6, 12.2.6.1, 12.3.3.4
Water-Flow Alarms	Test	Quarterly / Annually	12.2.7
Full flow	Test	Annually	12.4.3.2.2
Pressure Reducing and Relief Valves			
Sprinkler systems	Test	5 years	12.5.1.2
Circulation relief	Test	Annually	12.5.6.1.2
Pressure relief valves	Test	Annually	12.5.6.2.2
Backflow Prevention Assemblies	Test	Annually	12.6.2
Fire Department Connection	Test	5 years	12.7.4

Each table reprinted with the permission of the NFPA
From NFPA 25, 2006 California Edition

Appendix C

Record & Notification Form for Water-Based Fire Protection Systems Discharges

Record & Notification Sample Form for Water-Based Fire Protection Systems Discharges

Total gallons discharged:
>10,000 gallons – Please fill out form completely.
Between >1,500 and 10,000 gallons – Please fill out Part A only.

PART A

Name of Discharger:______________________________

Location of Discharge:______________________________

Date of Discharge:______________________________

Time Frame of Discharge: (Begin)________(End)________

Duration of Discharge (Minutes)______________________

Discharge Flow Rate (gpm)__________________________

Total Gallons Discharged____________________________

Dechlorination Chemicals Used:______________________

Chlorine Residual Concentration (After Dechlorination, in mg/l)______________

Location of Monitoring__________________________________

Time of Monitoring____________________________________

Description of Sediment Controls Used:______________________________

____

____

____

PART B

Date of Notification

____

Method of Notification

____

Who was Notified

____

Note: Information is required when notifying MS4

Appendix D
Pictures of Sediment Control Equipment

Examples of Sediment Control Equipment

Wattle and Municipal Sewer Protection

Typical Dechlorinator with De-Chlorination Tablet

Typical Sandbag

Gravel Bag

Mats and Wattle Erosion Protection

Synthetic and Straw Booms

These photos were obtained from various public websites

Examples of Sediment Control Equipment

Silt Fence

Barricade Utilizing Silt Fence and Hay Bales

Utilization of Hose to Apply Groundwork Protection

Filter Bag

Filter Bag with Sandbags Protecting Municipal Sewer

These photos were obtained from various public websites

Appendix E
Awareness Course Outline

Water Discharge for Fire Protection Systems
Awareness Level Training Course Outline

Course Objectives: To provide the student with an awareness of:

a. The Water-Based Fire Protection Systems Discharge Best Management Practices during testing, draining, and maintenance of these systems.
b. The records, forms, and notification procedures necessary for compliance with federal, state, regional, and local, water discharge laws and, regulations.
c. Safety considerations, testing procedures, control equipment, and drain inlet protection.
d. An understanding of the need to identify the volume/quantity of water discharged during testing and maintenance procedures.
e. The reporting thresholds which reflect the different levels of notifications and/or protocols.
f. The various federal, state, regional, and local agencies assigned the role of enforcement.

Course Content (2-1/2-hours to 3-hours)

1-1 **Orientation and Administration**

1-1.1 – Introduction of Instructor(s)
1-1.2 – Overview of Student Manual/Handouts
1-1.2 – Self Introductions

1-2 **Water Discharge for Fire Protection Task Force**

1-2.1 – Brief History
- 1-2.1.1 – Scope Goals and Objectives
- 1-2.1.2 - Timeline
- 1-2.1.3 – Development of the BMP
- 1-2.1.4 – Guidelines
- 1-2.1.5 – Awareness Training

2-1 **Overview of Best Management Practices**

2-1.1 – Typical Activities Associated with Water-based Fire Protection Systems
- 2-1.1.1 – Pre-construction Flow Testing
- 2-1.1.2 – Construction Testing and Draining
- 2-1.1.3 – Additions, Alterations and Modifications to Existing Systems

2-1.1.4 – Periodic Inspection, Testing, and Maintenance
2.1.1.4.1 – Title 19 California Code of Regulations (CCR) and NFPA 25 2006 (CA Edition)
2-1.2 – Emergency Repairs on Water-based Fire Protection Systems
2.1.2.1 – Repairs following a fire/explosion
2-1.2.2 – Repairs following an earthquake
2-1.2.3 – Repairs following a structural failure
2-1.3 – Discharges Associated with Water-based Fire Protection Systems
2-1.3.1 – General Engineering Contractor – A (CSLB)
2-1.3.1.1 – *Underground Piping only*
2-1.3.2 – Fire Protection Contractor – C-16 (CSLB)
2-1.3.2.1 – *Overhead and Underground Piping*
2-1.3.3 – Pipeline Contractor – C-34 (CSLB)
2-1.3.3.1 – *Underground Piping only*
2-1.3.4 – Plumbing Contractor – C-36 (CSLB)
2-1.3.4.1 – *Underground Piping only*
2-1.3.5 – Electrical Contractor – C-10 (CSLB)
2-1.3.5.1 – *Water-flow Fire Alarm only*
2-1.3.6 – SFM A-Licensed Concern/Company (CSFM)
2-1.3.6.1 – *Inspection, Testing and Maintenance only*

3-1 **Participants vs. Regulations**

3-1.1 Fire Protection Contractors (Discharges)
3-1.1.1 – Routine Discharge vs. Emergency Discharge
3-1.2 Fire Departments/Agencies
3-1.2.1 – Emergency Discharge vs. Non-emergency Discharge
3-1.3 Water Purveyors
3-1.3.1 – Routine Discharge vs. Emergency Discharge
3-1.4 Water Pollution Control Facilities
3-1.4.1 – Reclamation Procedures
3-1.5 MS4
3-1.5.1 – Municipal Separate Storm Sewer Systems
3-1.6 Regional Water Quality Control Boards
3-1.6.1 – Nine (9) Regional Areas/Boards
3-1.6.1.1 – Independent/Autonomous
3-1.7 State Water Resources Control Board
3-1.7.1 – Water Discharge Requirements (WDR)
3-1.7.1.1 – Title 23 CCR
3-1.8 U.S. Environmental Protection Agency (EPA)
3-1.8.1 – National Pollution Discharge Elimination System (NPDES)

4-1 Notification Requirements/Procedures

4-1.1 When to notify
4-1.2 Discharges < 1,500 gallons vs. > 1,500 gallons
4-1.3 Discharges > 10,000 gallons
4-1.4 Notification Method
- 4-1.4.1 – Telephone
- 4-1.4.2 – Fax Transmission
- 4-1.4.3 – E-mail
- 4-1.4.4 – In Person

5-1 Information Provided by Discharger for Notification

5-1.1 Recordkeeping
- 5-1.1 – Use of approved MS4 Forms (where available)

5-1.2 Method of Maintaining Records
- 5-1.2.1 – Bound Notebook
- 5-1.2.2 – Portable Electronic Device

5-1.3 Entries Recorded on Paper
- 5-1.3.1 – Black or Blue Ink

5-2 Discharger Records (information) for Discharges > 1,500 gallons

5-2.1 Name of Discharger
5-2.2 Date of notification (if greater than or equal to 10,000 gallons)
5-2.3 Method of notification (if greater than or equal to 10,000 gallons)
5-2.4 Location of discharge
5-2.5 The date of the discharge
5-2.6 The time of the beginning and end of the discharge
5-2.7 Duration of the discharge (minutes)
5-2.8 The flow rate (gallons per minute)
5-2.9 Total number of gallons discharged
5-2.10 Type of Dechlorination “chemicals” used
5-2.11 Concentration of chlorine measured after Dechlorination
5-2.12 Type of sediment controls used

5-3 Record Maintenance

5-3.1 Dischargers must maintain all records, including emergency discharges, for a minimum of five years and must have the records available for review by the MS4 upon request.

6-1 Volume Control during Emergency Repairs

6-1.1 During emergency discharges, the Dischargers will attempt to cease the release of water at the earliest opportunity while attempting to implement BMP to the extent feasible.
6-1.2 Exact flows, volumes, and length of discharge may not be available. In this situation, estimated values should be established and recorded.

6-2 Volume Determination

6-2.1 Water Discharge for Typical Fire Protection System Chart
6-2.1.1 - Flow and Volume Determination – Dischargers must determine the flow and volume discharge.
6-2.1.2 - By attaching a flow meter to the discharge opening and simply reading the displayed value.
6-2.1.3 - By measuring the pressure from a pressure gauge and then using the table or formulas found in **Appendix B**.

7-1 Safety Considerations

7-1.1 Sensitive Discharge Areas
7-1.2 Are road surface areas free of debris that may flow into the drain inlets or nearby creeks or ponds?
7-1.3 Are curbs or ditches adequate to handle the flow without creating a buildup of silt that cannot be contained and removed?
7-1.4 Will the water flow be free of contaminants such as oil, contaminated soils, etc.?
7-1.5 Will water movement during the flow test create erosion in any unpaved areas?
7-1.6 Flow for the shortest duration possible (e.g., MS4 may limit maximum flow rate to storm sewer where discharge flows could be very large)
7-1.7 Remove all debris from the curb and gutter before initiating flushing
7-1.8 Use Dechlorination when chlorine residual is a concern
7-1.8.1 – Many, if not most, inspection, testing and maintenance discharges will not have chlorine residual due to water age in the sprinkler system and thus will not need dechlorination. If CWS water is introduced during testing and is then discharged, it will require dechlorination.
7-1.9 Contain flow onsite whenever possible and/or direct the water flow to landscaped or green areas without causing damage or erosion.
7-1.10 When practicable, divert sprinkler system test flow to the sewer with the permission of the local sewer agency.

7-1.10.1 – The local sewer agency will likely set conditions so plan ahead.

7-1.11 A sensory checklist method (SCM) is completed for any partial or full discharge of vault, substructure or building fire system water to the street or storm drain system.

8-1 Dechlorination

8-1.1 The MS4 General NPDES Permit requires all waters discharged by Dischargers to be dechlorinated before entering a storm drain

8-2 Dechlorination Equipment

8-2.1 Mesh Bags

8-2.1.1 – These consist of a mesh bag into which large tablets of dry chemical are placed to react with residual chlorine to remove it

8-2.2 Flow Meter (optional)

8-2.3 Pressure Gauge

8-2.4 Pitot Tube

8-2.5 Dechlorination chemicals

8-2.6 Diffusers – These are mechanical devices which are placed on the end of the discharge point and which automatically mixes the discharged water with either dry or wet dechlorination chemicals. There are a wide variety of diffusers available.

8-2.7 Chlorine Residual Test Kits

8-3 Dechlorination Chemicals

8-3.1 Sodium Sulfite

8-3.2 Sodium Bisulfate

8-3.3 Sodium Thiosulfate

8-3.4 Ascorbic Acid

8-4 Chlorine Residual Test Kits

8-4.1 Test Strips

8-4.2 Color wheels

8-4.3 Electric Colorimeters

8-4.4 Sediment Control

8-4.5 Advantages and Limitation

9-1 Control Equipment

9-1.1 Wattles

9-1.2 Sand Bags
9-1.3 Gravel bags
9-1.4 Mats
9-1.5 Booms
9-1.6 Barricades
9-1.7 Silt Fencing
9-1.8 Hay Bales
9-1.9 Hoses
9-1.10 Filters

9-2 **Clean-up Equipment**

9-2.1 Debris Storage
9-2.2 Brooms
9-2.3 Shovels
9-2.4 Rakes
9-2.5 Vacuum truck or vacuum
9-2.6 Procedure
9-2.7 Sand or Gravel Bags
9-2.8 Dams
9-2.9 Number, Length and Height

9-3 **Drain Inlet Protection**

9-3.1 Determining Flow of Path
9-3.2 Alignment of Discharge Point
9-3.3 Preparing Flow Path for Discharge
9-3.4 Chlorination and Sediment Control
9-3.5 Adding Chlorination Concentration
9-3.6 Measuring Chlorination Concentration

10-1 **Historical Overview of Various Laws, Regulations, and Procedures**

10-1.1 Federal (Clean Water Act)
- 10-1.1.1 – Federal Water Pollution Control Act (1972)
  - 10-1.1.1.1 – National Pollutant Discharge Elimination System (NPDES)
  - 10-1.1.1.2 – Municipal and Industrial Storm Water Discharge (1987)

10-1.2 EPA Published Regulations (1990)
- 10-1.2.1 – Construction Projects encompassing five (5) or more acres
- 10-1.2.2 – EPA Regulation (Phase II Rule) lowered storm water discharge from five (5) to one (1) acre (1999)

10-1.3 State (Title 23 CCR – Waters)
- 10-1.3.1 – General Construction Storm Water Permits (1999)
  - 10-1.3.1.1 – Water Quality Order 99-08-DWQ
- 10-1.3.2 – SWRCB amended Order 99-08-DWQ to apply to sites as small as one (1) acre.
- 10-1.3.3 – Water Quality Order 2009 – 0009 - DWQ

10-1.4 – Porter-Cologne Water Quality Control Act

11-1 **Appendix Information**

12-1 **Conclusions**

12-1.1 Complete Class Evaluation Forms

13-1 **Questions and Answers**

Glossary of Terms

GLOSSARY OF TERMS

American Water Works Association (AWWA): An international non-profit professional organization dedicated to the improvement of water quality and supply. Founded in 1881, it has a membership of over 57,000 members worldwide as of 2010 and is the largest organization of water professionals in the world, representing more than 100 countries. AWWA members represent the full spectrum of the water community: water utilities, treatment plant operators and managers, scientists, environmentalists, manufacturers, academics, regulators, and others with an interest in water supply and public health. These members provide about 85 percent of the North American population with safe drinking water.

Best Management Practices (BMP): A compilation or an industry standard method to prevent or reduce the adverse effects of an action or process to the environment. Refers to those practices that have produced outstanding results in another situation and that could be adapted for our situation.

Clean Water Act (CWA): This is the primary federal law in the United States governing water pollution. Commonly abbreviated as the CWA, the act established the goals of eliminating releases of high amounts of toxic substances into water, eliminating additional water pollution by 1985, and ensuring that surface waters would meet standards necessary for human sports and recreation by 1983. The principal body of law currently in effect is based on the Federal Water Pollution Control Amendments of 1972, which significantly expanded and strengthened earlier legislation. Major amendments were enacted in the Clean Water Act of 1977 and the Water Quality Act of 1987.

Community Water Systems (CWS): A central system, owned, operated and maintained by a private corporation or a non-profit property owners association or city, county or water agency or district.

Dechlorination: A procedure that addresses chlorine residual in the discharged water. It is accomplished by adding an environmentally safe dechlorination chemical to the discharge flow to neutralize the chlorine residual. Using dechlorination in combination with the natural demand for chlorine, discharges entering the storm drain inlet should have negligible or non-detectable chlorine residual. Dechlorination can also be achieved by aeration of the discharged water through the use of a diffuser and by flowing along the ground a minimum distance to remove the chlorine.

Discharger: The person or company that caused non-storm water discharges water into the storm drain system.

A-Licensed Concern (company, firm, or individual): A license issued by the CSFM which is engaged in the business of servicing automatic fire extinguishing systems. This license is divided into four separate categories:

a. Type 1 – Fire Sprinkler Systems
b. Type 2 – Engineered and Pre-engineered Fixed Extinguishing Systems
c. Type 3 – Standpipe Systems
d. Type L – Limited to public or private entities that are not engaged in the business of performing testing and maintenance of wet fire extinguishing systems and which only perform annual testing and maintenance of wet pipe sprinkler systems, standpipe systems, private fire service mains, and weekly fire pump tests in structures or property owned or leased by that public or private

A-Classification Contractor – General Engineering Contractor: A license issued by the CSLB. The "A-General Engineering Contractor" is a contractor whose principal contracting business is in connection with fixed works requiring specialized engineering knowledge and skill, including the following divisions or subjects: irrigation, drainage, water power, water supply, flood control, inland waterways, harbors, docks, and wharves, shipyards and ports, dams and hydroelectric projects, levees, river control and reclamation work, railroads, highways, streets and roads, tunnels, airports, and airways, sewers and sewage disposal plants and systems, waste reduction plants, bridges, overpasses, underpasses, and other similar works, pipelines and other systems for the transmission of petroleum and other liquids or gaseous substances, parks, playgrounds and other recreational works, refineries, chemical plants and similar industrial plants requiring specialized engineering knowledge and skill, powerhouses, power plants and other utility plants and installations, mines and metallurgical plants, land leveling and earthmoving projects, excavating, grading, trenching, paving and surfacing work and cement and concrete work in conjunction with the above mentioned fixed works (California Business and Professions [B&P] Code, Section 7056).

C-10 License – Electrical Contractor: A specialty contractor classification license issued by the CSLB that performs their trade using the art, experience, science and skill necessary to satisfactorily organize, administer, construct and complete projects under their classification in accordance with the standards of their trade. An electrical contractor places, installs, erects or connects any electrical wiring, fixtures, appliances, apparatus, raceways, conduits, solar photovoltaic cells or any part thereof, which generates, transmits, transform or utilize electrical energy in any form.

C-16 License – Fire Protection Contractor: A specialty contractor classification license issued by the CSLB that performs their trade using the art, experience, science and skill necessary to satisfactorily organize, administer, construct and complete projects under their classification in accordance with the standards of their trade. A fire protection contractor (C-16) lays out, fabricates and installs all types of fire protection systems including all the equipment associated with these systems, excluding electric alarm systems (B&P Code, Sections 7055(c) and 832.16).

C-34 License – Pipeline Contractor: A specialty contractor classification license issued by the CSLB that performs their trade using the art, experience, science and skill necessary to satisfactorily organize, administer, construct and complete projects under their classification in accordance with the standards of their trade.

A pipeline contractor fabricates and installs pipelines for the conveyance of fluids, such as water, gas, or petroleum, or for the containment or protection of any other material, including the application of protective coatings or systems and the trenching, boring, shoring, backfilling, compacting, paving and surfacing necessary to complete the installation of such pipelines (B&P Code, Sections 7055(c) and 832.34).

C-36 License – Plumbing Contractor: A specialty contractor classification license issued by the CSLB that performs their trade using the art, experience, science and skill necessary to satisfactorily organize, administer, construct and complete projects under their classification in accordance with the standards of their trade. A plumbing contractor provides a means for a supply or safe water, ample in volume and of suitable temperature for the purpose intended and the proper disposal of fluid waste from the premises in all structures and fixed works. This classification includes but is not limited to:

a. Complete removal of waste from the premises or the construction and connection of onsite waste disposal systems;
b. Piping, storage tanks and venting for a safe and adequate supply of gases and liquids for any purpose, including

vacuum, compressed air and gases for medical, dental, commercial and industrial uses;

c. All gas appliances, flues and gas connections for all systems including suspended space heating units. This does not include forced warm air units;
d. Water and gas piping from the property owner's side of the utility meter to the structure or fixed works;
e. Installation of any type of equipment to heat water, or fluids, to a temperature suitable for the purposes listed in this section, including the installation of solar equipment for these purposes; and
f. The maintenance and replacement of all items described above and all health and safety devices such as, but not limited to, gas earthquake valves, gas control valves, backflow preventers, water conditioning equipment and regulating valves (B&P Code, Sections 7055(c) and 832.36).

Emergency Discharges: Non-routine activities where discharges are the result of unintended releases due to accidents or disasters not under the control of the Discharger. These activities may occur at anytime. Examples of emergency discharges include sheared private onsite fire hydrants, broken sprinklers and/or piping.

Environmentally Sensitive Area (ESA): Areas in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would easily be disturbed or degraded by human activities and developments (California Public Resources Code, Section 30107.5). ESAs subject to urban runoff requirements include but are not limited to all CWA section 303(d) impaired water bodies, areas designated as "State Water Quality Protection Areas," inclusive of "Areas of Special Biological Significance" by the SWRCB (Ocean Plan), water bodies designated with the RARE beneficial use by the RWQCBs (Basin Plans), and any other equivalent environmentally sensitive areas which the permittees have identified.

Municipal Separate Storm Sewer System Operator (MS4): The operators of storm drainage systems and are usually municipalities. Under Phase I of the NPDES Storm Water program, MS4 with a service population greater than 100,000 are required to have an NPDES MS4 permit for their storm water discharges. Phase II of the NPDES Storm Water program was promulgated on February 7, 2000, and addresses MS4 with populations under 100,000.

National Fire Protection Association (NFPA): The National Fire Protection Association (NFPA) is an international non-profit organization established in 1896. The company's mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA is responsible for 300 codes and standards that are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation in the United States, as well as many other countries. Its more than 200 technical code- and standard- development committees are comprised of over 6,000 volunteer seats. Volunteers vote on proposals and revisions in a process that is accredited by the American National Standards Institute (ANSI).

a. NFPA-13 – Standard for the Installation of Sprinkler Systems, 2010 Edition.
b. NFPA-13R – Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, 2010 Edition.
c. NFPA-13D – Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition.
d. NFPA-14 – Standard for the Installation of Standpipe and Hose Systems, 2007 Edition.
e. NFPA-15 – Standard for Water Spray Fixed Systems for Fire Protection, 2007 Edition.
f. NFPA-16 – Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems, 2007 Edition.
g. NFPA-20 – Standard for the Installation of Stationary Pumps for Fire Protection, 2007 Edition.
h. NFPA-22 – Standard for Water Tanks for Private Fire Protection, 2003 Edition.
i. NFPA-24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances, 2010 Edition.
j. NFPA-25 – Standard for the Installation of Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems. *Special Note:* The CSFM has adopted and amended the 2002 Edition of NFPA-25 and published the "NFPA-25 2006 California Edition."

National Pollution Discharge Elimination System (NPDES): As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or human-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal and other facilities must obtain permits if their discharges go directly to surface waters.

Permeable Surface: A surface that will allow water to seep into it.

Porter-Cologne Water Quality Control Act: In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance and restore the quality of the State's water resources. The Act established the State Water Resources Control Board and nine Regional Water Quality Control Boards as the principal state agencies with the responsibility for controlling water quality in California. Under the Act, water quality policy is established, water quality standards are enforced for both surface and ground water, and the discharges of pollutants from point and non-point sources are regulated. The Act authorizes the State Water Resources Control Board to establish water quality principles and guidelines for long range resource planning including ground water and surface water management programs and control and use of recycled water.

Potable Water: Water that is distributed through a community water system. Water from a fire sprinkler system is not considered potable water.

Receiving Body: A storm sewer system or storm drain system.

Regional Water Quality Control Boards (RWQCB): There are nine Regional Water Quality Control Boards (RWQCBs) statewide (Region 1-North Coast, 2-San Francisco Bay Area, 3-Central Coast, 4-Los Angeles, 5-Central Valley, 6-Lahontan, 7-Colorado River Basin, 8-Santa Ana, and 9-San Diego). The nine RWQCB are comprised of nine part-time Board members appointed by the Governor and confirmed by the senate. Regional boundaries are based on watersheds and water quality requirements on the unique differences in climate, topography, geology, and hydrology for each watershed. Each RWQCB makes critical decisions for its region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement action. **See Appendix C** for the RWQCB contact list.

Sediment: Solid particulate matter, both mineral and/or organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Sedimentation: Process of deposition of sediment carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material.

Sediment Control BMP: Describe practices that trap sediment after they have been eroded by rain, flowing water, or wind. They include those practices that intercept and slow or detain the flow of storm water to allow sediment to settle and be trapped (e.g., silt fence, sediment basin, fiber rolls, etc.).

Sensitive Discharge Areas: Areas where water discharges may present a potential problem or hazard to the natural environment (such as creeks).

Sensory Checklist Method: A BMP checklist of activities to be completed for any partial or full discharge of vault, substructure or building fire system water to the street or storm drain system. Primary sensory methods include visual observation and odor.

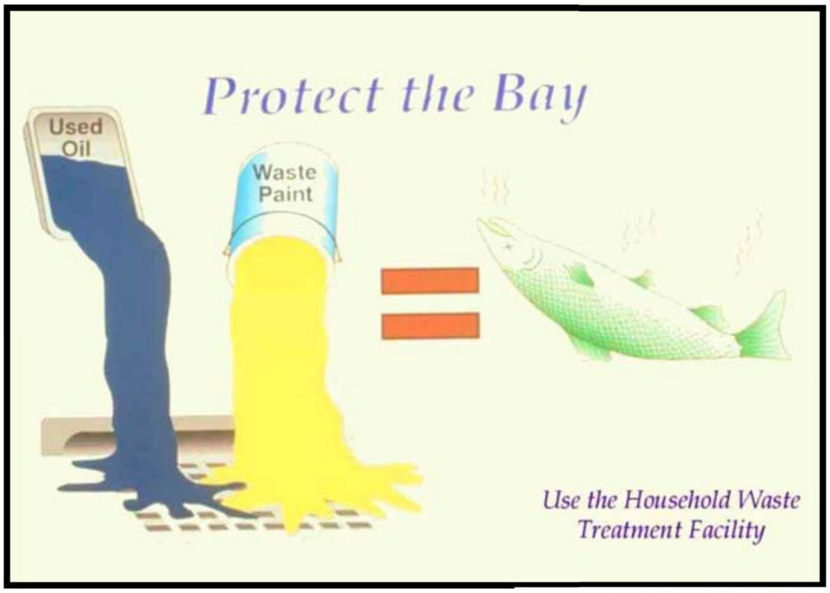
State Water Resources Control Board (SWRCB): Created by the State Legislature in 1967, the five-member Board protects water quality by setting statewide policy, coordinating and supporting the RWQCB efforts, and reviewing petitions that contest RWQCB actions. The SWRCB is also solely responsible for allocating surface water rights.

Storm Sewer System or Storm Drain System: The drainage system used to divert storm water runoff from its source to the final receiving water. Systems include but are not limited to: culverts, street gutters, swales, brooks, creeks, rivers, ponds, lakes, aqueducts and the ocean.

Water Discharge Mitigation: The management of erosion, debris, and sediment during the discharge of water through the use of BMP.

Waters of the State (California): Any surface water or groundwater, including saline waters, that is within the boundaries of the state" (California Water Code, Section 13050(e)); broadly construed to include all waters within the state's boundaries, whether private or public, including waters in both natural and artificial channels.

Non-Stormwater Discharges SC-10



Graphic by: Margie Winter

Objectives

- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Non-stormwater discharges are those flows that do not consist entirely of stormwater. For municipalities non-stormwater discharges present themselves in two situations. One is from fixed facilities owned and/or operated by the municipality. The other situation is non-stormwater discharges that are discovered during the normal operation of a field program. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include car washing, and surface cleaning. However, there are certain non-stormwater discharges that pose environmental concern. These discharges may originate from illegal dumping or from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges (which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances (such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants) into storm drains. The ultimate goal is to effectively eliminate non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges.

Approach

The municipality must address non-stormwater discharges from its fixed facilities by assessing the types of non-stormwater discharges and implementing BMPs for the discharges determined to pose environmental concern. For field programs

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the field staff must be trained to now what to look for regarding non-stormwater discharges and the procedures to follow in investigating the detected discharges.

Suggested Protocols

Fixed Facility

General

- Post "No Dumping" signs with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.

- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

- Landscaping and beautification efforts of hot spots might also discourage future dumping, as well as provide open space and increase property values.

- Lighting or barriers may also be needed to discourage future dumping.

Illicit Connections

- Locate discharges from the fixed facility drainage system to the municipal storm drain system through review of "as-built" piping schematics.

- Use techniques such as smoke testing, dye testing and television camera inspection (as noted below) to verify physical connections.

- Isolate problem areas and plug illicit discharge points.

Visual Inspection and Inventory

- Inventory and inspect each discharge point during dry weather.

- Keep in mind that drainage from a storm event can continue for several days following the end of a storm and groundwater may infiltrate the underground stormwater collection system. Also, non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- Review the "as-built" piping schematic as a way to determine if there are any connections to the stormwater collection system.

- Inspect the path of floor drains in older buildings.

Smoke Testing

- Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems.

- During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.

  Dye Testing

- A dye test can be performed by simply releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

TV Inspection of Storm Sewer

- TV Cameras can be employed to visually identify illicit connections to the fixed facility storm drain system.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.

- Clean up spills on paved surfaces with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.

- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.

- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.

- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

- See fact sheet SC-11 Spill Prevention, Control, and Clean Up.

Field Program

General

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially ones that involve more than one jurisdiction and those that are not classified as hazardous, which are often not responded to as effectively as they need to be.

- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

- See SC-74 Stormwater Drainage System Maintenance for additional information.

Field Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- During routine field program maintenance field staff should look for evidence of illegal discharges or illicit connection:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections and notify appropriate investigating agency.
- If trained, conduct field investigation of non-stormwater discharges to determine whether they pose a threat to water quality.

Recommended Complaint Investigation Equipment

- Field Screening Analysis
  - pH paper or meter
  - Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity
  - Sample jars
  - Sample collection pole
  - A tool to remove access hole covers
- Laboratory Analysis
  - Sample cooler
  - Ice
  - Sample jars and labels
  - Chain of custody forms.
- Documentation
  - Camera
  - Notebook
  - Pens
  - Notice of Violation forms

- Educational materials

Reporting

- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any onsite drainage points observed.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.

Enforcement

- Educate the responsible party if identified on the impacts of their actions, explain the stormwater requirements, and provide information regarding Best Management Practices (BMP), as appropriate. Initiate follow-up and/or enforcement procedures.
- If an illegal discharge is traced to a commercial, residential or industrial source, conduct the following activities or coordinate the following activities with the appropriate agency:
  - Contact the responsible party to discuss methods of eliminating the non-stormwater discharge, including disposal options, recycling, and possible discharge to the sanitary sewer (if within POTW limits).
  - Provide information regarding BMPs to the responsible party, where appropriate.
  - Begin enforcement procedures, if appropriate.
  - Continue inspection and follow-up activities until the illicit discharge activity has ceased.
- If an illegal discharge is traced to a commercial or industrial activity, coordinate information on the discharge with the jurisdiction's commercial and industrial facility inspection program.

Training

- Train technical staff to identify and document illegal dumping incidents.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Train employees to identify non-stormwater discharges and report them to the appropriate departments.
- Train staff who have the authority to conduct surveillance and inspections, and write citations for those caught illegally dumping.

- Train municipal staff responsible for surveillance and inspection in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and federal OSHA 29 CFR 1910.146).
  - Procedural training (field screening, sampling, smoke/dye testing, TV inspection).
- Educate the identified responsible party on the impacts of his or her actions.

Spill Response and Prevention

- See SC-11 Spill Prevention Control and Clean Up

Other Considerations

- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The cost of fees for dumping at a proper waste disposal facility are often more than the fine for an illegal dumping offense, thereby discouraging people from complying with the law. The absence of routine or affordable pickup service for trash and recyclables in some communities also encourages illegal dumping. A lack of understanding regarding applicable laws or the inadequacy of existing laws may also contribute to the problem.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Many facilities do not have accurate, up-to-date schematic drawings.
- Can be difficult to locate illicit connections especially if there is groundwater infiltration.

Requirements

Costs

- Eliminating illicit connections can be expensive especially if structural modifications are required such re-plumbing cross connections under an existing slab.
- Minor cost to train field crews regarding the identification of non-stormwater discharges. The primary cost is for a fully integrated program to identify and eliminate illicit connections and illegal dumping. However, by combining with other municipal programs (i.e. pretreatment program) cost may be lowered.
- Municipal cost for containment and disposal may be borne by the discharger.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

What constitutes a "non-stormwater" discharge?

- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

Permit Requirements

- Current municipal NPDES permits require municipalities to effectively prohibit non-stormwater discharges unless authorized by a separate NPDES permit or allowed in accordance with the current NPDES permit conditions. Typically the current permits allow certain non-stormwater discharges in the storm drain system as long as the discharges are not significant sources of pollutants. In this context the following non-stormwater discharges are typically allowed:

  - Diverted stream flows;
  - Rising found waters;
  - Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
  - Uncontaminated pumped ground water;
  - Foundation drains;
  - Springs;
  - Water from crawl space pumps;
  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
  - Lawn watering.

Municipal facilities subject to industrial general permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Illegal Dumping

- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties

Outreach

One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people on the street who are aware of the problem and who have the tools to at least identify the incident, if not correct it. There we a number of ways of accomplishing this:

- Train municipal staff from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report the incidents.
- Deputize municipal staff who may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act (see below).
- Educate the public. As many as 3 out of 4 people do not understand that in most communities the storm drain does not go to the wastewater treatment plant. Unfortunately, with the heavy emphasis in recent years on public education about solid waste management, including recycling and household hazardous waste, the sewer system (both storm and sanitary) has been the likely recipient of cross-media transfers of waste.
- Provide the public with a mechanism for reporting incidents such as a hot line and/or door hanger (see below).
- Help areas where incidents occur more frequently set up environmental watch programs (like crime watch programs).
- Train volunteers to notice and report the presence and suspected source of an observed pollutant to the appropriate public agency.

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- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

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  - Water from crawl space pumps;
  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
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  - Individual residential car washing; and
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Storm Drain Stenciling

- Stencil storm drain inlets with a message to prohibit illegal dumpings, especially in areas with waste handling facilities.
- Encourage public reporting of improper waste disposal by a HOTLINE number stenciled onto the storm drain inlet.
- See Supplemental Information section of this fact sheet for further detail on stenciling program approach.

Oil Recycling

- Contract collection and hauling of used oil to a private licensed used oil hauler/recycler.
- Comply with all applicable state and federal regulations regarding storage, handling, and transport of petroleum products.
- Create procedures for collection such as; collection locations and schedule, acceptable containers, and maximum amounts accepted.
- The California Integrated Waste Management Board has a Recycling Hotline, (800) 553-2962, that provides information and recycling locations for used oil.

Household Hazardous Waste

- Provide household hazardous waste (HHW) collection facilities. Several types of collection approaches are available including permanent, periodic, or mobile centers, curbside collection, or a combination of these systems.

Training

- Train municipal employees and contractors in proper and consistent methods for waste disposal.
- Train municipal employees to recognize and report illegal dumping.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Federal Regulations (RCRA, SARA, CERCLA) and state regulations exist regarding the disposal of hazardous waste.
- Municipalities are required to have a used oil recycling element and a HHW element within their integrated waste management plan.
- Significant liability issues are involved with the collection, handling, and disposal of HHW.

Examples

The City of Palo Alto has developed a public participation program for reporting dumping violations. When a concerned citizen or public employee encounters evidence of illegal dumping, a door hanger (similar in format to hotel "Do Not Disturb" signs) is placed on the front doors in the neighborhood. The door hanger notes that a violation has occurred in the neighborhood, informs the reader why illegal dumping is a problem, and notes that illegal dumping carries a significant financial penalty. Information is also provided on what citizens can do as well as contact numbers for more information or to report a violation.

The Port of Long Beach has a state of the art database incorporating storm drain infrastructure, potential pollutant sources, facility management practices, and a pollutant tracking system.

The State Department of Fish and Game has a hotline for reporting violations called CalTIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).

The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program,
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program
(http://www.projectcleanwater.org)

Santa Clara Valley Urban Runoff Pollution Prevention Program
http://www.scvurppp-w2k.com/pdf%20documents/PS_ICID.PDF

BEST MANAGEMENT PRACTICES

Plan for

URBAN RUNOFF MANAGEMENT

PARTICIPATING RIVERSIDE COUNTY FIRE FIGHTING AGENCIES

City of Corona Fire Department
City of Hemet Fire Department
City of Norco Fire Department
City of Riverside Fire Department
County of Riverside Fire Department/CDF
Idyllwild Fire Protection District
Murrieta Fire Protection District

May 1, 2004

INTENT

The purpose of this plan is to provide Best Management Practices (BMPs) used by fire fighting agencies for urban runoff management. These BMPs are a requirement of the Riverside County Municipal Stormwater permit (section XI.B) adopted by the Santa Ana Regional Water Quality Control Board (SARWQCB). Riverside County is under the jurisdiction of the Colorado River Basin, San Diego, and Santa Ana Regional Water Quality Control Boards.

The Riverside County Stormwater Permittees in cooperation with the Riverside County Fire Agencies have developed fire department activities procedures to provide guidance to Prevention and Firefighting personnel for management of urban runoff. Guidance is provided in the form of recommended BMPs that are incorporated as part of the Drainage Area Management Plan (DAMP).

The BMPs, when followed, will minimize discharges of urban runoff to the municipal separate storm sewer system (MS4) associated with fire prevention, firefighting, fire training, emergency scene spills or discharges and fire facility maintenance activities.

PROCEDURE

<u>Fire Prevention Activities</u>

1. Fire Sprinkler Acceptance and Testing BMPs

   - Contain flows onsite whenever possible and/or direct the water flows to landscaped or green areas whenever possible and safe to do so without causing damage or erosion.
   - When practicable, divert sprinkler system flushing flows to the sewer, with the permission of the local sewer agency.
   - Conduct on non-rainy days.
   - Remove debris from the effected curb and gutter before initiating flushing.

2. Fire Hydrant Testing BMPs

   - Conduct on non-rainy days.
   - Conduct flows for the shortest duration possible.
   - Use a water diffuser as necessary.
   - Remove debris from the affected curb and gutter before initiating flushing.
   - Direct water flows to landscaped or green areas whenever possible and safe to do so without causing damage or erosion.

Non-emergency Firefighting Activities

1. Discharges Associated With Fire Training Activities

Training activities, which simulate emergency responses, must be performed in a manner that reduces or prevents discharges to the storm drain systems to the maximum extent practicable. In addition, when the elimination of discharges into the storm drain system is unavoidable (i.e. equipment failures), measures will be implemented to minimize impacts to water quality:

- Live and simulated fire training should be conducted, where feasible, in facilities where runoff controls protecting the storm drain system have been engineered and built into the facility.
- When conducting Maximum Capability Training (MCT) exercises, potable water sources may be used when runoff cannot be contained.
- Direct water flows to landscaped or green belt areas whenever possible.
- Survey the area prior to the training exercise to ensure that debris will not enter the storm drain system as a result of the flows generated during the drill.
- When practicable, divert flows to the sewer with the permission of the local sewer agency.
- Use fog streams or straight streams for short durations when practicable.
- Use lower gallon per minute (GPM) nozzle settings.
- Prevent discharge of foam or other additives to the storm drain system. If training activities involve the use of foam, block off all potentially affected storm drain inlets with plastic sheeting and sandbags or temporary berms.

2. Discharges Associated With Post-Emergency Fire Fighting Activities

The post-emergency rehabilitation and maintenance of response equipment must be performed in a manner that prevents discharges to the storm drain system whenever practicable and minimizes discharges to the storm drain system when elimination of discharges is unavoidable.

3. Discharges Associated with Activities Conducted at Fire Facilities

A. Vehicles and Equipment Washing and Cleaning

The following BMPs should be considered in order to prevent or reduce the discharge of pollutants to the storm drain system from vehicle and equipment washing and cleaning:

- Use methods of cleaning vehicles that employ the minimal use of water, such as wet chamois or non-water rinses, when applicable.
- Limit the use of all cleaning agents and when feasible only use water.
- Remove debris from any area or facility used for washing and/or cleaning vehicles.
- Prevent runoff from vehicle and equipment washing and cleaning from entering the storm drain system to the extent feasible by employing one of the following BMPs.

a. Direct water flows to landscaped or green areas or contain the water onsite and allow it to evaporate and infiltrate whenever safe to do so without causing damage or erosion.
b. Use designated wash areas (preferably covered and bermed) to contain and/or divert the wash water to the sewer either through the use of "wet-vac" or through a plumbed sanitary sewer connection.
c. Use self-contained water recycling systems.
d. Use off-site commercial washing and steam cleaning facilities.

- Prohibit all steam cleaning discharges from entering the storm drain system. Direct all steam cleaning discharges to the sanitary sewer.

B. Vehicle Fueling

The following BMPs should be considered in order to prevent or reduce the discharge of pollutants to the storm drain system when fueling fire fighting apparatus.

- Protect the fueling area from storm water by installing a canopy.
- Pave fueling area surfaces with Portland cement concrete (or other equivalent smooth impervious surface).
- Keep perimeter drains clear of debris at all times.
- Where a perimeter drain is not installed, install a berm or grade area to prevent run-on of storm water and spilled liquids.
- Use a dead-end sump to collect spills or install an oil-water separator.
- Utilize vapor recovery nozzles to help control drips as well as air pollution. Discourage "topping-off' of fuel tanks.
- Maintain a spill control kit at the site. Use absorbent materials on small spills and general cleaning rather than hosing down an area. Remove the absorbent materials promptly and dispose as hazardous waste.
- Keep site Stormwater Pollution Prevention Plan (SWPPP) current.

C. Vehicles and Equipment Maintenance and Repair

The following BMPs should be considered in order to prevent or reduce the discharge of pollutants to the storm drain system from vehicle and equipment maintenance and repair:

- Conduct vehicle and equipment maintenance in areas where precautions have been taken to prevent the entry of spills into the storm drain system.
- Use dry cleaning methods in maintenance and repair areas when practical.

D. Hose Washing and Cleaning

- Design future facilities used for washing and/or cleaning fire hoses to prevent wash water or other debris from entering the storm drain system without adequate treatment.
- Direct water flows to landscaped or green areas or contain the water onsite and allowing it to percolate through plant material, the landscape, or to evaporate completely, whenever safe to do so without causing damage or erosion.
- Use designated wash areas (preferably covered and bermed) to contain and/or divert the wash water to

the sanitary sewer either through the use of a "wet-vac" or through a plumbed sanitary sewer connection.
- Prevent wash water containing detergents, degreasers, or other contaminants from entering the storm drain system.
- When cleaning the wash area prevent discharge from entering the storm drain system. Utilize wet mop cleaning methods in small areas, when feasible.
- Use methods of cleaning fire hoses that employ the minimal use of water, such as high-pressure spray washers, when applicable.
- Consider the use of biodegradable cleaning agents.

E. Facility Maintenance

The following BMPs should be considered in order to prevent or reduce the discharge of pollutants to the storm drain system during facility maintenance:

- Use dry cleaning methods, such as sweeping, to clean impervious areas such as apparatus floors, driveways, patios, and walkways. Place sweepings and debris in receptacles for solid waste disposal.
- Maintain landscaped areas as required, limiting the introduction of leaves and landscape waste into the storm drain system.
- Monitor and maintain irrigation systems to minimize runoff.
- Maintain and repair structures in order to prevent the release of water, soils, or waste to the storm drain system.

F. Solid Waste and Hazardous Materials Storage Areas

The following BMPs should be considered in order to prevent or reduce the discharge of pollutants to the storm drain system from solid waste and in hazardous materials storage areas:

- Provide a canopy or roof for solid waste and hazardous materials storage areas;
- Provide secondary containment (i.e. a metal or plastic pan with a raised edge) for hazardous materials storage areas;
- Ensure waste containers and dumpsters are properly secured and sealed. Provide lids for all trash and solid waste receptacles. Keep lids closed to prevent contact with rainfall and to ensure containment of waste within the storage area.

Emergency Fire Fighting Activities

An "emergency" exists from alarm notification until, in the opinion of the incident commander, the emergency has concluded and emergency equipment is returned to the station. Discharges occurring during emergency fire fighting activities (i.e. flows necessary for the protection of life and property) do not require BMPs and are not prohibited under the storm water permits. However, when and where possible and practicable, and when not interfering with health and safety, implementation of all applicable BMPs described in this section should be considered.

1. Discharges Associated with Emergency Fire Fighting Activities

To the extent allowed by the circumstances at the scene and without compromising the health and safety of personnel or the public, emergency fire fighting activities should be performed in a manner that avoids or minimizes discharges to the storm drain system. BMPs that may be considered during emergency fire fighting activities include the following:

- If possible, avoid directing fire fighting flows directly on erodible surfaces if runoff will enter receiving waters or storm drains.
- If possible, apply fire-fighting flows so that runoff will flow over vegetated areas.

2. Discharges Associated with Hazardous Materials Spills

Fire departments within the County are participating agencies with specified responsibilities within their respective jurisdictions. Each department operates under a Hazardous Materials Area Plan that describes procedures for the allocation of resources and assigns tasks in time of a hazardous materials emergency. Fire department and safety personnel are trained to respond to hazardous material spills according to response protocols established by each department BMPs for hazardous materials emergencies that are set forth in the current response protocols for each department.

Spills, releases, and illegal discharges of pollutants to the receiving waters or to the storm drains shall be reported by the Discharger as required by all applicable state and federal laws. In addition, any such spills, releases, and illegal discharges, with the potential to endanger health, safety, or the environment, shall be reported by fire department staff to Riverside County Environmental Health Department. If safe to do so, necessary actions shall be taken to contain and minimize the spill, release, or illegal discharge.

IMPLEMENTATION STRATEGY

Education. Training and Outreach

1. Stormwater NPDES Training

Fire department personnel within Riverside County should receive annual education and training to increase staff awareness and understanding of stormwater pollution issues, BMPs, and their compliance obligations.

2. Best Management Practices (BMPs) Update

The Permittees will continue to work cooperatively with fire departments to identify, update, and provide guidance on the implementation BMPs, as appropriate, to reduce contaminants in discharges related to fire department agency activities to the maximum extent that is practicable.

PROGRAM ASSESSMENT AND REPORT

Program Effectiveness Assessment Strategy

The Permittees will assess the effectiveness of the program described in this plan annually, at minimum by implementing the following assessment procedures:

- Document all education and training activities conducted by Stormwater Program manager.
- Document fire department staff receiving educational materials and training.
- Inspect a selected number of fire facilities to assess compliance with recommended BMPs.
- Conduct assessment with fire department personnel for effectiveness of BMPs to obtain revision suggestions for practicality and effectiveness of BMPs.

Annual Report

Activities performed by the Permittees under this stormwater program element, results of any assessment, inspections, and any revisions made to this manual will be documented annually in the Permitees' Annual Report.

GLOSSARY

Best Management Practice (BMP)
Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practice to prevent or reduce the pollution of Waters of the U.S. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of MS4 permits, BMPs are typically used in place of numeric effluent limits.

National Pollutant Discharge Elimination System (NPDES)
Permits issued under Section 402(p) of the CWA for regulating discharge of pollutants to Waters of the U.S.

Annual Report
Pursuant to each NPDES MS4 permit issued by the Regional Board to the Permittees, there is a requirement that an Annual Report be filed with the Regional Board. The report to the Santa Ana RWQCB is due on or before each November 30th.

Permittees (in the SARWQCB permit area)
County of Riverside, Riverside County Flood Control and Water Conservation District, cities of Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Moreno Valley, Murrieta, Norco, Perris, Riverside, and San Jacinto.

Drainage Area Management Plan (DAMP)
The DAMP is a programmatic document developed by the Permittees and approved by the Executive officer that outlines the major programs and policies that the Permittees individually and/or collectively implement to manage Urban Runoff in the Permit Area.

Maximum Capability Training (MCT)
The MCT involves training exercises in which high water flows are generated to ensure operational readiness. Examples may include: Probation preparation and testing; Organized exercises that prepare or test the abilities of long term employees; Water flows into the storm drain are permissible when using potable water sources (hydrants or water tanks) and debris from the effected curb and gutter have been previously removed.

Municipal Separate Storm Sewer System (MS4)
As MS4 is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, natural drainage features or channels, modified natural channels, man-made channels, or storm drains): (I) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to Waters of the U.S.; (ii) designated or used for collecting conveying storm water; (iii) which is not a combined sewer; (iv) which is not part of the POTW as defined at 40 CFR 122.2.

RB-AR24357

U.S. Environmental Protection Agency

Region 9
Water Division
75 Hawthorne Street
San Francisco, CA 94105-3901

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) COMPLIANCE INSPECTION

City of El Segundo

INSPECTION REPORT

Inspection Date:
September 29, 2011

Report Date:
November 22, 2011

1.0 INTRODUCTION

On September 29, 2011, the U.S. Environmental Protection Agency's (EPA) contractor, PG Environmental, LLC, conducted an inspection of the City of El Segundo Municipal Separate Storm Sewer System (MS4) Program with assistance from Los Angeles Regional Water Quality Control Board (Water Board) staff (hereinafter, collectively, the Inspection Team).

1.1 Permit and Storm Water Management Plan

Discharges from the City of El Segundo (hereafter, the City or Permittee) MS4 are regulated under California State Water Resources Control Board (SWRCB) Order No. 01-182, National Pollutant Discharge Elimination System (NPDES), General Permit No. CAS004001, *Waste Discharge Requirements (WDRs) for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles, and Incorporated Cities Therein*, (hereinafter, the Permit), issued December 13, 2001, last amended April 14, 2011.

The Permit authorizes the City to discharge storm water runoff and certain non-storm water discharges from its MS4 to waters of the United States, under the Permit terms and conditions. Part 3 of the Permit requires the City to develop, implement, and enforce an effective storm water quality management program (SQMP) designed to reduce the discharge of pollutants from the regulated MS4 to the maximum extent practicable (MEP) and to protect water quality.

1.2 Purpose of Inspection

The purpose of the inspection was to obtain information that will assist EPA and the Water Board in assessing the City's compliance with the requirements of the Permit and associated SQMP, as well as the implementation status of the City's SWPPP. The photograph log is provided as Appendix A.

1.3 Program Areas Evaluated

The inspection included an evaluation of the Permittee's compliance with the Illicit Connection and Illicit Discharge Elimination Program (IC/ID) included in the Permit.

1.4 Inspection Process

The Inspection Team obtained its information through a series of interviews with representatives from the Public Works Department and Fire Department, along with a series of site visits, record reviews, and field verification activities. It should be noted that this inspection report does not attempt to comprehensively describe all aspects of the City's SQMP, fully document all lines of questioning conducted during personnel interviews, or document all the in-field verification activities conducted during site visits.

EPA contractor representatives presented their credentials at the opening meeting. The primary representatives involved in the inspection were the following:

City of El Segundo MS4 Inspection: September 29, 2011	
Public Works	Ron Fajardo, General Services Manager Ron Campbell, Sewer Crew Leader Stephanie Katsouleas, Public Works Director (via phone prior to and following on the on-site activities.
Fire Department	Steve Tsumura, Environmental Safety Manager
Regional Water Quality Control Board	Ivar Ridgeway, Senior Environmental Scientist Tracy Woods, Environmental Scientist
EPA Contractors	Wes Ganter, PG Environmental, LLC Katie Bradshaw, PG Environmental, LLC

2.0 PROGRAM EVALUATION RESULTS

This inspection report identifies program deficiencies, positive attributes, and additional observations and is not a formal finding of violation. Program deficiencies are areas of concern for successful program implementation. Positive attributes indicate a Permittee's overall progress in implementing the SQMP. The Inspection Team documented only positive attributes that were notable.

The Inspection Team did not evaluate all components of the permittee's Program. Therefore, the permittee should not consider the enclosed list of program deficiencies as a comprehensive evaluation of all of the individual program elements.

During the inspection, the Inspection Team obtained documentation and other supporting evidence regarding compliance with the Permit and associated SQMP. Photo documentation is provided in Appendix A.

Positive attributes indicate overall progress in implementing the Program.

Several positive attributes of the City's program were particularly notable:

1. The City had a dedicated staff position addressing Environmental Health and Safety housed in the City Fire Department. This staff member appeared to have the skills and authority to identify and provide immediate enforcement action against all observed illicit discharges. This authority included the ability to write on-the-spot citations with escalating fines. This citation had been used routinely in the past and records of completed illicit discharge incidents were maintained.
2. The City staff, as most notably highlighted by the City Public Works maintenance staff, appeared to have received appropriate storm water training, had a clear understanding of illicit connections and discharges, and appeared motivated to protect water quality.
3. The City had in place a permit process for discharges of permitted non-storm water discharges that specifically prohibits, including dechlorinated and debrominated swimming pool water and decorative fountain water, from being discharged into the storm drain system. All non-storm water discharges are to be directed to the sanitary sewer. In addition, the City has a prohibition against the draining of swimming pools and decorative fountains to the public right-of-way.
4. The City had been exploring ways to minimize the discharge from Pump Station 18 by holding more storm water runoff and allowing it to infiltrate into the ground. While this was not an engineered process, the City had been able to successfully increase the storage capacity of the storm water retention basin and indicated that they were able to retain the flow from a multi-day 2" rain event without a discharge.

Section 2.1 Illicit Discharge Detection and Elimination

Part 4.G of the Permit requires the City to develop, implement, and enforce an illicit connection and illicit discharge elimination program (IC/ID) program in accordance with the specific requirements at Part G (1)–(3) of the Permit. This was the focus area of the inspection.

Deficiency Noted:

2.1.1 The City identified that the role of the Fire Department in the illicit connection and illicit discharge elimination program was well established; however, there were no formal procedures in place for communicating illicit connections or illicit discharges among the different City departments (e.g., Public Works Department), or guidelines for maintaining records. The City reported that they did not see a reason to establish such procedures due to the very infrequent reporting or observation of illicit connections / discharges. However, the current process appeared to be based exclusively on the institutional knowledge of the current employees. The Inspection Team recommends that the City developed standard operating procedures for identifying and responding to illicit discharges.

Deficiency Noted:

2.1.2 During the inspection process the Inspection Team observed dry weather flows from one outfall to pump Station 18 and from two outfalls to pump Station 17. City staff indicated that the flows at Pump Stations 17 and 18 (refer to Appendix A, Photographs 1 and 2) were regularly present and that dry weather flows at pump Station 18 were "from the golf course" (refer to Appendix A, Photograph 3). Flows into the basin at Station 18 were said to infiltrate into the ground. The source of the flows to Pump Station 17 was unknown (refer to Appendix A, Photographs 4 and 5). At Station 17, when the elevation of the wet well reached a certain elevation, the pump(s) would automatically turn on and the flow would be lifted into the adjacent storm drain system and then be captured by the downstream diversion structures and directed to the sanitary sewer system. The Inspection Team requested pump run time records for Stations 16, 17, and 18 for the summer months of 2011 in order to determine the magnitude of these persistent dry weather flows. Exhibit 1 provides the City's response to this request.

From: "Fajardo, Ron" <RFajardo@elsegundo.org>
To: "Katsouleas, Stephanie" <skatsouleas@elsegundo.org>
Cc: "Busick, Gil" <GBusick@elsegundo.org>
Subject: Information requested during IDDE Inspection on September 29, 2011

Good Morning Stephanie,
Here is the information Gil and I were able to find regarding the Storm Water Stations.

The sump pump for Station #16 is connected to the telemetry system and we were able to get a print out of the runtime data between June and September of 2011. Based on the data in the attached file, the sump pump had a total of 17.8 hours of runtime during this period and is rated at 500 gpm.

The sump pump for Station #17 is not connected to the telemetry system, due to a limited number of inputs, and so we photocopied entries from the field log. Due to the limited amount of data, the field log shows a total of 25.2 hours between May 2, 2011 and October 3, 2011. Some of this runtime will be attributable to the storms in May, but we have no way of filtering it out at this point. The flow curves show the pump rated at 600 gpm.

The sump pump for Station #18 is also not connected to the telemetry system due to a limited number of inputs and so we used copies of the field log as well. The log shows 0.0 hours between March 20, 2011 and October 3, 2011. The flow curves show this pump rated at 800 gpm.

We have searched our records at the Maintenance Yard and Engineering but could not find any copy of the 2002 Smoke Testing Report. The only paperwork we could find was a copy of the original purchase order and the agreement.

Finally, Gil looked at his copy of the Storm Drain GIS map and did not find any unique ID numbers for the Storm Station outfalls.

Once you review this information, can you please forward it to Wes and the others? I hope I have answered the questions that they asked and please let me know if you should have any additional ones.

Thanks,
Ron

Ron Fajardo
General Services Manager
City of El Segundo
150 Illinois Street
El Segundo, CA 90245
(310) 524-2715

Exhibit 1. City of El Segundo Response to Inspection Team Data Request

Deficiency Noted:

2.1.3 It was unclear to the Inspection Team if sufficient efforts had been deployed by all parties to determine the adequacy of the diversion structure to handle dry and wet weather flows when Pump Station 17 pumps were active and discharging into the storm drain system. The downstream diversion structure (below Pump Station 17) is owned and operated by the County of Los Angeles. During wet weather the diversion is overtopped and flows are directed to the storm drain outfall at Imperial Avenue which discharges to Santa Monica Bay. City representatives stated that they believed the diversion structures were capable of diverting all of the dry weather flow but that the City did not have an active role in observing, maintaining, or assessing the adequacy of the diversion.

Deficiency Noted:

2.1.4 The City staff could not identify efforts or activities performed to identify the source of the dry weather flows with any certainty, and City staff could not provide information on actions performed by the City to monitor and perform visual inspections of the outfalls that discharge to Santa Monica Bay. As stated in Part 4.G.3.b of the Permit, "Permittees shall investigate illicit discharges as soon as practicable (during or immediately following containment and cleanup activities), and shall take enforcement action as appropriate."

City staff indicated that City-led sampling, monitoring, assessment, and documentation of the flows had not been conducted. It was noted that the County of Los Angeles does perform monitoring at each of the outfalls as part of the requirements established in the bacteria TMDL for Santa Monica Bay.

To adhere to this requirement, the City needs to take reasonable steps to identify the source(s) of these persistent dry weather flows and subsequently prohibit the discharge of all prohibited discharges, if any. Additionally, it is recommended that the City institute an outfall screening program that includes either visual or water-quality screening methods, or both. All outfalls should be assessed for dry weather flows and included in the ongoing screening program.

Section 2.2 Additional Observations

- The City appeared to have a GIS map of both the storm and sanitary sewer systems.
- The City has 4 dry weather storm water diversions within its jurisdiction that direct dry weather flows into the Los Angeles County sanitary sewer system.
- The City has 9 sanitary pump stations and 4 storm pump stations. The Inspection Team visited storm Pump Stations 16, 17, and 18 (refer to Appendix A, Photographs 1, 2, and 6). Stations 16 and 17 direct flows to the downstream dry weather diversions.
- The City has been modifying its operational practices at Station 18 to allow for the capture and subsequent infiltration of flows. It was stated that the pump start elevations had been increased from approximately 6 feet to their current elevation of 25 feet. This allowed the City to retain and infiltrate a storm event measuring approximately 2 inches in the winter of 2011. This practice has been implemented for various reasons including risk mitigation via reduction of discharges.
- There are 3 storm water outfalls to the Pacific Ocean. Grand Avenue (which was visited) (refer to Appendix A, Photograph 7), 28th Street Outfall, and Imperial Avenue outfall. There are no structural treatment controls in the public right-of-way, although the storm water catch basin for Station 18 is being used to store and infiltrate flows (refer to Appendix A, Photograph 3).
- The City does not have a program for routine visual or water quality screening of outfalls to the ocean or to the Pump Stations.
- Citizens are encouraged to call 911 to report illicit connections and illicit discharges.
- City program representatives where aware that residents and other concerned individuals can and do report illicit connection and illicit discharge incidents to the 1-888-CLEAN-LA program administered by the County. Rarely is the City contacted by the County in these instances and therefore the City is largely unaware of the County's efforts within their jurisdiction. City representatives indicated that would possibly benefit from obtaining this information.

Appendix A
Photograph Log

Photograph 1. **View facing east at Pump Station 17 and associated drainage conveyance channel.**

Photograph 2. **View of Pump Station 18 building.**

Photograph 3. **View facing southwest at basin and inlet to Pump Station 18 shown in Photograph 2. Note the City indicated that flows to this basin were "from the golf course."**

Photograph 4. **View of inlet to drainage conveyance channel which flows to Pump Station 17, shown in Photograph 1. Note the wetted area from dry weather flows.**

Photograph 5. **Close-up view of inlet shown in Photograph 4. Note the dry weather flow.**

Photograph 6. **View of Pump Station 16 building.**

Photograph 7. View of Grand Avenue Outfall located on El Segundo Beach.

U.S. Environmental Protection Agency
Region 9
Water Division
75 Hawthorne Street
San Francisco, CA 94105-3901

MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) COMPLIANCE INSPECTION

Culver City

INSPECTION REPORT

Inspection Date:
September 30, 2011

Report Date:
November 22, 2011

1.0 INTRODUCTION

On September 30, 2011, the U.S. Environmental Protection Agency's (EPA) contractor, PG Environmental, LLC, conducted an inspection of Culver City Municipal Separate Storm Sewer System (MS4) Program with assistance from Los Angeles Regional Water Quality Control Board (Water Board) staff (hereinafter, collectively, the Inspection Team).

1.1 Permit and Storm Water Management Plan

Discharges from the Culver City (hereafter, the City or Permittee) MS4 are regulated under California State Water Resources Control Board (SWRCB) Order No. 01-182, National Pollutant Discharge Elimination System (NPDES), General Permit No. CAS004001, *Waste Discharge Requirements (WDRs) for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles, and Incorporated Cities Therein*, (hereinafter, the Permit), issued December 13, 2001, last amended April 14, 2011.

The Permit authorizes the City to discharge storm water runoff and certain non-storm water discharges from its MS4 to waters of the United States, under the Permit terms and conditions. Part 3 of the Permit requires the City to develop, implement, and enforce an effective storm water quality management program (SQMP) designed to reduce the discharge of pollutants from the regulated MS4 to the maximum extent practicable (MEP) and to protect water quality.

1.2 Purpose of Inspection

The purpose of the inspection was to obtain information that will assist EPA and the Water Board in assessing the City's compliance with the requirements of the Permit and associated SQMP, as well as the implementation status of the City's SQMP. A photograph log is provided as Appendix A.

1.3 Program Areas Evaluated

The inspection included an evaluation of the Permittee's compliance with the Illicit Connection and Illicit Discharge Elimination Program (IC/ID) included in the Permit.

1.4 Inspection Process

The Inspection Team obtained its information through a series of interviews with representatives from the Public Works Department, Enforcement Services, and Fire Department, along with a series of site visits, record reviews, and field verification activities. It should be noted that this inspection report does not attempt to comprehensively describe all aspects of the City's SQMP, fully document all lines of questioning conducted during personnel interviews, or document all the in-field verification activities conducted during site visits.

EPA contractor representatives presented their credentials at the opening meeting. The primary representatives involved in the inspection were the following:

Culver City MS4 Inspection: September 30, 2011	
Public Works	Damian Skinner, Environmental Programs & Operations Manager Kaden Young, Associate Engineer
Fire Department	Dave White, Assistant Fire Chief

Enforcement Services	Sharon Guidry, Manager
Regional Water Quality Control Board	Ivar Ridgeway, Senior Environmental Scientist
EPA Contractors	Wes Ganter, PG Environmental, LLC Katie Bradshaw, PG Environmental, LLC

2.0 PROGRAM EVALUATION RESULTS

This inspection report identifies program deficiencies, positive attributes, and additional observations and is not a formal finding of violation. Program deficiencies are areas of concern for successful program implementation. Positive attributes indicate a Permittee's overall progress in implementing the SQMP. The Inspection Team documented only positive attributes that were notable.

The Inspection Team did not evaluate all components of the permittee's Program. Therefore, the permittee should not consider the enclosed list of program deficiencies as a comprehensive evaluation of all individual program elements.

During the inspection, the Inspection Team obtained documentation and other supporting evidence regarding compliance with the Permit and associated SQMP. Photo documentation is provided in Appendix A.

Several positive attributes of the City's program were particularly notable:

1. The City had in place a strong illicit connection and illicit discharge elimination program structure that includes the Public Works Department, Enforcement Services, and the Fire Department. Each of these departments plays a different role in the illicit connection and illicit discharge elimination program, but all of the departments have a common goal of identifying and preventing illicit discharges and protecting water quality. Staff interviewed during the inspection appeared knowledgeable and motivated to prohibit, remove, respond to illicit connections and discharges in the City. Additionally, communication between the departments appeared well established and effective.
2. The City had in place a strong record keeping database to record reported illicit connections and discharges and corrective actions taken. The City used the data to develop maps and trends in the public reporting of illicit discharges on an annual basis.
3. The City had recently hired a consultant to complete storm water inspections of all their licensed commercial and industrial base of approximately 500 facilities. In prior years the City had completed the inspection requirements in the MS4 permit but instituted these additional voluntary inspections because the MS4 permit has been administratively continued. The new round of inspections was completed in 2010 and the City estimated that approximately 400 facilities received a physical inspection. The consultant was provided training, received a City-contractor badge, and documented the inspections on a multi-copy inspection form. Identified storm water deficiencies were addressed while the inspector was on-site and the inspection information was subsequently entered into a database. The City has since been using the inspection data to focus future efforts in areas and/or sectors with higher rates of illicit discharge occurrence or where increased and/or recurring education is needed. For example, the City is focusing efforts at restaurants due to the transient nature of their employees. Additionally, after the inspections were completed, there was an observed increase in the number of illicit discharges reported by the business community, indicating an increased awareness and identification of illicit discharges by the community.
4. The City appeared to have a strong partnership with the Santa Monica Bay Restoration Commission that has resulted in the installation of 400 rain barrels (refer to Appendix A,

Photograph 1), two cisterns, and a demonstration rain garden (refer to Appendix A, Photographs 2 and 3) to help reduce overall storm water runoff. These devices have been provided free of charge to City residents and businesses. Additionally, the partnership has been instrumental in the establishment of existing and planned rain gardens that adjoin Ballona Creek.

5. The City had developed a MS4 flow chart documenting all of the requirements of the MS4 permit, the departments involved, and the specific actions taken for each requirement. The flow chart had been successfully used as a staff training tool as well as a program-wide informational tool for the program manager and other City employees and management.

Section 2.1 Illicit Discharge Detection and Elimination

Part 4.G of the Permit requires the City to develop, implement, and enforce an illicit connection and illicit discharge elimination program (IC/ID) program in accordance with the specific requirements at Part G (1)–(3) of the Permit. This was the focus area of the inspection.

Deficiency Noted:

2.1.1 During the inspection process, the Inspection Team observed dry weather flows from three outfalls to Ballona Creek, one of which was the outfall from the continuous deflection separation (CDS) filter unit at Overland Avenue (refer to Appendix A, Photograph 4). The flow at these three locations was significant (refer to Appendix A, Photographs 4 through 7). The City staff indicated that the flows at these outfalls were regularly present. Flow in Ballona Creek eventually discharges to Santa Monica Bay.

As stated in Part 4.G.3.b of the Permit, "Permittees shall investigate illicit discharges as soon as practicable (during or immediately following containment and cleanup activities), and shall take enforcement action as appropriate." To adhere to this requirement, the City needs to take reasonable steps to identify the source(s) of these persistent dry weather flows and subsequently prohibit the discharge of all prohibited discharges, if any. Additionally, it is recommended that the City institute an outfall screening program that includes either visual or water-quality screening methods, or both. All outfalls should be assessed for dry weather flows and included in the ongoing screening program.

At the time of the inspection, the City staff could not identify efforts or activities performed to identify the source(s) of the persistent dry weather flows discharging through the outfalls with any certainty. In addition, the staff indicated that City-led efforts regarding sampling, monitoring, documentation, and characterization of the flows had not occurred. Nor could City staff readily identify to the Inspection Team the number of outfalls within their jurisdiction.

The County of Los Angeles does perform monitoring and sampling of Ballona Creek both upstream and downstream of the CDS unit outfall as part of the requirements established in the metals, toxics, and trash TMDLs for Ballona Creek. City staff indicated that the County's dry weather monthly monitoring reports showed no pollutants of concern present in Ballona Creek in the vicinity of the outfalls. The Inspection Team did not attempt to verify this statement.

Deficiency Noted:

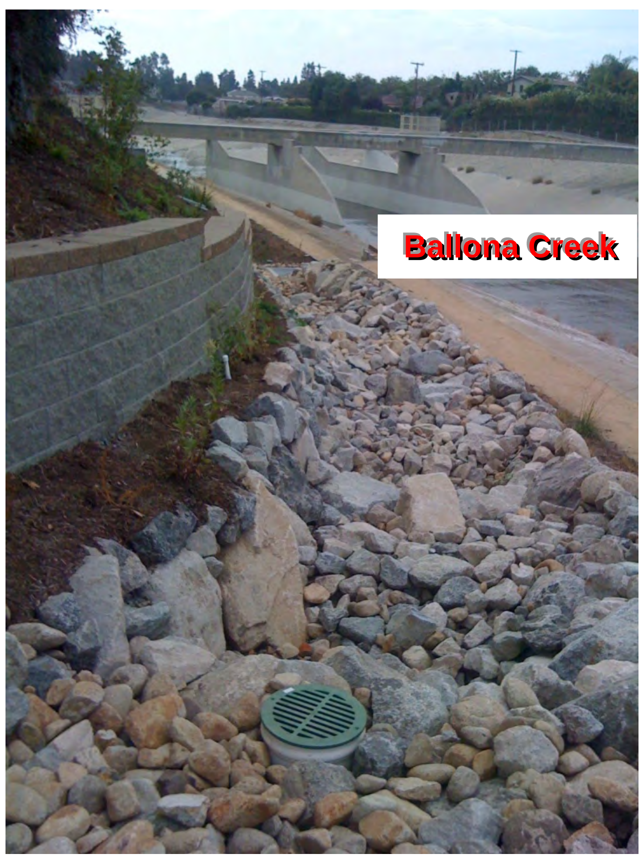
2.1.2 At the time of the inspection, it did not appear to the Inspection Team that the City effectively educates its employees on the definition of an illicit discharge; therefore, the City would benefit by establishing a common definition of illicit discharges so to ensure conformity in recognition and response. For example, Code Enforcement department staff indicated that the Code Enforcement officers were instructed that only "clear water" is allowed in the storm drain. Likewise, Municipal Operations Department staff indicated that sewer crews were keen to notice discharges that appeared different than those normally observed.

Section 2.2 Additional Observations

- The City is in the process of completing GIS mapping of the storm sewer system which is scheduled to be completed in early 2012. At the time of the inspection, the City had available paper maps of the storm drain system.
- 834 catch basins have been identified of which the City has operational control of approximately of 130. The other catch basins are operated by the County of Los Angeles.
- Of the nearly 400 inspections recently completed, one illicit connection was identified and removed.
- The City does not authorize the discharge of pool water to the storm sewer system. Essentially, there are no authorized discharges to the storm drain system with residential car washing being a ‘grey area’ of oversight.
- One dry weather diversion is present of which the City shares 2% of the annual operating and monitoring costs. The County, City of Los Angeles, and Caltrans cost sharing the remainder.
- Citizens can report illicit connections and illicit discharges via an online CRM tool, a mobile APP, or by calling the City.
- The storm drain system map showed multiple short reaches of sewer (approximately 2 – 5 blocks). The City should recognize that this is likely not the full extent of the MS4 (i.e., curb and gutter may extend much further upstream) and should consider mapping the contributing drainage basins to all outfalls.
- City program representatives where aware that residents and other concerned individuals can and do report illicit discharge incidents to the 1-888-CLEAN-LA program administered by the County. Rarely is the City contacted by the County in these instances and therefore the City is largely unaware of the County’s efforts within their jurisdiction. City representatives indicated that would possibly benefit from obtaining this information.

Appendix A
Photograph Log

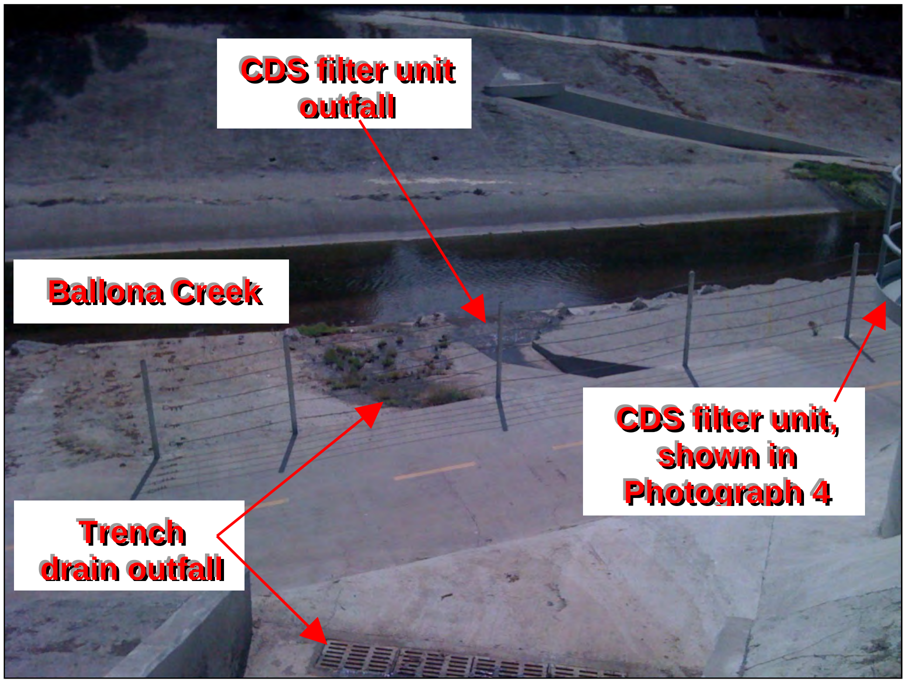
Photograph 1. **Example of City provided Rain barrel.**



Photograph 2. **View facing southwest at rain garden installed adjacent to Ballona Creek.**

Photograph 3. View facing southwest at rain garden installed adjacent to Ballona Creek.

Photograph 4. View facing southwest at CDS filter unit located at Overland Avenue. Note the CDS unit outfalls to the adjacent Ballona Creek (shown in Photograph 5.



Photograph 5. **View facing southwest at two of the three outfalls to Ballona Creek near Overland Avenue. Note the dry weather flows at the trench drain and CDS unit outfalls.**

Photograph 6. **Close-up view of dry weather flow to the trench drain and outfall shown in Photograph 2.**

Photograph 7. **View facing northest at outfall to Ballona Creek. Note the dry weather flow at the outfall.**

2009-2010 Annual Report Responses to NDPES Permit Requirements
Culver City and El Segundo

Permit Citation[1]	Category	Requirement	Annual Report Response by Culver City[2]	Annual Report Response by El Segundo[3]
G.1.a.)	Implementation	Develop an Implementation Program Document the Implementation Program	The IC/ID Program is developed and available on the LA MS4 Permit website.	The IC/ID Program is developed and available on the LA MS4 Permit website.
G.1.b.)	Tracking	Develop and maintain a listing of all permitted connections to their storm drain system.	Records for illicit connection and discharges kept in a database.	"Public Works will create a database if any illicit connections are found"
		Map all illicit connections and discharges on their baseline maps.	Stated that no illegal connections were found during routine inspections. CC stated map has been developed.	Map provided on website.
G.1.c.)	Training	Train all targeted employees who are responsible for identification, investigation, termination, cleanup,, and reporting of illicit connections and discharges.	CC stated "The only weakness (of storm water management program) is training of staff appropriately. Certain group needs to understand GIASP regulations while other would need to comply with the MS4 general permit."	
		Conduct refresher training on an annual basis.		Annual training documented, July 21, 2009, "Stormwater Program Management"
G.2.a.1.)	Field Screening for Illicit Discharges	Open Channels	No open channel	No open channel
		Underground pipes in priority areas	Not screened for illicit discharges in 09-10.	Not screened for illicit discharges in 09-10.
		Underground pipes that are ≥ 36" diameter	Not screened for illicit discharges in 09-10.	Not screened for illicit discharges in 09-10.
G.2.a.2.)	Response to Illicit Connections	Investigation - initiate investigation within 21 days to determine source	"The City has had no illicit connections"	"No illicit connections have been identified since the last investigation"
		Termination - ensure termination of the connection within 180 days	"The City has had no illicit connections"	"No illicit connections have been identified since the last investigation"
G.3.a. and b.)	Illicit Discharges	Abatement and Cleanup - response to abate, contain, and clean up all illicit discharges	11 discontinued/ cleaned up voluntarily through enforcement and the source was identified.	2 discontinued/ cleaned up voluntarily through enforcement and the source was identified.
		Investigation - investigate as soon as practicable, and take enforcement action as necessary	11 verbal warnings issued	2 verbal warnings issued

[1] Los Angeles Municipal Storm Water NPDES Permit (No. CAS004001), Amended on September 14, 2006 by Order R4-2006-0074, and Amended on August 9, 2007 by Order R4-2007-0042

[2] Source: LA County MS4 Permit Individual Annual Report Form for FY 2009-2010 for the City of Culver City

[3] Source: LA County MS4 Permit Individual Annual Report Form for FY 2009-2010 for the City of El Segundo

Note: The Annual Reports represent the timeframe between July 1 and June 30 of the following year, and are required to be submitted prior to the Principal Permittee's Annual Report submittal date of October 15.

Note: Orange box indicates that information could not be found in the 2009-2010 annual report that addressed the permit requirement.

August, 2011

BEST MANAGEMENT PRACTICES

SWIMMING POOL, SPA, AND FOUNTAIN MAINTENANCE

The City of Los Angeles wants you to know ...

Discharges of water to the street gutter flow untreated through storm drains to our arroyos, creeks, river; and ultimately, the ocean. Any pollutants present in the water are not removed prior to reaching the ocean.
It is therefore very important that the water contain no pollutants.

The City of Los Angeles allows the periodic draining of swimming pools, spas, and decorative fountains to the street gutter, storm drain, or sanitary sewer, provided that certain Best Management Practices are followed.

Proper Disposal of Water from Swimming Pools, Spas, & Fountains

1. Water from swimming pools, spas, or decorative fountains must be dechlorinated or debrominated prior to discharge to the street, storm drain, or sanitary sewer. Suggested methods are:
   - Allow the pool water to sit in the pool without adding chlorine. Chlorine levels will drop naturally over several days.
   - Add a dechlorinizing agent to the pool water. A common chemical used for this purpose is sodium thiosulphate. Different products are available in the market to accomplish this action.
   - Using a pool test kit, check the residual chlorine level prior to discharging. Discharge water when residual chlorine measures zero.
2. The dechlorinated or debrominated pool water may be drained to the storm drain or sanitary sewer. If draining to the sanitary sewer, a P-trap (3 -inch minimum) shall be required with adequate trap seal protection as per section 310.3 of the Uniform Swimming Pool, Spa and Hot Tube Code [L.A.M.C. Section 94.1007.0]. No trap or vent is required for connections to the storm drain system.
3. In order to prevent hydraulic overload of the sanitary sewer, pool water **may not** be discharged to the sanitary sewer within one to two days after the cessation of a rain event.
4. Pool, spa or fountain water containing copper-based algaecides **may not** be discharged to the storm drain or sanitary sewer.
5. Fountain water containing a dye may not be discharged to the storm drain. Discharges of dyed water to the sanitary sewer are conditional pursuant to **L.A.M.C. 64.30**.
6. Maintenance discharges from swimming pools, fountains and spas such as filter backwash, acid wash, and plaster wastes shall never be discharged to the public right-of-way or storm drain system.
7. Do not drain swimming pool, spa or fountain water in such a manner that the water encroaches on an abutting property or floods the public right-of-way.

8. Do not drain, or cause to be drained, pool, spa or fountain water into any private sewage disposal system (e.g. septic tanks, cesspools, etc.).
9. When discharging to a storm drain, exam the catch basin. If the catch basin contains trash, debris, oil, chemicals, and other waste, notify the Wastewater Collections Division of the Bureau of Sanitation regarding the planned discharge, in order to ensure the affected storm drain catch basin is clean of any debris or trash.
   Clogged catch basins may cause the discharged water to flood surface streets. The Wastewater Collections Division phone numbers are as follows:
   i. **Valley/West Los Angeles areas: 1-818-345-2107**
   ii. **All other areas: 1-213-485-5392**

   The notification should be at least 72 hours in advance of the planned discharge.

10. Ensure your service personnel and others drain the pool, spa, or fountain according to the mandated Best Management Practices.
11. Discharges to the storm drain shall be between the hours of 8 pm to 8 am.

Pool Deck and Area Drains

These drains should not be connected to the sanitary sewer, but may be connected to a dry well or the storm drain system.

Backwash of Pool Filters

Pool filter back wash may not he drained to the storm drain system or public right-of-way. Pool filter back wash may be drained to the sanitary sewer provided:

1. the water passes through a separation tank prior to discharge;
2. the connection is in compliance with all applicable plumbing regulations,
3. Provided there are no harmful chemicals present, the diatomaceous earth filter waste may be dried and deposited in the trash or used in the garden as a soil amendment.

Other BMPs

Automotive Industry & Repair

Heavy Equipment Operators

Horse Owners & Equine Industry

Home Repair & Remodeling

Land or Air Transportation Facility

Landscape, Gardening & Pest Control

Manufacturing Facilities

Painting

Restaurant Industry

Sewage Systems

- Residential
- Commercial

Water-based Cleaners

Back to top of page

CITY OF LOS ANGELES
DEPARTMENT OF WATER AND POWER

POLLUTION PREVENTION PLAN FOR WATER SYSTEM DISCHARGES

Prepared By: Wastewater Quality Compliance Group

Approved by: ______________________
Assistant General Manager - Water

NEWER VERSION 2008

Date:

RB-AR24383

Pollution Prevention Plan for Water System Discharges

Table of Contents

PART I - BACKGROUND

PART II - BEST MANAGEMENT PRACTICES (BMPs)

PART I -- BACKGROUND

I. Historical

Congress enacted the Clean Water Act (CWA) to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" through reduction and eventual elimination of the discharge of pollutants into those waters. The CWA prohibits the discharge of pollutants from a point source, except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit.

Water suppliers may have numerous releases of potable water from their storage and distribution systems to surface waters and surface water drainage courses. These releases include but are not limited to: pressure relief valves; system maintenance activities (e.g., cement lining); well development and maintenance activities; fire hydrant flow testing; and flushing and dewatering of pipelines, reservoirs, tanks, vaults, sumps and wells.

The Los Angeles Department of Water and Power (DWP) is required to either prohibit, or control by NPDES permit, the contribution of pollutants to surface waters or the storm drain system. The Federal regulations allow authorized states to issue either "general" NPDES permits (which lump numerous similar discharges under a single permit) or "individual" NPDES permits (permits issued on a site-by-site, activity-by activity basis) to regulate discharges of pollutants to Waters of the United States. Failure to comply with these requirements may result in a fine of up to $25,000 per day of violation and possible imprisonment.

II. Introduction

In 1990, the Environmental Protection Agency (EPA) adopted regulations for permitting stormwater and non-stormwater discharges to surface water and storm drain conveyances. The State Water Resources Control Board (SWRCB) and the respective regional boards, as well as local cities and counties, have been aggressively managing these discharges.

Over the past several years, significant changes have occurred in the regulations governing the direct, short term and intermittent discharges of drinking water supplies to Waters of the State. Based on the nature of water supplier discharges, a general permit was initially sought to legalize these discharges.

In 1994, the State of California began drafting a general permit that would allow utilities and water suppliers to discharge water system discharges and power system substructure discharges legally under the State Porter-Cologne Act. In February 1996, the SWRCB decided it was unable to adopt the draft general permit because of a conflict of interest on the part of some State Board members who were also water suppliers. When this permitting avenue closed, and in order to legally discharge water from water system activities to the storm drain, the Wastewater Quality and Compliance Group (WQCG) sought coverage of these activities under the Los Angeles Regional Water Quality Control Board's (RWQCB) Municipal Countywide Stormwater Permit (Muni Permit).

The Muni Permit (effective July 1996) provides for the legal discharge of water system releases to the storm drain, provided the American Water Works Association (AWWA) Pollution Prevention Plan (PPP) document is used. For all intents and purposes, such a document does not exist. However, the regulatory intent is none the less very clear, and it requires the application of Best Management Practices (BMPs) for preventing stormwater pollution. Thus, in accordance with the Muni Permit provisions, this document is the PPP for DWP and contains the BMPs which will be implemented when discharging potable water from water supply activities to surface waters of the State

This PPP is intended to cover all new or existing discharges from water system facilities to the storm drain. This PPP is also intended to cover short-term, intermittent discharges to surface waters or conveyances that in turn discharge to surface waters. Regulation of these discharges under the Muni Permit reduces the administrative burdens otherwise associated with processing and overseeing thousands of individual permit applications. The specific discharges addressed in this document are described in Table I.

Table 1
<u>Water Supply Discharges</u>

	Discharge Process	Activities	Probable Pollutants of Concern
1.	Cement Lining	Flushing, Disinfection	Sediment, Chlorine, Algae
2.	Main Flushing	Flushing	Sediment, Rust Particles, Chlorine, Algae
3.	Main/Service Pipeline Installation/Replacement	Disinfecting, Flushing	Sediment, Chlorine, Algae
4.	Reservoir Dewatering/ Tank Dewatering	Tank Draining/Cleaning, Maintenance, Cyclic Blowoff Testing, Emergency Drawdown	Sediment, Chlorine, Algae, Metals
5.	Pump Station /Chlorination Station / Regulator Station Discharges	Relief Valves, Pump Packing/Sealing Water, Emergency Pump Cooling Water	Sediment, Chlorine, Algae
6.	Groundwater Well Development/Maintenance/WQ Sampling	Sampling, Developing, Testing, Flushing, Drilling	Sediment, Chlorine, Algae TCE, PCE, Nitrate
7.	System Pressure Protection	Relief Valves	Sediment, Chlorine, Algae
8.	Main and Service Leaks, Leak Repair and Hydrant Knockoffs	System Failures, Hydrant Knock-Offs	Sediment, Chlorine, Algae
9.	Service/Lateral Replacements	Flushing	Sediment, Chlorine, Algae

10.	Substructure/Vault Dewatering	Pumping	Sediment, Chlorine, Algae

III. Pollution Prevention Plan

Pollution Prevention Plans (PPP) are prepared by the regulated community and are required to contain the procedures or practices which each company will institute to reduce or eliminate, to the maximum extent practicable, the discharge of pollutants to the Waters of the State. This PPP, when properly implemented, is intended to reduce or prevent the discharge of pollutants through the development and implementation of BMPs which constitute compliance with Best Available Technology (BAT) and Best Conventional Control Technology (BCT) and, in most cases, will achieve compliance with water quality standards

The objective of this PPP is twofold: (1) to help identify the sources of pollution that affect the quality of the discharges; and (2) to identify BMPs which will reduce or eliminate pollutants in the discharges. This approach provides the flexibility necessary to establish multiple BMPs for different types of water system activities and pollutant sources in lieu of "end of pipe" controls or treatment. As this PPP covers vastly different types of facilities/activities, the SWRCB recognizes that there is no single best way of developing or organizing a PPP. This PPP attempts to adequately identify and assess all potential sources of pollutants and describe and assess the appropriate BMPs necessary to reduce or eliminate pollutants. In implementing these BMPs, DWP will strive to achieve environmental results in the most cost-effective manner.

The following BMPs constitute the DWP's PPP for handling water supply discharges in order to ensure that a minimum of regulated contaminants are discharged to the storm drain system, and that DWP's discharges comply with the criteria in the Muni Permit.

Administrative, contracting and inspection procedures will be implemented to achieve the BMPs contained in this document. The procedures will target those activities with the potential to generate significant pollutant loads and focus on source minimization, education, good housekeeping, good waste management and good site planning.

IV. PPP Applicability - Conditions, Limitations, or Restrictions

The Muni Permit stipulates that allowed discharges shall not cause or contribute to a violation of an applicable water quality standard. Therefore, as a condition of coverage under the Muni Permit, the discharges in Table I shall not cause or contribute to a violation of a water quality standard. Facilities or activities covered by individual NPDES permits and facilities which do not discharge into Waters of the United States are not covered by this PPP. Discharges associated with auto washing, auto maintenance, groundwater cleanup activities or construction activities are also not covered by this PPP.

The applicable sections of the PPP shall be applied whenever there is discharge unless BMP implementation is technically infeasible, in which case the WQG (213) 367-0436 should be contacted in advance of commencing the job. To the extent possible, these BMPs will be employed during emergency operations, including taking all reasonable steps to minimize or prevent any discharge that has a reasonable likelihood of adversely affecting human health or the environment.

It is also recognized that some discharges may have unusual conditions which require additional treatment or control, and that these situations are best handled on a case-by-case basis in concert with the Regional Board. Discharges that are suspected of having the potential to impact the quality of the State's water after the implementation of the identified BMPs shall be held in impervious containers and handled in an appropriate legal manner. Discharges with acute or chronic toxicity, chemicals or organic constituents, bacteria, herbicides, pesticides, oil and grease, radioactivity, salinity or elevated temperature that may adversely affect the quality and beneficial uses of the State's receiving waters are not allowed to be discharged under the Muni Permit and therefore are not covered by this PPP.

Discharges under the Muni Permit are subject to periodic review and revision by the RWQCB. The regulating agency may conduct infrequent unannounced inspections to verify that the PPP is being followed and that it is effective at preventing contaminants from entering the storm drain system. Specifically, the regulating agency is allowed to:

1. enter the premises or job site where a regulated activity is located or conducted, or where records pertaining to this activity are kept;

2. gain access and copy any records pertaining to this activity;
3. inspect any facility, equipment, or practices pertaining to a regulated activity;
4. halt any discharge if the RWQCB Executive Officer so orders; and
5. photograph, sample, or monitor for the purpose of assuring compliance with existing regulations.

In addition, relevant sections of the PPP shall:

1. be made available to the RWQCB upon request;
2. be amended whenever there is a change in construction, operation or maintenance, when such amendment is necessary to ensure compliance with BAT/BCT and receiving water limits; and
3. be available at the activity site by the time the activity begins.

PART II - BEST MANAGEMENT PRACTICES (BMPs)

I General Guidelines

This section is designed to describe those Best Management Practices (BMPs) that can be applied to all activities described in Table I. Specific BMPs for each activity are discussed in the sections that follow. However, there are some practices which are generic and applicable to all types of discharges. These generic activities are discussed below.

Before discharging potable water from a water supply activity, the expected flow path should be quickly surveyed for the presence of such contaminants as motor fluid leaks or spills, fecal matter, dirt, or debris. If items such as these are found, they should be removed from the path by sweeping, or if necessary, the flows can be redirected around the contaminants. If the impact area (where the water first contacts the ground) or the surrounding area is unpaved or easily eroded, the flow path should be either redirected to a paved or non-erodible area or mechanisms to dissipate the water's energy should be considered.

Control practices that, to the extent feasible, will prevent an increase in sediment load in the discharge should be used. One or more sediment controls should be implemented for all significant discharges. Whenever possible, direct the discharge flow such that the water has the opportunity to pond or otherwise percolate into the soil rather than flow via gutters, storm drains, flood control channels, rivers, creeks, or streams. Whenever possible, projects shall be scheduled during the dry season or when not expecting rain, in order to minimize the exposure of maintenance activities to storm water.

Another source of discharge pollutants could come from the leaking vehicles and equipment used at the job site. All vehicles should be inspected prior to leaving DWP's equipment yard, and leaking vehicles or equipment should not be dispatched to the job site. Vehicles and equipment found to be leaking during the job should be reported and the vehicle/equipment repaired as soon as possible upon returning to the yard. For jobs which occur over several days and the equipment is to remain at the job site, fueling, maintenance, or vehicle/equipment washing at the job site should be avoided whenever feasible. Vehicles and equipment stored at job sites should either be stored on impermeable surfaces or drip pans and absorbent material should be placed under the stored equipment that is prone to leaks and drips.

There shall be no intentional release of petroleum products into streams or onto the soil. The site foreman is to ensure containment, prompt cleanup, and proper transportation of all petroleum waste to approved offsite areas for subsequent disposal in accordance with applicable regulations. If a significant spill occurs, the site foreman shall contact the LAWSDAC at 213-367-5118. In order to minimize risk, the use of hazardous materials will be minimized and employees will be trained in proper material use.

In project areas exposed to storm water, all fuels, chemicals, fuel and chemical wastes, animal waste, garbage, batteries, and other materials which have potentially adverse impacts on water quality are to be removed and lawfully disposed of from the project site. Hazardous material spills and leaks should be cleaned up with materials appropriate for the types of chemicals used on the job site such as brooms, gloves, shovels, dustpans, adsorbent for liquid spills, etc.

These BMPs are generic in nature and they may need to be tailored to the unique specifics of each job, location, topography, etc. in order to be effective. Some specific considerations may include: proximity of the job to the nearest storm drain or watercourse; and the presence of a busy intersection vs. undeveloped property; the slope the water travels down. Many of the BMPs are applicable to all types of activities, while some of them require preplanning and are applicable only to scheduled activities. Our approach is to conduct a pre-job evaluation of on-site conditions whenever practicable. This type of evaluation may also minimize the amount of area disturbed and the duration of the disturbance. Part of the evaluation process is to conduct a job site review to determine the anticipated flow path of the discharge and the relevant and appropriate BMPs for the job based on the site characteristics.

Prior to implementing any scheduled discharge activity, survey the project site and identify:

1. the entire affected area;
2. the location of buildings and paved areas;
3. the location of major activity areas;
4. drainage areas and the direction of runoff flows;
5. the discharge points from the job; and
6. points of entrance into the storm drain.

A key aspect to the implementation of this PPP is to ensure that all appropriate employees have knowledge and access to the BMPs described herein. An initial step towards this goal is to identify all appropriate employees who should receive training. Environmental awareness training for maintenance crews and subcontractors should be based on the following four objectives:

- promote a clear understanding of the problem, including activities with the potential to pollute storm water;
- identify the BMPs applicable or appropriate to the job;
- promote employee/subcontractor ownership of the problems and solutions;
- integrate employee/subcontractor feedback into training and BMP implementation.

Integrating employee/subcontractor training into existing programs will make the training process more streamlined.

Contractors who perform work for DWP will be responsible for implementing the BMPs outlined in this document.

Since the BMPs might be different depending on conditions (e.g., rainy days vs. dry days, summer vs. winter, etc.), employees should be trained with step-by-step guidance in the selection of appropriate BMPs. After the training sessions, provide employees with handouts, manuals or other documentation that can be used later as reference information.

Safety concerns should also be incorporated into the training programs. BMPs should be established for unexpected accidents and a safety program should be initiated which includes first aid, accident prevention and emergency response. The safety program should emphasize that public health and safety must be the highest priority when conducting emergency response activities.

II BMPs for Cement Mortar Lining

Background

Unlined cast iron and steel water mains are subject to tuberculation. Cleaning and lining such mains with cement mortar improves their performance, extends their life, and delays their replacement (which is a more disruptive activity).

Procedure:

A 6-foot by 8-foot section of the street is cut out (Hole A), and a hole is dug down to about 1 foot below the main line. The rubble and dirt is transported by truck to the contractor's yard. A 6-foot section of the pipe is removed. Any residual water is pumped out from the hole into the street. About 300 feet away another 6-foot by 8-foot hole is dug (Hole B) and the process is repeated.

A cable is pulled within the main line from Hole A to Hole B. A scraping device is then attached to a cable and moved from Hole A to Hole B. Successively thicker scrapers are added until they can be heard scraping against the metal pipe (that is, when all of the deposits, namely iron oxides, have been scraped off the pipe). A cement mortar application device is then inserted in Hole B and pulled through the pipe while cement mortar is pumped to it from Hole A. A smoothing device is then inserted in Hole B and pulled through to Hole A to smooth out the cement that was applied to the pipe. The cut sections of the pipe are replaced with new pipe.

The debris scraped from the pipe is removed from Hole A and Hole B with a backhoe and sent to an appropriate disposal facility. The holes are backfilled with slurry and are paved over. The line is then superchlorinated before it is returned to service.

All the service meters running along side of the newly lined main are replaced and new curb valves installed. If the service line from the main to the meter is galvanized, a new copper line is installed.

Potential Pollutants

The potential pollutants generated during this activity are tuberculation debris, soil, cement, chlorine, algae and oil and grease. The cement is generated when the mortar is handled and used to line the pipes, while rubble and sediment is generated when water comes into contact with the material in the excavation. The oil and grease may be generated by the construction equipment or vehicles. Chlorine is potentially generated when the line is initially opened up and the potable water drains out and also during the superchlorination process.

<u>BMPs</u>

Residue from the saw-cutting process should be contained and removed from the pavement. In some instances, a wet "shop-vac" can be used to vacuum up the water associated with the saw cutting. Drip pans or absorbent materials should be placed under saw-cutting equipment when not in use. Trenching and backfilling procedures shall be followed which minimize the contamination of storm water by sediment and debris.

Prior to excavation, berms will be deployed downstream of the excavation as a precautionary measure in the event that buried water-containing substructures are inadvertently hit causing an unexpected release of water to the street. During the excavation of the holes, the least possible amount of material shall be excavated from the hole. In order to minimize the amount of sediment escaping to the storm drain, the pavement surrounding the hole shall be swept up after excavation at the end of each day. The excavated material shall be hauled off site and disposed of appropriately. If rainfall is expected, all unfilled trenches shall be covered overnight to minimize the amount of rainfall that might potentially enter the trench. Whenever possible, work shall be performed during the dry season or when heavy rain is not anticipated.

While pumping the residual water out of the trench to the street, the hose inlet shall be underlain with coarse rock and have a screen on the inlet to reduce the amount of small pebbles and sediment being pumped out. Burlap sacks will be placed over the hose outlet to reduce the discharge of sediment. Where feasible, the pump discharge rate will be moderated to minimize the potential to stir up sediment in the excavation. Drainage controls, such as sediment traps, will be used where necessary. These drainage controls would be temporary set- ups intended to impede the water sufficiently for the sediment to settle out. Sediment retained behind the traps shall be removed promptly. Lastly, geotextile fabric will be secured over the storm drain inlet to minimize the discharge of sediment and debris to the storm drain system.

If sediment/debris removal from the hole is required <u>during</u> the course of the job, minimize the release of material to the street. Furthermore, the material which does land on the street should be minimized from entering the storm drain by sweeping the job site at the end of each day.

No cement washwater shall be discharged to the stormdrain. The washing of trucks, equipment or tools in contact with the cement is prohibited unless the washwater is discharged into the excavation hole and remains there.

In general, the reduction of residual chlorine by organic debris and other reducing agents in the gutter and storm drain, as well as the volatilization and dissipation of chlorine which will occur before the discharge reaches the receiving waters should lead to chlorine levels being acceptably low. The superchlorinated water shall be dechlorinated to a residual chlorine level of less than 0.1 ppm prior to the discharge reaching the storm drain.

The backfill should be composed of cement slurry. This process will allow future work done at this site to be performed in the dried slurry, which will not produce a muddy water discharge to the storm drain, and which will reduce the overall discharge of sediment into the storm drain.

III BMPs for Main Flushing

Background

Existing water mains are periodically flushed to remove sediment and biofilm that can harbor microbiological organisms. The presence of these organisms can cause a violation of state and federal drinking water regulations, while other organisms produce chemicals that can cause drinking water violations. Periodic flushing of water mains also improves the aesthetic properties of the water (e.g., appearance, taste, and odor). Newly installed or repaired mains are flushed prior to and after being disinfected.

Procedure

Water Quality Inspectors manage two water main flushing programs, the Dead-end Flushing Program and the System-wide Flushing Program. The Dead-end Flushing Program is conducted by a Water Distribution flushing crew who open blow-off valves and flush across system divides at all dead-end water mains in the City. The System-wide Flushing Program is conducted by two Water Distribution flushing crews who systematically close gate valves and discharge water from fire hydrants in order to flush every water main in the City. For both programs, the mains are flushed anywhere from 10 minutes to approximately 2 hours depending on the amount of sediment in the line. The crews observe the discharge path to identify and correct any problems such as flooding. Discharging of water ceases when the water being discharged is visually clear of color, turbidity, and sediment.

Potential Pollutants

The potential pollutants generated during this activity are sediment (sand, dirt, pebbles) rust, algae, and chlorine. The sediment, rust and algae are generated when the hydrant valve is opened and the water discharged. The chlorine originates from the residual chlorine levels in the drinking water within the distribution system as required for public health by the Department of Health Services.

BMPs

Prior to initiating the flush, the discharge path shall be inspected and, if practicable, any potential pollutants (e.g., litter) in the path shall be removed. Wherever possible, hydrants shall be chosen that discharge to a storm drain without crossing major thoroughfares. This will minimize the contribution of pollutants due to automobile traffic.

All valves and hydrants to be used in the cleaning operation shall be inspected to ensure that a tight shutdown is possible in case any potential pollutants are discovered during discharge.

The potable water discharged from water system activities has residual chlorine levels ranging from 0.2 to 4 parts per million (ppm). However, the reduction of chlorine by organic debris and other reducing agents found in the gutter and storm drain, as well as the volatilizing of chlorine due to turbulence encountered by the discharge before it reaches the receiving waters, should lead to the levels of chlorine being acceptably low prior to the discharge reaching the receiving waters of the state. Nevertheless, chlorine levels must be checked to ensure total residual chlorine is less than 0.1 ppm before entering the storm drain system. If dechlorination is necessary, the total chlorine residual shall be checked to ensure it is less than 0.1 ppm before entering the storm drain.

To optimize the settling of suspended material flushed from the water distribution lines, temporary sediment traps (e.g., sand bag barriers) will be strategically placed upstream of all affected nearby storm drain inlets. Geotextile fabric will be secured over the entrance to all affected nearby storm drain inlet structures. Clear water shall continue to be discharged until it appears that the majority of the debris has been removed from the drainage path and is trapped behind the sediment dams. Alternatively, the drainage path shall be cleaned at the conclusion of the flushing job until the majority of sediment along the drainage path has been removed. The debris retained behind the sediment traps will be removed and properly handled so as to minimize the introduction of pollutants to the storm drain.

IV BMPs for Main/Service Pipeline Installation/Replacement

Background

The pipes used to distribute water age over time and occasionally need to be replaced to reduce the risk of leakage or breakage and to improve water quality. New installations of pipelines are done by both DWP and contractors, with contractors typically installing water mains and services for new developments (e.g., contractors typically install the 6" and 8" mains for new housing tracts).

DWP replaces mains that are leaky or have become too small to supply the necessary water for a given area. Most mains have diameters that range from 6 to 30 inches. DWP replaces any existing galvanized steel or lead services with 1 inch copper.

Trunklines are mains that are used to transport water over large distances without any branching off to serve distribution. Trunklines tend to be larger than other mains, ranging from 24 to 100 inches. Because of specialized equipment and mobilization required, contractors usually install trunklines with diameters of 60 or greater inches.

Procedure

Design engineers determine the size of the pipe to be installed and its location. The engineers then compile a construction work package (CWP). The district superintendent receives the CWP and assigns it to a crew supervisor. The supervisor reviews the CWP, goes to the site, lays out the job and orders marking for the underground utilities. He then orders the saw cutting for the trenches.

A main line crew is mobilized to the site with a backhoe and digs out the street where the saw cutting took place. The excavated soil is dumped into a dump truck which hauls off the material to be disposed of properly. In the case of replacement pipe, the new pipe is placed adjacent to the old pipe which is left undisturbed. The old pipe's valves are closed and the crew cuts through the pipe in order to connect the new pipe with the existing line. Water between the closed valve and the cut will run into the trench. If necessary, water is pumped out from trench to the gutter. Mud, which interferes with the replacement work, is lifted out by backhoe into a dump truck.

Before connecting the new pipe, it is disinfected with superchlorinated water, which is dechlorinated while being released to the street. The trench is backfilled with sand slurry and the street paved.

Potential Pollutants

The potential pollutants generated during this activity are sediment, chlorine, and debris. The sediment is generated when water comes into contact with the material in the hole. Sediment is also generated from saw cutting, trench excavation and backhoe mud removal. The chlorine is generated during the superchlorination process. The debris is generated with the removal of the pavement from the street.

BMPs

Residue from the saw cutting process should be contained and removed from the pavement. In some instances, a wet "shop-vac" can be used to vacuum up the water associated with the saw cutting. Drip pans or absorbent materials should be placed under saw cutting equipment when not in use. Trenching and backfilling procedures which minimize the contamination of storm water by sediment and debris shall be followed.

Prior to excavation, berms will be deployed downstream of the excavation as a precautionary measure in the event that buried water-containing substructures are inadvertently hit causing an unexpected release of water to the street. Whenever possible, the minimum amount of excavation necessary to perform the work should be done. In order to reduce the amount of sediment which can be potentially deposited onto the street and thus ultimately reach the storm drain, the pavement surrounding the hole shall be swept up after excavation at the end of each day. The excavated material shall be hauled off site and disposed of appropriately. If the material is transported to a yard prior to its disposal at a landfill, it shall be covered at the yard for protection against erosion from potential rainfall. If rainfall is expected, all unfilled trenches shall be covered overnight to minimize the amount of rainfall that might potentially enter the trench. Whenever possible, the work shall be performed during the dry season or when heavy rain is not anticipated.

The inlet of hoses used to pump residual water out of the trench shall be underlain with coarse rock and shall be fitted with screens to reduce the amount of sediment and debris being pumped out. Burlap sacks will be placed over the hose outlet to reduce the discharge of sediment. Where feasible, the pump discharge rate will be moderated to minimize the potential to stir up sediment in the excavation. Temporary sediment traps which promote sedimentation behind the trap, can be constructed of sandbag barriers. Sediment traps will be used on all discharges that have the potential to introduce substantial amounts of sediments into the storm drain. In all cases where the soil is expected to contain hazardous materials (e.g., the soil emits petroleum or solvent odors), sediment traps shall be used. Sediment shall be promptly removed from the sediment traps. Lastly, geotextile fabric will be secured over the storm drain inlet to minimize the discharge of sediment and debris to the storm drain system.

In general, the reduction of residual chlorine by organic debris and other reducing agents in the gutter and storm drain, and the volatilization and dissipation of chlorine which will occur before the discharge reaches the receiving waters should lead to chlorine levels being acceptably low. The superchlorinated water shall be dechlorinated to a residual chlorine level of 0.1 ppm or less prior to the discharge reaching the storm drain.

Any galvanized steel or lead service pipelines encountered during main pipeline installations will be replaced with 1 inch copper line, since copper pipelines are less likely to retain sediment, thereby making a pipeline leak or rupture less likely.

V BMPs for Reservoir/Tank Dewatering

Background

Tanks accumulate sediment that is contained in the water. To remove sediment, the tanks are occasionally drained. Tanks are drained more frequently than reservoirs, so the BMPs in this section will apply primarily to tank discharges. Approximately 20 tanks per year are drained.

DWP has reservoirs ranging from 1 acre-feet to 10,000 acre-feet. Dewatering for reservoirs over 1,000 acre-feet occurs very infrequently. Reservoirs are typically dewatered for improvement or construction reasons; some examples include lining the bottom/sides of the reservoir, improving the piping on the inlet/outlet of the reservoir, or dam improvements. Typically about one reservoir every 2 – 3 years and approximately 20 tanks per year are emptied for maintenance.

Procedure for Tank and Small Reservoir (<1000AF) Dewatering

Prior to dewatering a tank, the water in the tank is "drunk down." That is, the majority of tank's water is emptied into the distribution system and the tank is not refilled. This minimizes the amount of water being discharged.

The water is then discharged from the tank or small reservoir. Once the water is removed from the tank or small reservoir, the majority of the sediment is manually removed. The tank/small reservoir interior is then hosed down and discharged.

Procedure for Reservoir (>1000AF) Dewatering

Prior to dewatering a reservoir, the water in the reservoir is "drunk down" to a minimal operating level. That is, as much of the reservoir's water as possible is emptied into the distribution system and the reservoir is not refilled. This minimizes the amount of water that is being discharged to the storm drain.

The water is then discharged from the reservoir. Once the water is removed from the reservoir, the majority of the sediment is removed from the reservoir bottom. For larger reservoirs, heavy equipment is used for sediment removal. The sediment is transported to an approved landfill.

Once the sediment is removed, reservoir maintenance activities, such as dam improvements, piping improvements and reservoir lining, can be performed.

Potential Pollutants

The potential pollutants generated during this activity are sediment, debris, and chlorine. These pollutants originate from the drinking water that is brought into the tank or reservoir. Sediment is also generated from the reservoir maintenance activities performed. Oil and grease may be generated by the construction equipment or vehicles.

BMPs

The frequency of tank cleaning will be increased to once every 4 years so as to minimize the amount of accumulated sediment, if any, per cleaning event. Drinking the tank/reservoir down will minimize the amount of water being discharged. The residual water will be discharged at a rate that will minimize the potential for erosion to the surrounding environment. Draining the tanks/reservoirs in a slow, controlled manner will minimize the sediment leaving the tank/reservoir and will also allow more sedimentation to occur in the discharge stream, thus minimizing the amount of sediment reaching the storm drain.

Manually removing the majority of sediment from the tank/reservoir bottom minimizes the amount of sediment being discharged to the storm drain.

When tanks/reservoirs are in rural settings, water will be discharged via natural water courses to hillsides or other soil surfaces (i.e., not pavement or concrete) when possible. This will allow the water not to be "wasted" and to percolate into the ground without being discharged into the storm drain system. The residual water will be discharged at a rate that will allow the water to percolate into the ground with only minimal erosion to the environment.

Temporary sediment traps, which promote sedimentation behind the trap, will be constructed of sandbag barriers. Sediment traps will be used on all discharges that have the potential to introduce substantial amounts of sediments into the storm drain. The storm drainage structures shall be protected from entering sediment by promoting sedimentation upstream of the inlet and securing geotextile fabric over the inlet. Sediment traps shall be designed and used to minimize the amount sediment that reaches the storm drain. The sediment shall be promptly removed from the drainage path or from behind the sediment traps.

In general, the reduction of residual chlorine by organic debris and other reducing agents in the gutter and storm drain, and the volatilization and dissipation of chlorine which will occur before the discharge reaches the receiving waters should lead to chlorine levels being acceptably low. Nevertheless, chlorine levels must be checked to ensure total residual chlorine is less than 0.1 ppm before entering the storm drain system. If dechlorination is necessary, the total chlorine residual shall be checked to ensure it is less than 0.1 ppm before entering the storm drain.

VI BMPs for Pump Station/Regulator Station Discharges

Background

DWP has over 110 different pressure zones in the City. Pump stations and regulator stations are the primary means of modifying pressure from zone to zone. Some pump station or regulator station equipment may leak water, and some of this potable water may potentially enter the storm drain.

The primary purpose of the pumping station is to pump water from one pressure zone (alternatively, hydraulic grade) to a higher pressure zone. Water is taken from a trunk line, water tank, or a distribution main.

The purpose of a regulator station is to supply water from a higher hydraulic grade zone to a lower hydraulic grade zone.

Procedures

Small amounts of water from the pump and valve leaks at pumping stations are discharged from time to time into the storm drain. Water from relief valves at regulator stations unexpectedly discharge into the storm drain in order to protect the lower hydraulic grade zone.

Potential Pollutants

The potential pollutant generated during this activity is chlorine. Since the water is of potable quality, the amount of chlorine present is minimal. This chlorine is dissipated via volatilization during its exposure to the atmosphere.

BMPs

The valves isolating the high-pressure area shall be closed so that the discharge will release the minimum amount of water necessary to test or maintain the relief valve. This practice, which is controlled automatically, keeps the pipes from having a failure or rupture; should that happen, water, mud, rocks and all sorts of sediment would flow uncontrollably into the storm drain.

The stations shall be frequently maintained to minimize the need for relief valves to operate and to also minimize the amount of drips from leaky equipment.

VII BMPs for Groundwater Well Development/Well Maintenance

Background

Wells are important sources of water supply to the City. About 15 percent of the City's water is obtained from over 100 active and standby wells. This percentage can vary from year to year and during different seasons depending on quantity of source surface water and economics. During emergencies, such as severe drought or natural disasters (i.e. earthquake), groundwater makes up a large percent of the City's water supply. In addition, having wells on standby status gives greater flexibility in groundwater operations and adds to the available water supply.

The Department redevelops/rehabilitates groundwater wells because the well's production decreases. Specifically, the well perforations where the groundwater comes in through the soil matrix tend to clog up over time, decreasing the amount of water available to pump out of the well. The rehabilitation of the wells, which are usually 20 inches in diameter, decreases the draw down and maintains the groundwater production close to original design.

The RWQCB has adopted a new General NPDES permit for these types of activities. For any type of well development/maintenance activities, please contact the Wastewater Quality and Compliance Group at 213-367-0436 for further instructions.

VIII BMPs for Main/Service Leaks, Leak Repair and Fire Hydrant Knock-offs

Background

All leaks and fire hydrant knock-offs are unanticipated occurrences, and are therefore very difficult to mitigate. Additionally, only large or catastrophic leaks, which occur infrequently, have the potential to produce significant pollutant discharges.

Most leaks occur in service pipelines and flow out onto the street and into a storm drain. Blowouts are pipeline failures that are so large that they cause at least $10,000 worth of damage to the street.

With respect to fire hydrants, in order to prevent unnecessary injury to motorists, DWP uses hollow bolts in its hydrants so as to break away during impact. At the request of the Fire Department, DWP uses wet barrel hydrants which are always charged with pressure from a main. As a result, when a knock-off occurs, a water gusher will occur. These usually range from 5- to 20-feet high, but they could gush as high as 100 feet. The testing of hydrants is performed by the Fire Department and therefore the development and implementation of any applicable BMPs associated with hydrant testing will be under their jurisdiction. Accordingly, this document does not address hydrant testing.

Procedure for Leaks and Leak Repair

Once the source of the leak is isolated, the crew supervisor orders saw cutting into the asphalt surrounding the leak. The field crew comes out with a backhoe and digs out the street where the saw cutting took place. The asphalt, concrete or asphalt/concrete combination comprising the topmost covering of the pipe is removed using a backhoe and loaded into a dump truck. The soil covering the pipe is also removed and put into a dump truck. These dump trucks either dispose of the material immediately at a landfill or stockpile it covered at a facility yard for a few days until enough soil and debris are accumulated for larger deliveries to the landfill.

The crew may repair the leak by either plugging the leak, placing a sleeve around the failed pipeline portion, or replacing the failed line with new pipe. Mud which forms in the trench and which needs to be removed in order to complete the job, is lifted via backhoe into a dump truck and is disposed of properly.

The trenches are then backfilled with a sand slurry and the street is paved.

Procedure for Hydrant Knock-offs

Once DWP is notified of a knock-off, a field crew is dispatched to turn off the valves to the hydrant as soon as possible.

Potential Pollutants

The potential pollutants generated during this activity are sediment, chlorine and debris. Sediment and debris are generated from catastrophic ruptures and from excavations during leak repair. Fire hydrant knock-offs may cause debris which is already present in the street to enter the storm drain. Chlorine may be present in the discharge from the residual levels in the drinking water as mandated by law.

BMPs for Leaks or Leak Repair

Reported leaks shall be responded to as quickly as possible in order to minimize the amount of water lost and the effects of that water on the surrounding areas.

Residue from the saw-cutting process should be contained and removed from the pavement. In some instances, a wet "shop-vac" can be used to vacuum up the water associated with the saw cutting. Drip pans or absorbent materials should be placed under saw-cutting equipment when not in use. Trenching and backfilling procedures shall be followed which minimizes the contamination of storm water by sediment and debris.

Prior to excavation, berms will be deployed downstream of the excavation as a precautionary measure in the event that buried water-containing substructures are inadvertently hit causing an unexpected release of water to the street. Whenever possible, the minimum amount of excavation necessary to perform the work should be done. This reduces the amount of sediment, rocks, etc. which can be potentially deposited onto the street and thus enter the storm drain. In order to further reduce the amount of sediment which can reach the storm drain, the pavement surrounding the hole shall be swept up after excavation at the end of each day. The excavated material shall be hauled off site and disposed of appropriately. If the material is transported to a yard prior to its disposal at a landfill, it shall be covered at the yard as protection against erosion from potential rainfall. If rainfall is expected, all unfilled trenches shall be covered overnight to minimize the amount of rainfall that might potentially enter the trench.

The inlet of hoses used to pump residual water out of the trench, if necessary, shall be underlain with coarse rock and shall be fitted with screens to reduce the amount of sediment and debris being pumped out.

Burlap sacks will be placed over the hose outlet to reduce the discharge of sediment. Where feasible, the pump discharge rate will be moderated to minimize the potential to stir up sediment in the excavation. Temporary sediment traps which promote sedimentation behind the trap, will be constructed of sandbag barriers or other equally effective devices. Sediment traps will be used on all discharges that have the potential to introduce substantial amounts of sediments into the storm drain. In all cases where the soil is expected to contain hazardous materials (e.g., the soil emits petroleum or solvent odors), sediment traps shall be used. Sediment shall be promptly removed from behind the sediment traps. Lastly, geotextile fabric will be secured over the storm drain inlet to minimize the discharge of sediment and debris to the storm drain system.

In general, the reduction of residual chlorine by organic debris and other reducing agents in the gutter and storm drain, the volatilization and dissipation of chlorine which will occur before the discharge reaches the receiving waters should lead to chlorine levels being acceptably low. Nevertheless, chlorine levels must be checked to ensure total residual chlorine is less than 0.1 ppm before entering the storm drain system. If dechlorination is necessary, the total chlorine residual shall be checked to ensure it is less than 0.1 ppm before entering the storm drain.

BMPs for Hydrant Knock-Offs

The most effective BMP DWP employs is to turn off the valves supplying water to the hydrant as soon as it is notified of the knock-off. DWP also ensures that Fire Department personnel have been trained in turning off the valves to the hydrant so that they may do so if they are notified:

Hydrants are usually situated on a street corner, near the curb. Storm drains are also usually located near a street corner, so hydrant knock-offs frequently flow directly into the storm drain, without collecting a large amount of debris and pollutants from the street.

General

BMPs will be instituted as warranted and as conditions permit for hydrant knock-offs, blow outs, and catastrophic ruptures. However, DWP's first responsibility is to respond to restoring essential public services, ensuring public health and safety and minimizing damage to public and private property.

IX BMPs for Underground Substructure Dewatering (Using Sensory-Screening Techniques)

Background

DWP addresses two categories of underground structures in this chapter: service boxes and vaults. Service boxes have dimensions of 4-feet by 5-feet or less, are prefabricated of a fiberglass compound and have no bottom. The great majority of underground structures are domestic service meter boxes with dimensions of 12 inches by 18 inches.

These underground structures can fill with water due to groundwater intrusion, storm water runoff, a leak from pipes within the structure, or runoff from some domestic activity (e.g., irrigation).

DWP conducted a four-month study of water infiltrated power system structures in an attempt to develop a reliable yet easy-to-use field administered "sensory screening technique". This study led to the development of the Sensory Checklist Method (SCM). While the pilot study focused on Energy System applications, it has also been applied to the Water Service Organization's (WSO) contaminated commercial water meter vaults and can be applied to the larger WSO vaults and substructures.

The pilot study involved the inspecting of over one hundred underground water-filled substructures using the SCM. Water which passed the SCM, and presumed dischargable, was subject to parallel laboratory water quality analysis. Vaults passing the SCM were then compared with the lab test results to check for consistency and reliability. The results of the study validated the use of the SCM as a dependable, reliable, and easy to use means of detecting the presence of gross pollutants.

The SCM was found to be so effective for the presence of gross pollutants that, in fact, the only class of contaminants regularly present in <u>trace</u> amounts in the sample water which could not be detected by the sensory method were pesticides and herbicides. The presence of pesticides and herbicides cannot be attributed to DWP operations (i.e., DWP did not add the pollutant), but rather is the result of "run on" into DWP substructures from stormwater infiltration.

Procedure

An SCM Checklist is completed for any partial or full discharge of vault/substructure water to the street/storm drain system. A copy of the SCM and an overview of the checklist follows.

CHECK 1 – Is the water cloudy, discolored and/or have an unusual odor?

This first check identifies substructure conditions that would require it to be contained and formally tested by a chemistry laboratory to determine the proper handling procedures. These conditions include but are not limited to cloudiness, discoloration and odors (sewage, chemicals, solvents, gasoline, etc.).

CHECK 2 – While monitoring the discharge being pumped, is there an occurrence of oil, tar, soil, cloudy discharge and/or unusual odors?

Monitor the discharge while pumping and enter the required information when appropriate (date pumped, amount pumped, and where it was pumped to [alley, street, etc.]). If any contaminants are detected during discharge, immediately stop pumping. Return to CHECK 1 to reassess the situation. If it is subsequently determined that containment is necessary, an SCM Checklist must still be completed and the line labeled "Storm Drain Discharge Stopped" must be marked. Give a detailed description of the condition that prompted the stopping of the discharge.

Completed SCM Checklists should be kept on file by the discharging facility for one year. After one year, they must be forwarded to the Wastewater Quality Compliance Group in Room 1213 for permanent record keeping.

BMPs

The primary BMP we employ is the SCM. DWP's four-month study, referenced above, revealed that hazardous chemicals, solvents, oil, grease, tar, sewage, etc. found in the vault/substructure waters could be easily detected in a sensory manner by inspecting the substructure and the water for the following signs:

- Strong chemical odor for - solvents, gasoline, diesel, etc.;
- Rainbow sheens or layers for - oil;
- Floating, suspended, and/or sinking materials for - debris, tar, etc.;
- Sulfurous (rotten egg) odor for - decaying matter, sewage, etc.;
- Color or discoloration for - sediment, minerals, heavy metals, etc.

SEPULVEDA TRUNK LINE
UNIT 3 EXTENSION
Water Discharge Plan

Submitted by: Michael W. Hanson
Wastewater Quality and Compliance Group
April 17, 2008
213-367-0634

CONTRACT: 7076

Spec. Section No.: F02515-1.05
Submittal No.: 032
Revision No.: 0

The Wastewater Quality and Compliance Group has reviewed the submitted Mainline Discharge Plan and has the following comments:

Items Number 3 and 4 indicate that a water quality sample will be taken prior to the hydrostatic test being completed. This is not acceptable. The sample needs to be taken after the hydrostatic test is complete and not when the water is first introduced into the pipe. Residence time in the pipe during the hydrostatic test is what causes the water to degrade. It is at this point, after the test is completed that the water needs to be sampled and analyzed to determine what treatment will be necessary in order to discharge the water in compliance with the hydrostatic discharge permit.

The Wastewater Quality and Compliance Group appreciates the efforts outlined in the scope of work to contain all of the "burped" water from the line during the hydrostatic test. This is the proper best management practice for dealing with this water. Once the hydrostatic test is complete and the analytical results have determined the proper course of treatment and disposal for the water, this collected "burp" water can be added into the discharge for disposal.

If you have any questions, please feel free to contact me.

RB-AR24416

Golden State
Water Company
A Subsidiary of American States Water Company

Golden State Water Company

Water Pollution Control Program

Potable Water Distribution System Releases for Unincorporated Areas of Los Angeles County

Updated June 2007

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Section 1: Amendment Log

Golden State Water Company shall amend this Water Pollution Control Program whenever there is a change in operations which may affect the discharge of significant quantities of pollutants to surface waters or the storm sewer system.

Page	Reason for Change	Change

Section 2: Introduction

2.1 Introduction

The purpose and scope of this plan is to provide a program to manage planned, unplanned and emergency potable water distribution system releases within Los Angeles County. This plan is consistent with American Water Works Association (AWWA) guidelines for dechlorination and suspended solids reduction practices and applies to all discharges as defined by the *Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles, and the Incorporated Cities Therein, Except the City of Long Beach*, Los Angeles Regional Water Quality Control Board adopted Order No. 01-182, NPDES Permit No. CAS004001. Part 5 of this permit defines, "Potable Water Distribution System Releases" as "sources of flows from drinking water storage, supply, distribution systems including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing; and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities".

2.2 Regulatory Background

In 1972, the Federal Clean Water Act (CWA) authorized the United States Environmental Protection Agency (EPA) to regulate discharges to surface waters and prevent pollution. In 1990, under the authority of the CWA, EPA adopted regulations to prohibit storm water and non-stormwater discharges to surface water and storm drain conveyances unless they are covered by a National Pollutant Discharge Elimination System (NPDES) permit. Water utility discharges are allowed under and defined by the following federal, regional and local authorities:

a) Pursuant to 40 Code of Federal Regulations 122.26 (d) water line flushing and potable water sources are authorized non-storm water discharges, commonly regulated under Municipal Separate Storm Sewer System (MS4) permits.
b) Pursuant to the Los Angeles Regional Water Quality Control Board adopted Order No. 01-182, NPDES Permit No. CAS004001, Part 1(2)(c)(2), Permittees shall effectively prohibit non-storm water discharges into the MS4 except where such discharges are incidental to urban activities, including potable drinking water supply and distribution system releases (consistent with American Water Works Association guidelines for dechlorination and suspended solids reduction practices).
c) The Los Angeles County Department of Public Works Supervising Civil Engineer reviewed the MS4 permit and stated that our utility (then named Southern California Water Company) discharges met the conditions of the exemption (correspondence dated January 18, 2000).

Whether drinking water system releases are categorically exempt or captured under a permit, these types of releases are only allowed if Best Management Practices (BMPs) are implemented. Pursuant to the Los Angeles Regional Water Quality Control Board adopted Order No. 01-182, NPDES Permit No. CAS004001, Part 5, BMPs are defined as "methods, measures or practices designed and selected to reduce or eliminate the discharge of pollutants to surface waters from point and non-point source discharges including stormwater. BMPs include structural and nonstructural controls, and operation and maintenance procedures, which can be applied before, during, and/or after pollution producing activities." The objective of the BMPs is to minimize, to the maximum extent practicable, adverse environmental impacts on receiving waters by both preventing the discharge from becoming polluted and by controlling for any potential pollution.

The BMPs provide general guidance on methods to place some control on pollutants entering the waterways. It is important to understand that these activities and BMPs may not fit every situation encountered in the field and may have to be modified for specific field conditions. In modifying a BMP or a control measure, the intent of reducing pollutants must be preserved. It is not the intent of the BMPs to ensure removal of all the pollutants, but to reduce the pollutant loading by implementing generally accepted control practices.

2.3 Health & Safety Priorities

There are many things that must be considered during potable water discharges. The intent of this document is to address environmental concerns; as with all drinking water utility operations, public health and worker safety are also primary concerns. All necessary planning and precautions should be undertaken to ensure that field personnel and the general public are not endangered by any activities, planned or unplanned.

2.3.1 Public Health

The provision of potable drinking water has a direct impact on public health and public safety and is governed by General Order 103 of the California Public Utilities Commission, Standards of Service, Part II, Sections 2 and 3. Section 2 addresses Continuity of Service, including Emergency Interruptions and Scheduled Interruptions.

> "a. Emergency Interruptions. Each utility shall make all reasonable efforts to prevent interruptions to service and when such interruptions occur shall endeavor to reestablish service with the shortest possible delay consistent with the safety to its customers and the general public.
>
> b. Scheduled Interruptions. Whenever any utility finds it necessary to schedule an interruption to its service, it shall, where feasible, notify all customers to be affected by the interruption, stating the approximate time and anticipated duration of the interruption. Scheduled interruptions shall be made at such hours as will provide least inconvenience to the customers consistent with reasonable operations."

Section 3 addresses Pressures, including Variations in Pressure and Delineation of Minimum Normal Operating Pressures.

> "a. Variations in Pressure. The utility shall maintain normal operating pressures of not less than 40 p.s.i.g. nor more than 125 p.s.i.g. at the service connection, except that during periods of hourly maximum demand the pressure at the time of peak seasonal loads may be not less than 30 p.s.i.g. and that during periods of hourly minimum demand the pressure may be not more than 150 p.s.i.g. Subject to the minimum pressure requirement of 40 p.s.i.g., variations in pressures under normal operation shall not exceed 50% of the average operating pressure. The average operating pressure shall be determined by computing the arithmetical average of at least 24 consecutive hourly pressure readings."
>
> "c. Delineation of Minimum Normal Operating Pressures. Other minimum normal operating pressures are applicable within delineated areas as set forth on the utility's Commission approved tariff sheets."

In addition, if a situation exists that requires that portions of the water system be shut down, AWWA and California Department of Health Services (to be known as California Department of Public Health as of July 1, 2007) guidelines for pipeline disinfection should be followed. The standard presents essential procedures for the disinfection of new and repaired potable water mains. All new water mains shall be disinfected before they are placed in service. All water mains taken out of service for inspection, repair, or other activities that might lead to contamination of water shall be disinfected before they are returned to service. (22 CCR § 64630(f))

2.3.2 Public and Worker Safety

In some cases, public safety can be potentially impacted by a situation arising as a result of, or in addition to, an unplanned release. For example, a water line break could flood a roadway and negatively impact driving conditions. This presents a situation where public and worker safety is the immediate and primary concern. Appropriate traffic control must be set up to mitigate any potential impacts. In these situations, the implementation of BMPs should not interfere with immediate emergency response operations or impact public health and safety. A water line break can also cause flooding and property damage to surrounding structures. Whenever possible, efforts should be undertaken to prevent property damage.

Each task that involves water releases and the implementation of BMPs should be prioritized in order of the following safety concerns:

a) Worker and Public Safety. Worker safety issues may include: providing appropriate personal protective equipment (PPE), setting up adequate traffic control, identifying any site contamination concerns, mitigating or eliminating uneven or slippery work areas, preventing flooding, preventing property damage, and providing sufficient lighting for poor night visibility. Public safety concerns may include: stopping or diverting main breaks that are impeding traffic, operating valves as necessary to prevent contamination of mains and to minimize the number of customers that would need to have their water shut off.

b) Environmental Protection and Protection of Private Property. Environmental protection is also a priority issue for water utilities. Environmental protection concerns may include the need to shut down or reduce flow if water from a pipeline rupture may be entering a sensitive habitat area (e.g., wetland). Preventing damage to private property is another priority and may include actions to stop or divert flows that are causing flooding and threatening homes or businesses. The potential for environmental and property damage increases in cases of unplanned releases that occur for a period of time before being reported or identified.

Section 3: Description of Work Activities and Potential Pollutants

3.1 General Description of Unplanned or Emergency Discharges

Unplanned discharges are the result of accidents or incidents that cannot be scheduled or planned for in advance. Unplanned or emergency releases may include water main or service line breaks, leaks, overflows, fire hydrant shearing, and emergency flushing activities. Distribution system repairs are typically associated with unplanned discharges and must be performed in a timely manner to restore water service and ensure public health and safety. Following the repairs or additions, the pipelines are disinfected in accordance with 22 CCR § 64630(f).

Golden State Water Company (GSWC) recognizes that BMPs are most effective when implemented before a release occurs. In an unplanned or emergency situation, it is critical that BMPs be implemented as soon as possible while making every effort possible to ensure that such actions and mitigation measures do not compromise public or worker safety. After the initial response and/or repairs have been completed, additional consideration should be given to augmenting the BMPs, as necessary.

3.2 Typical Work Activities and Potential Pollutants Addressed in this Plan

a. Type of Discharge: Distribution System Maintenance and Testing

Distribution maintenance and testing includes, but is not limited to, flushing, meter testing, fire flow testing and new installations. Maintenance and testing are integral parts of ensuring safe and reliable potable drinking water to customers within Los Angeles County. For example, distribution system flushing improves water quality and reduces customer complaints. The Department of Health Services requires all public drinking water systems to report the total number and frequency of deadend and hydrants flushed in the Annual Report to the Drinking Water Program.

Distribution system maintenance and testing techniques and procedures are tailored to the characteristics of the distribution system, location of hydrants and water quality conditions. Most activities occur on paved surfaces or can be directed to a paved surface.

Location of Discharge:

Discharges usually occur from a hydrant or pipeline located in the public right of way and discharge flows down street gutter to storm drain.

Approximate Discharge Quantity:
The volume of different discharges varies significantly depending on duration and system pressure. Discharges can be as short as 15 minutes per location and do not generally last more than 8 hours.

Potential Pollutants: Since most maintenance and testing is under our control, we can implement BMPs to reduce flow and direct discharge to paved streets, minimizing or eliminating potential for erosion. Drinking water within the distribution system contains a residual of chlorine. Because demand for chlorine is high in some street gutters, by the time the discharge enters the storm drain, the chlorine residual may be negligible or not detectable by field instrumentation.

b. Type of Discharge: System Leaks and Emergency Repairs


Water lines develop leaks from corrosion, ground movement, vibration, or tree root damage. In addition, equipment from contractors working on projects nearby or in the immediate area of our pipelines can cause leaks and require repairs. These types of releases occur as a result of an accident or incident that is unforeseen.

Exact procedures for emergency repair techniques vary depending on characteristics of the incident and the distribution system. Safety, traffic control, and protection of the environment and private property must also be considered when assessing safe implementation of BMPs during an emergency event. Water discharging from a main break or service line leak usually originates below ground and therefore brings silt, loam, sand and rocks from the area around the leak. The granular size of this additional material is limited to the composition of the ground at the site. The quantity of material is affected by the force of the flow, the length of time the leak continues before a crew can respond and the options available to the crew for managing the flow once onsite.

There are some fire hydrants in our systems that can discharge a full steam of water when knocked off by a vehicle collision. These hydrants are installed with special break-away bolts intended to minimize damage caused by the collision. Response procedures for a sheared fire hydrant vary depending on the characteristics of the distribution system, hydrant type and location.

Location of Discharge:
Unplanned releases from pipelines usually occur on paved streets in the public right of way but may discharge to unpaved areas susceptible to erosion. Discharge flows down street gutter to storm drain.

Approximate Discharge Quantity:
The volume of different discharges varies significantly during unplanned discharges. The amount of flow and duration would depend upon the specific circumstances per incident.

Potential Pollutants: System repairs often require digging up sections of the street to expose the leaking pipeline, exposing discharging water to dirt. This can result in significant quantities of suspended sediments. In addition, solids can be picked up from the gutter by the flow path. Drinking water within the distribution system contains a residual of chlorine. Because demand for chlorine is high in some street gutters, by the time the discharge enters the storm drain the chlorine residual may be negligible or not detectable by field instrumentation. This is particularly true of discharges with high sediment loads.

Section 4: Water Quality Control Action Plan

4.1 Action Plan for Implementing Drinking Water Discharges Best Management Practices

Best Management Practices are incorporated into various standard operation and maintenance procedures for typical activities using easily implemented control devices known to reduce pollutants from discharge activities. BMPs use a practical common sense approach to pollutant control. Regardless of the field conditions or characteristics of a discharge, one or more BMP control devices may be required. The BMPs referenced in this section were developed as building blocks. Flexibility exists in their application to allow a mixed selection or multiple BMPs to be used in response to a combination of field conditions and pollutants.

An annual training program, as well as field training, will assist employees in becoming familiar with discharge activities typical to the work they perform and equally familiar with the materials and equipment available to them to control the pollutant characteristics in those discharges. Periodic review of this plan will aid the employee in maintaining technical knowledge and allow important feedback and evaluation for continued improvement of the Plan. It is important for operators and supervisors to understand that unplanned discharges require implementation of BMPs as soon as practical while the emergency is brought under control.

4.2 Types of Controls

a. Sediment Control

Sediment control addresses turbidity and sedimentation in discharged water and soil erosion caused by the discharged water. It is performed using a system of temporary portable dams constructed from appropriate materials along the flow path with the purpose of slowing the overall flow of water. Slowing the flow encourages suspended material to settle out. The settled material is then collected and disposed of properly. This is also performed using drain inlet protection materials.

b. Dechlorination

Dechlorination is a procedure that addresses chlorine residuals in the discharged water. It is accomplished by adding an environmentally safe dechlorinating chemical to the discharge flow to neutralize the chlorine residual. Using dechlorination, in combination with the natural demand for chlorine, discharges entering the storm drain inlet should have a negligible or non-detectable chlorine residual.
There are typically three situations encountered when dechlorinating a discharge:
1) **Turbid Water Dechlorination** - Turbid water dechlorination involves any source containing a chlorine residual leaking from underground facilities where the flow reaches the surface carrying fine suspended material from the site making it too cloudy to test for chlorine residual in the field. The chlorine residual contained in drinking water is often destroyed naturally before it reaches the surface, but source water can be tested to determine if sufficient chlorine residual may still be present to warrant some level of dechlorination.
2) **Clear Water Dechlorination** - Clear water dechlorination involves any source containing a chlorine residual where the flow reaches the surface relatively clear of suspended material

providing an ideal condition for taking chlorine residual measurements before the flow enters a storm drain system.
3) **Super Dechlorination** - Super dechlorination involves any source of highly chlorinated water. Chlorine residual in this case is high enough that it must not be allowed to enter creeks or storm drain systems. Super chlorinated water must be adequately and appropriately treated with a dechlorinating agent to destroy all chlorine residual at the point of discharge.

c. Erosion Control
Erosion control addresses soil erosion and potential property damage based on the force and volume of the discharged water. It is of primary importance to maintain a safe and adequate water supply and fire protection at all times throughout the service area. It is therefore favorable to maintain positive pressure within a leaking water system and deal effectively with the problem of erosion while the leak is brought under control.

Erosion control is accomplished by reducing the flow of water over bare ground and removing material from the flow path. Steps taken to limit property damage are appropriate provided the protection of public health is not compromised.

4.3 Inventory of Drinking Water Discharge Best Management Practices Materials

There are many different types of BMP materials available. Not all materials are suitable to all applications. The materials stocked in your District may vary depending on the types of discharges in your systems. Materials should be stored near other equipment, such as backhoes or traffic control cones, to be readily accessible in an emergency.

☑ Mesh or Burlap Gravel Bags
☑ Snake Bag Rock Wattles
☑ Geotextile Temporary Drain Inlet Sediment Filter Bags
☑ Colorimeter Kits
☑ Dechlorinating Agent (liquid or tablet)
Examples: Sodium Thiosulfate, Sodium Bisulfate, Sodium Sulfite, Ascorbic Acid
☑ Dechlorinating Tablet Mat or Strip
☑ Dechlorinating Diffuser
☑ Flat Blade Shovels
☑ Brooms

4.4 Sediment Dams

Purpose: Sediment Dams are BMPs designed to control sediment from entering the storm drain system during both planned and unplanned drinking water utility discharges.

Materials & Equipment: May include gravel or weighted straw bags.

Advantages and Limitations: This BMP is designed to provide sediment control measures by creating detention time in the discharge flow and allow solids to settle out of suspension. This control measure describes procedures that should be incorporated into repair activities. It is beyond the scope of this document to describe standard operating procedures for pipeline maintenance and repairs. In planned discharges, this BMP can be set up in advance of discharge activity. For unplanned or emergency discharges, this BMP can be set up as soon as practical while the emergency is being brought under control. Implementation of this control measure should not interfere with or delay repairs or corrective actions undertaken by the utility to stop the discharge.

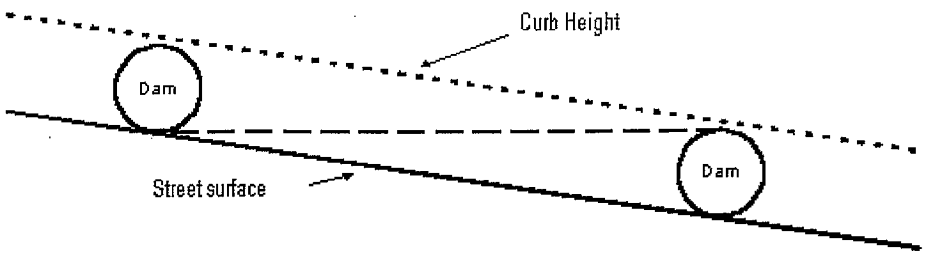
Procedure: Place gravel or sand filled bags to form dams across (perpendicular to) the flow path and curb with the end of the dam (furthest from curb) curving slightly upstream. Dam height, length, the number of bags used and the interval between dams will vary depending upon site conditions and the resources available. It is recognized that there will be some circumstances where steep topography and/or high flow rates will preclude effective sediment removal using any of the current technologies.

The following criteria should be used to determine bag placement:

- **Dam Height** - The height of each dam should be slightly less than the height of the curb or other retaining structure that is acting to channel the flow. If it is equal to or higher than the curb, flow will be diverted onto the sidewalk and cause flooding.

- **Dam Length** - The longer the dam, the greater the ponding area and the better the retention of sediment. However, dam length is limited by the number of bags available, traffic flow considerations and potential for flooding of property. Bags and ponded water should not extend outside of coned areas into traffic lanes or onto private property.

- **Number of Dams & Distance Between Dams** – In general, the greater the number of dam locations between the discharge source and entry into storm drains or receiving waters, the greater the retention of sediment. A minimum of two dams should be used in all cases. The interval between dams must shortened as the ground surface gradient (slope) increases to maintain equivalent sediment removal rates.



When the discharge is complete, allow any water that is ponded behind the dams to be drained. Be sure storm drain inlet is protected. Shovel up as much sediment as possible. Move one of the dams to a location immediately upstream of the storm drain or to the point where the flow enters receiving waters to provide sediment control for the cleanup discharge. If possible, clean the flow path and upstream dams to remove residual sediment from the street. Retrieve all dam material and store in appropriate location.

4.5 Drain Inlet Protection

Purpose: This BMP is to control sediment from entering the storm drain system during both planned and unplanned drinking water utility discharges.

Materials & Equipment: May include gravel bags, a geotextile drain inlet filter bag and/or a cloth petromat.

Advantages and Limitations: This BMP is designed to provide sediment control at the point of entry to the underground municipal storm drain system. This control measure describes activities that should be incorporated into repair activities. It is beyond the scope of this document to describe standard operating procedures for pipeline maintenance and repairs. In planned discharges, this BMP can be set up in advance of discharge activity. In some cases, this can be set up in advance as a precautionary measure. For unplanned or emergency discharges, this BMP can be set up as soon as practical while the emergency is being brought under control.

Implementation of this control measure should not interfere with or delay repairs or corrective actions undertaken by the utility to stop the discharge.

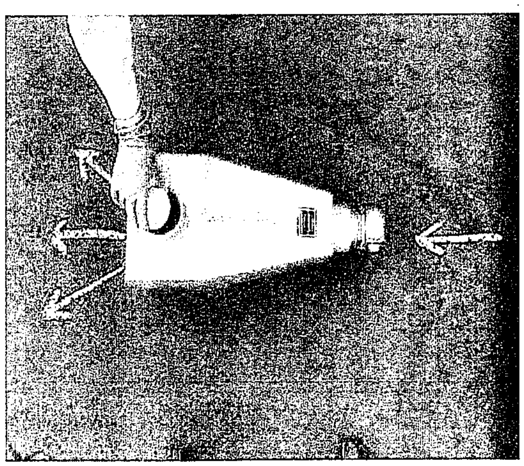
Procedure: Place gravel bags to either completely or partially surround drain inlet. The number of bags used will vary depending upon site conditions and the resources available. Protection should be installed around all affected drain inlets within reason. Several bags may need to be stacked on top of each other to produce the desired protection. Remove grate from drain inlet and ensure that it is clear and clean of debris. Place filter bag insert so that edges are secured when grate is replaced. Periodically inspect and adjust gravel bags as necessary. Because filter bags clog quickly, pay particular attention to water backing up around the drain inlet. Either replace the bags frequently or adjust upstream sediment dams to provide more sediment removal prior to drain inlet.

When the discharge is complete, allow any water that is ponded behind the dams to drain. If possible, clean the flow path and upstream dams to remove residual sediment from the street. Retrieve all BMP materials and remove temporary drain inlet bag.

4.6 Dechlorinating Diffuser

Purpose: This BMP is designed to neutralize chlorine residual from drinking water utility discharges. Its main purpose is for hydrant flushing and distribution system flushing. In some cases it can be used for dewatering during pipeline leaks and repairs.

Materials & Equipment: LPD-250 Dechlorinating Diffuser, Dechlorinating Agent, Colorimeter Kit



Advantages and Limitations: This BMP is designed to remove levels of chlorine residual in distribution system water capable of surviving beyond the point of discharge. It causes the flow of discharged water to run across and through a stainless steel mesh cylinder loaded with dechlorinating agent. The dechlorinating agent is expended at a rate commensurate with the volume of water passing through the device. Measure chlorine residual exiting this device and/or entering the storm drain to determine effectiveness.

Procedure: Evaluate chlorine residual level and determine if passive non-chemical dechlorination is feasible. If not, load dechlorinating agent into diffuser. Attach discharge end of pump hose to the diffuser. Monitor control devices and free chlorine level in the discharge. Periodically check level of chlorine in discharge using field kit colorimeter.

4.7 Operating Procedures for Planned, Unplanned and Emergency Releases

Task	Procedure
1. Stop the discharge	Prevent or reduce further environmental or property damage by locating the source of the unplanned release. Using knowledge of the valve system, shut off the upstream valve while limiting the number of customers that may experience water shortages. In order to protect public health, the majority of distribution system leaks will be repaired under pressure.
2. Ensure public safety	Ensure the health and safety of the public and workers first. Set up traffic control and protect private property if necessary.
3. Notification	Call for assistance from the superintendent or other personnel, if necessary. If residences or businesses will be temporarily out of water, begin contacting those customers immediately after emergency shutdown has been accomplished. • Call for assistance from the superintendent or other personnel, if necessary. • If residences or businesses will be temporarily out of water, begin contacting those customers immediately after
4. Evaluate and determine appropriate BMP use	Isolate the main or service prior to any additional excavation needed to repair main break based on standard procedures. Evaluate release volume and character. Compare with release point and conveyance to determine appropriate BMP use. Select appropriate BMP based on whether discharge flows over paved or unpaved areas. For discharges to paved streets, ensure that control devices fit properly for receiving system. (i.e. curb inlet, drop inlet, culvert, creek, etc.) Locate denuded or exposed areas that may be especially susceptible to erosion. Protect and redirect flow when possible.
5. Remove debris from discharge flow path	Remove sediment and debris from the flow path to the extent possible. If there is surface flow and it is not appropriate to isolate the service, remove any sediment and debris that can be removed without causing it to become entrained in the

	flow. If the storm drainage system was clogged prior to the unplanned discharge resulting in water jumping to downstream drain inlets (DIs), then use sediment control equipment to contain the flow within reasonable conditions.
6. Implement BMPs as appropriate	Based on flow path, potential pollutants and other field constraints, implement BMPs as appropriate.
7. Monitor flow and sediment control devices	Check the dams periodically to ensure they are staying in place and performing their function. Modify BMPs as field conditions develop and as flow volumes or patterns change.
8. Clean up and disposal	Retrieve all BMP materials. If possible, clean the flow path. and upstream dams to remove residual sediment from the street. If necessary where clay soils stain or adhere excessively to the street, contact a third party contractor to clean up the street and gutters. The excess sediment may be 1) spread out on an appropriate unpaved ground locally, if an appropriate location exists, 2) transported to a utility facility and deposited on an appropriate unpaved surface, if an appropriate location exists, 3) added to open trench spoils bins, or 4) disposed of in a dumpster. Non-sediment debris, such as trash, must be disposed of in a dumpster or garbage can.

4.8 Training

The District Manager in each area within the County of Los Angeles will be responsible for implementation of this Program, including tail-gate training sessions, and ensuring that Superintendents have the resources necessary to implement the Program. Periodic updating of this Program may be necessary. The Environmental Specialist or Water Quality Engineer will update this plan and the Program to conform to changes in regulatory approvals or industry standards.

Effective implementation of drinking water utility pollution control measures requires:
1. Staff training
2. Coordination with water utility project planning
3. Incorporation of the pollution control requirements into contract and service agreements.
4. Incorporation into GSWC oversight of contractor field activities.

Objective:
The objective of the training is to ensure that GSWC staff and other applicable employees understand:
1. How water utility activity runoff may impact the environment
2. Types of potential pollutants from water utility operations.
3. General regulatory requirements
4. Introduction to the Pollution Control Program
5. How to select BMPs
6. How to implement BMPs

7. Company employee roles and responsibilities

Audience and Frequency:
GSWC field staff working within the County of Los Angeles and involved in addressing planned, unplanned or emergency releases will be trained on the Pollution Control Program within one month of hire date. This includes any employees who may plan, conduct, implement or manage field activities. The duration of initial training will be 60 minutes to 4 hours depending on specific job responsibilities. Periodic refresher training will occur as part of the regular on the job training and the tail-gate training sessions. Initial training will be conducted by a recognized expert in water pollution control. Fact sheets will be available to all employees and for use during tail-gate training session. Example of fact sheet is in Appendix A.

Training Curriculum:
The material to be covered is outlined as follows:
Introduction
Review Goals and Objectives
Evaluating Jobsite Needs
A) Checklists and Evaluations
1) Planned versus unplanned discharges
2) Volume, flow path and release area evaluation
B) BMP Application
1) Erosion and sediment control
2) Dechlorination
C) Cleanup
BMP Use and Site Cleanup
A) BMP Selection
1) Activity Method
2) Characteristic Method
3) Agree on a plan
B) BMP Setup
1) Drain Inlet Protection
2) Other BMP's
3) Modifications
C) Site Cleanup
Reporting and Recording Discharge
A) Planned Discharges Checklist
1) Discharge Volume
2) Turbidity
3) Chemicals
B) Unplanned Discharges Checklist
1) Discharge Volume
2) Erosion
3) Dechlorination

Section 5: Site Inspection

5.1 Maintenance, Inspection and Repair of Drinking Water Discharge Best Management Practices

GSWC will be responsible for insuring that all required maintenance, inspection and repair of BMPs are carried out. The attached checklists for planned and unplanned discharges will assist in this process. The BMPs in this plan were adapted from practices established by AWWA for controlling discharges from drinking water utilities. It is expected that continued implementation of this plan will identify the need for further refinements and revisions, particularly in field implementation settings. A central element for evaluating and improving the plan is to provide those involved in its implementation with opportunities to give their assessment of its effectiveness and practicability. The attached checklists will assist in this process as well.

Discharge Activity Checklist

Golden State Water Operation and Maintenance

For discharges with one or more of the following:

- ✓ volumes greater than 50,000 gallons
- ✓ turbidity >50 NTU
- ✓ chemical additives with concentrations greater than that found in drinking water

Location:

Date of Discharge:

Name of Person Completing Form:

Date Form Completed:

Fill In The Circle Next To The Discharge Activity:

- ☐ Distribution System Maintenance and Testing
- ☐ System Leaks and Emergency Repairs
- ☐ Other:

Procedure:

- ☐ As practicable, stop the discharge as soon as possible
- ☐ Inspect flow path
- ☐ As practicable, remove potential pollutants from the flow path

Identify The Discharge Options To Be Used For This Activity:

- ☐ Remove water - transported off-site
- ☐ Dust control - applied to paved surface or bare ground
- ☐ Irrigation - applied to landscaping
- ☐ Discharge to storm drain - use appropriate control measures listed below.
- ☐ Discharge directly to creek - use appropriate control measures listed below.
- ☐ Other:

Identify The Control Measures To Be Used:

- ☐ Check and clean flow path/catch basin
- ☐ Drain inlet protection
- ☐ Sediment control
- ☐ Dechlorination. Method:
- ☐ Clean sidewalks or pedestrian walkways
- ☐ Clean curb line and roadway

☐ Other:
NOTE: Follow all applicable safety standards/requirements as directed by your Supervisor
Brief Staff On actions to be taken as identified above.

Proceed with necessary notifications: ☐ **Not applicable**

Who: (am/pm)	When:
Who: (am/pm)	When:

Install Control Measures

Carry Out the Discharge Activity in Accordance with Standard Operating Procedures:
☐ Time begun: ☐ Time ended
☐ Estimated actual discharge rate:
☐ Estimated actual discharge volume:

Close the Operation

☐ Remove the control measures
☐ Inspect the flow path for erosion damage and/or sediment deposition
☐ Inspect the receiving stream, if practical, for erosion damage or sediment deposition
☐ Cleanup
☐ Remove/dispose of collected sediments and debris

Discharge Water Time Inspected Control Measures Time Inspected

Notes Regarding the Implementation of the Control Measures:
BMP Evaluation (problems, suggested improvements, other items which may be used to improve the BMP):

Send Copies to: ☐ Supervisor (original)
☐ Water Quality/Environmental Compliance (copy)
☐ Others:

Section 6: Reference Documents

40 CFR 122. 2005. EPA Administered Permit Programs: The National Pollutant Discharge Elimination System. Subpart B – Permit Application and Special NPDES Program Requirements. Section 122.26 Stormwater discharges (applicable to state NPDES programs, see §123.25). Federal Code of Regulations United States Environmental Protection Agency.

American Water Works Association (AWWA) 2005. C651-05: Disinfecting Water Mains. AWWA Catalog Number 43651. Denver, CO: American Water Works Association.

California-Nevada Section of the American Water Works Association (CA-NV AWWA), 2005. Best Management Practices (BMP) Manual for Drinking Water System Releases. October, 2005. Rancho Cucamonga, CA: California-Nevada Section of the American Water Works Association.

California Stormwater Quality Association (CASQA). 2004. Stormwater Best Management Practice Handbook. Water & Sewer Utility Maintenance SC-76. Menlo Park, California. Accessed February 8, 2005 at http://www.cabmphandbooks.com/ (last updated September 30, 2004.)

California Environmental Protection Agency (CalEPA), San Diego Regional Water Quality Control Board, Region 9, 2002. Standardized Best Management Practices for Potable Water Discharges, December 12, 2002.

City of Los Angeles Department of Water and Power (LADWP), 2003. Pollution Prevention Plan for Water System Discharges, December 8, 2003.

County of Los Angeles Department of Public Works (LADPW), 2004. Technical Manual for Stormwater Best Management Practices in the County of Los Angeles, February 2004

East Bay Municipal Utility District (EBMUD), 2004. Sediment Control During Open Channel Potable Water Discharges.

Golden State Water Company (GSWC). 2003. Line Flushing Procedures.

Public Utilities Commission of the State of California (PUC), General Order 103. Rules Governing Water Service Including Minimum Standards. Amended March 9. 1994; Effective March 9. 1994; Decision 94-034.

San Jose Water Company (SJWC), 2006. Draft Water Utility Pollution Prevention Plan. November 2006 draft.

Attachment A:
Example Factsheet

Water Quality Elements

Summer 2007

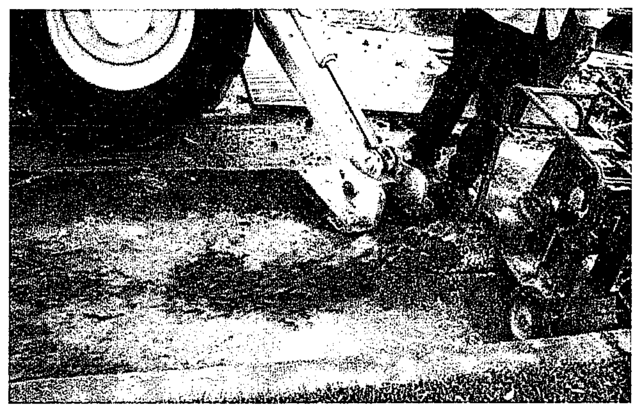
What are NPDES BMPs for Sediment Control?

By Heather Conklin, Water Quality Technician

National Pollutant Discharge Elimination System (NPDES) Best Management Practices (BMPs) are a series of administrative or field techniques to reduce pollution before it enters a body of water or a storm drain. Almost all NPDES permits require the use of BMPs, some even require that BMPs are documented and inspection reports made available to the regulatory agency. Instructions on how to implement, document and inspect site specific BMPs are usually contained in a Storm Water Pollution Prevention Plan for construction projects or in a Pollution Prevention, Monitoring and Reporting Plan.

Dirt

This article addresses one of the most common pollutants encountered during potable drinking water activities. Sediment, also known as dirt, gets mixed up with GSWC discharges most often when portions of the distribution system are either installed or repaired. Sediment can clog storm drains making them less effective during a flood event. Sediment also impacts water clarity, nutrient uptake and fish reproduction in streams, rivers and the ocean.



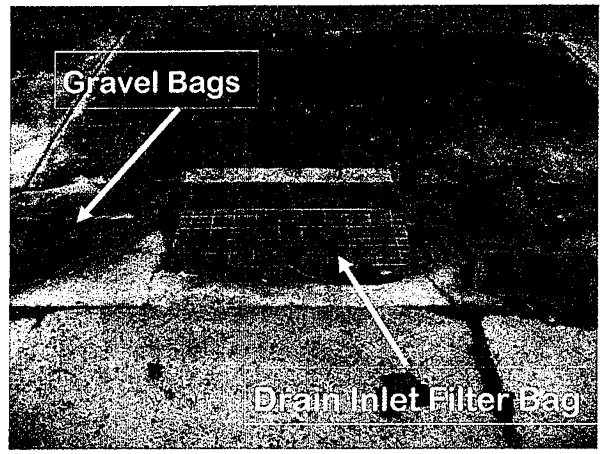
Dealing With Dirt

Fixing broken mains is a dirty job but here are some ways to deal with the dirt and prevent large amounts of sediment from entering the storm drain.

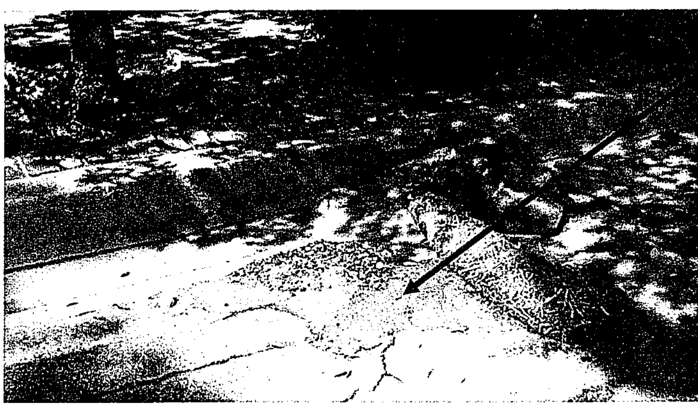
- When flushing a hydrant, remove sediment and debris from the water flow path as much as practical.
- Use materials such as weighted straw wattles, gravel bags or sand bags to control the flow of water and sediment into the storm drain.

Continued on Next Page

What are NPDES BMPs for Sediment Control? (continued)



- Use gravel bags or temporary drain inlet geotextile bags to filter some of the sediment out of the water flow before or as it enters the storm drain.
- Place gravel or sand filled bags to form dams across the flow path and curb with the end of the dam curving slightly upstream. This creates a dam to slow down the water and allow the sediment to drop out of suspension. Later the sediment can be cleaned up and disposed of properly.
- All impacted drain inlets should have BMPs implemented within reason.
- Check drains periodically to ensure that BMPs are working and preventing sediment from entering the stormdrain.



This BMP worked and kept a pile of dirt from entering the storm drain. But now it needs to be replaced or cleaned up. When straw wattles break, they often create a bigger mess to clean up, so gravel bags are preferred.

- Dam height, length, the number of bags used and the interval between dams will vary depending upon job site conditions and the resources available. Use your best judgment.
- Modify BMPs as field conditions develop and flow volumes or patterns change.
- If storm drainage system was clogged prior to the discharge resulting in water jumping to downstream drain inlets, then use sediment control equipment to contain the flow within reasonable conditions.

BMPs take time in the field but failure to implement can result in substantial violations and fines. One construction company in Roseville, California was recently fined $900,000 for failing to properly implement and maintain BMPs. For more information on BMPs, be sure to check out AWWA's BMP Manual at **\\scwc6\NewWQ\Documents\AWWA BMP Manual 2005.pdf.**

Attachment B:
Table of Related Best Management Practices

Table of Related Best Management Practices

	Maintenance & Testing	Leaks/Pipeline Repairs
SC-76 Water and Sewer Utility Maintenance	X	X
EC-1 Scheduling	X	N/A
SE-4 Check Dam	X	X
SE-6 Gravel Bag Berm	X	X
SE-7 Street Sweeping/Vacuuming	X	X
SE-8 Sandbag Barrier	x	X
SE-10 Storm Drain Inlet Protection	X	X

SC-76 For water line maintenance and cleaning, if repairs or corrective action will cause additional discharges of water, select the appropriate procedures for erosion control, chlorine residual, turbidity, and chemical additives. Prevent potential pollutants from entering the flow path.

EC-1 control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

SE-4 A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle

SE-6 A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

SE-7 Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or

SE-8 A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept sheet flows. Sandbag barriers pond sheet flow runoff, allowing sediment to settle out.

SE-10 Storm drain inlet protection consists of a sediment filter or an impounding area around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove

Attachment C:
Related Best Management Practices Description Sheets

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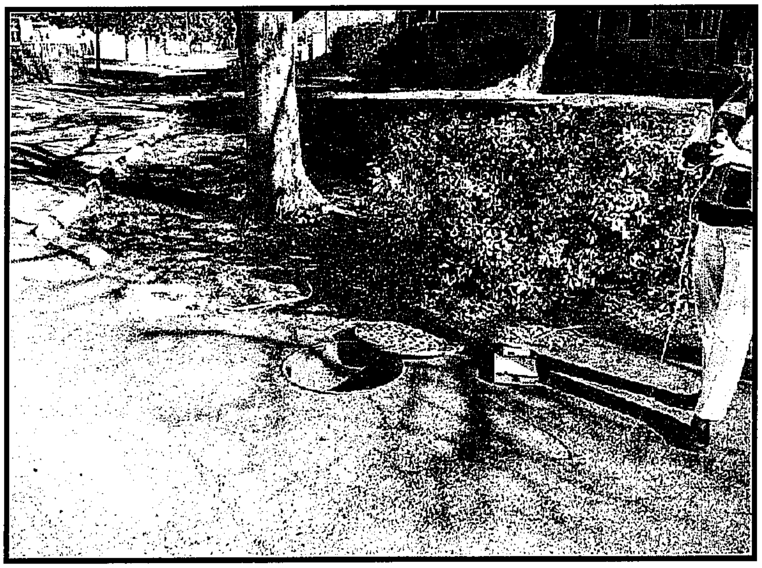

Objectives

- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Although the operation and maintenance of public utilities are not considered chronic sources of stormwater pollution, some activities and accidents can result in the discharge of pollutants that can pose a threat to both human health and the quality of receiving waters if they enter the storm drain system. Sewage incident response and investigation may involve a coordinated effort between staff from a number of different departments/agencies. Cities that do not provide maintenance of water and sewer utilities must coordinate with the contracting agency responsible for these activities and ensure that these model procedures are followed.

Approach

Pollution Prevention

Inspect potential non-stormwater discharge flow paths and clear/cleanup any debris or pollutants found (i.e. remove trash, leaves, sediment, and wipe up liquids, including oil spills).

Suggested Protocols

Water Line Maintenance and Cleaning

Procedures can be employed to reduce pollutants from discharges associated with water utility operation and maintenance activities. Planned discharges may include fire hydrant testing, flushing water supply mains after new construction, flushing lines due to complaints of taste and odor, dewatering mains for maintenance work. Unplanned discharges from treated, recycled water, raw water, and groundwater systems operation and maintenance activities can occur from water main

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breaks, sheared fire hydrants, equipment malfunction, and operator error.

Planned discharges

- Identify a suitable discharge option in the following order of preference:
  - Apply to the land.
  - Reuse water for dust suppression, irrigation, or construction compaction.
  - Discharge to a sanitary sewer system with approval.
  - Discharge to the storm drain system using applicable pollution control measures. (Only available to clean water discharges such as water main/ water storage tank/water hydrant flushing).
- If water is discharged to a storm drain, control measures must be put in place to control potential pollutants (i.e. sediment, chlorine, etc.). Examples of some storm drain protection options include:
  - Silt fence – appropriate where the inlet drains a relatively flat area.
  - Gravel and wire mesh sediment filter – Appropriate where concentrated flows are expected.
  - Wooden weir and fabric – use at curb inlets where a compact installation is desired.
- Prior to discharge, inspect discharge flow path and clear/cleanup any debris or pollutants found (i.e. remove trash, leaves, sediment, and wipe up liquids, including oil spills).
- General Design considerations for inlet protection devices include the following:
  - The device should be constructed such that cleaning and disposal of trapped sediment is made easy, while minimizing interference with discharge activities.
  - Devices should be constructed so that any standing water resulting from the discharge will not cause excessive inconvenience or flooding/damage to adjacent land or structures.
- The effectiveness of control devices must be monitored during the discharge period and any necessary repairs or modifications made.

Unplanned Discharges

- Stop the discharge as quickly as possible.
- Inspect flow path of the discharged water:
  - Identify erodible areas which may need to be repaired or protected during subsequent repairs or corrective actions

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- Identify the potential for pollutants to be washed into the waterway

- If repairs or corrective action will cause additional discharges of water, select the appropriate procedures for erosion control, chlorine residual, turbidity, and chemical additives. Prevent potential pollutants from entering the flow path.

Sanitary Sewer Maintenance

Applicable to municipalities who own and operated a sewage collection system. Facilities that are covered under this program include sanitary sewer pipes and pump stations owned and operated by a municipality. The owner of the sanitary sewer facilities is the entity responsible for carrying out this prevention and response program.

- Clean sewer lines on a regular basis to remove grease, grit, and other debris that may lead to sewer backups.

- Establish routine maintenance program. Cleaning should be conducted at an established minimum frequency and more frequently for problem areas such as restaurants that are identified

- Cleaning activities may require removal of tree roots and other identified obstructions.

- During routine maintenance and inspection note the condition of sanitary sewer structures and identify areas that need repair or maintenance. Items to note may include the following:

  - Cracked/deteriorating pipes
  - Leaking joints/seals at manhole
  - Frequent line plugs
  - Line generally flows at or near capacity
  - Suspected infiltration or exfiltration.

- Prioritize repairs based on the nature and severity of the problem. Immediate clearing of blockage or repair is required where an overflow is currently occurring or for urgent problems that may cause an imminent overflow (e.g. pump station failures, sewer line ruptures, sewer line blockages). These repairs may be temporary until scheduled or capital improvements can be completed.

- Review previous sewer maintenance records to help identify "hot spots" or areas with frequent maintenance problems and locations of potential system failure.

Spills and Overflows

- Identify and track sanitary sewer discharges. Identify dry weather infiltration and inflow first. Wet weather overflow connections are very difficult to locate.

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- Locate wet weather overflows and leaking sanitary sewers using conventional source identification techniques such as monitoring and field screening. Techniques used to identify other illicit connection sources can also be used for sewer system evaluation surveys (see SC74 Drainage System Operation and Maintenance).

- Implement community awareness programs for monitoring sanitary sewer wet weather overflows. A citizen's hotline for reporting observed overflow conditions should be established to supplement field screening efforts.

- Establish lead department/agency responsible for spill response and containment. Provide coordination within departments.

- When a spill, leak, and/or overflow occurs and when disinfecting a sewage contaminated area, take every effort to ensure that the sewage, disinfectant and/or sewage treated with the disinfectant is not discharged to the storm drain system or receiving waters. Methods may include:

  - Blocking storm drain inlets and catch basins

  - Containing and diverting sewage and disinfectant away from open channels and other storm drain fixtures (using sandbags, inflatable dams, etc.)

  - Removing the material with vacuum equipment

- Record required information at the spill site.

- Perform field tests as necessary to determine the source of the spill.

- Develop notification procedures regarding spill reporting.

Septic Systems

- Ensure that homeowners, installers, and inspectors are educated in proper maintenance of septic systems. This may require coordination with staff from other departments. Outreach to homeowners should include inspection reminders informing then that inspection and perhaps maintenance is due for their systems. Recommend that the system be inspected annually and pumped-out regularly.

- Programs which seek to address failing septic systems should consider using field screening to pinpoint areas where more detailed onsite inspection surveys are warranted.

Training

- Conduct annual training of water utility personnel and service contractors. (field screening, sampling, smoke/dye testing, TV inspection).

- OSHA-required Health and Safety Training 29 CFR 1910.120 plus annual Refresher Training (as needed).

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and federal OSHA 29 CFR 1910.146).

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Spill Response and Prevention

- See previous section regarding spills and overflows.
- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Enact ordinance granting "right-of-entry" to locate potentially responsible parties for sewer overflows.
- Reliance on individual onsite inspection to detect failed septic systems can be a major limitation. The individual onsite inspection is very labor-intensive and requires access to private property to pinpoint the exact location of the failing system.
- A significant limitation to correcting failing septic systems is the lack of techniques available for detecting individual failed septic systems.

Requirements

Costs

- Departmental cooperation recommended for sharing or borrowing staff resources and equipment from municipal wastewater department.
- Infiltration, inflow, and wet weather overflows from sanitary sewers are very labor and equipment intensive to locate.
- The costs associated with detecting and correcting septic system failures are subject to a number of factors, including availability of trained personnel, cost of materials, and the level of follow-up required to fix the system problems.

Maintenance

- Minimum 2-person teams to perform field screening and associated sampling.
- Larger teams required for implementing other techniques (i.e. zinc chloride smoke testing, fluorometric dye testing, television camera inspection and physical inspection with confined space entry) to identify sewer system leaks.
- Program coordination required for handling emergencies, record keeping, etc.
- Many of the problems associated with improper use of septic systems may be attributed to lack of user knowledge on operation and maintenance. Educational materials for homeowners and training courses for installers and inspectors can reduce the incidence of pollution from these widespread and commonly used pollution control devices.

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Supplemental Information

Further Detail of the BMP

Onsite Sewage Disposal Systems

New onsite sewage disposal systems should be designed, located, and installed away from open waterbodies and sensitive resources such as wetlands and floodplains. A protective separation between the OSDS and groundwater should also be established. OSDSs should be operated and maintained to prevent surface water discharges and reduce pollutant loadings to groundwater. Inspection of OSDSs should occur regularly and repairs made immediately. New or replacement plumbing fixtures should be of the high efficiency type.

Typical Sanitary Sewer Problems

- Old and deteriorated main and lateral pipes - Sewers range in age from 30 to 100 years with an average age of 50 years.
- Cracked sewer pipes - Existing sewers are mostly clay pipes which can crack as they deteriorate with age and also by earth movement.
- Misaligned and open pipe joints - Most of the mortar used to seal the joints between sections of clay pipe has deteriorated.
- Undersized sewer pipe - The existing sewer system is overloaded due to new sewer hook-ups, underground water infiltration, and illegal roof and/or yard drain connections.
- Defective manholes - Old manholes are made of bricks. Typical problems associated with brick manholes are loose bricks, missing bricks, and misaligned manholes.
- Missing and/or unrecorded sewer pipes and manholes - This problem is typical in the easement/backline sewer. Sewer pipe locations shown on the sewer record map are different from the actual sewer location.
- Sewer main under houses and other improvements - Complaints of sewer main alignment crossing the house and other improvements. A solution to this problem requires an agreement with the property owner for a new sewer easement at a relocated line.

Causes of Sanitary Sewer Backups

- Root infiltration - Tree roots are a major cause of backups.
- Water inflow/infiltration - Rain water entering the sewer pipe causes overflows.
- Solids - Typical solids that buildup in the pipe and cause backups are grease, dirt, bones, tampons, paper towels, diapers, broken dishware, garbage, concrete, and debris.
- Structural defects in pipes and manholes - Sags in the line, cracks, holes, protruding laterals, misaligned pipe, offset joints are all possible causes of backups.

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Design Considerations

Sanitary sewer overflows can often be reduced or eliminated by a number of practices, in addition to sewer system cleaning and maintenance, including the following:

- Reducing infiltration and inflow through rehabilitation and repair of broken or leaking sewer lines.
- Enlarging or upgrading the capacity of sewer lines, pump stations, or sewage treatment plants.
- Constructing wet weather storage and treatment facilities to treat excess flows.
- Addressing SSOs during sewer system master planning and facilities planning.

Septic Systems

Two field screening techniques that have been used with success at identifying possible locations of failing septic systems are the brightener test and color infrared (CIR) aerial photography. The first involves the use of specific phosphorus-based elements found in many laundry products, often called brighteners, as an indicator of the presence of failing onsite wastewater systems. The second technique uses color infrared (CIR) aerial photography to characterize the performance of septic systems. This method has been found to be a quick and cost-effective method for assessing the potential impacts of failing systems and uses variations in vegetative growth or stress patterns over septic system field lines to identify those systems that may potentially be malfunctioning. Then a more detailed onsite visual and physical inspection will confirm whether the system has truly failed and the extent of the repairs needed. These inspections may be carried out by county health departments or other authorized personnel.

References and Resources

Alameda Countywide Clean Water Program on-line
http://www.ci.berkeley.ca.us/pw/Storm/stormala.html

Los Angeles County Stormwater Quality. Public Agency Activities Model Program. On-line: http://ladpw.org/wmd/npdes/public_TC.cfm

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1998. Water Utility Operation and Maintenance Discharge Pollution Prevention Plan. June

United States Environmental Protection Agency (USEPA). 2001. Illicit Discharge Detection and Elimination. On-line: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/illi_1.cfm

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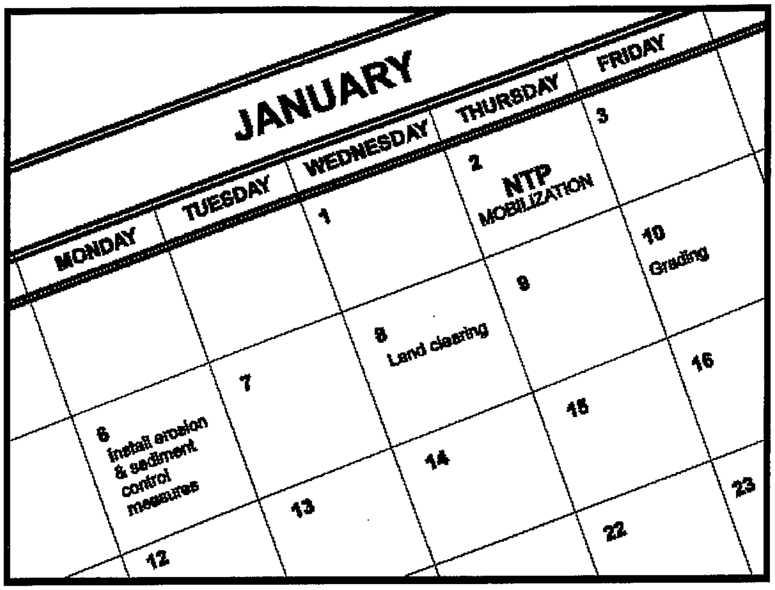
United States Environmental Protection Agency (USEPA). 2001. Pollution Prevention/Good Housekeeping for Municipal Operators Septic System Controls. On-line: http://www.epa.gov/npdes/menuofbmps/poll_14.htm

Scheduling EC-1



Objectives

EC	Erosion Control	☑
SE	Sediment Control	☒
TR	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.

- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil

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disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Scheduling EC-1

Inspection and Maintenance

- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

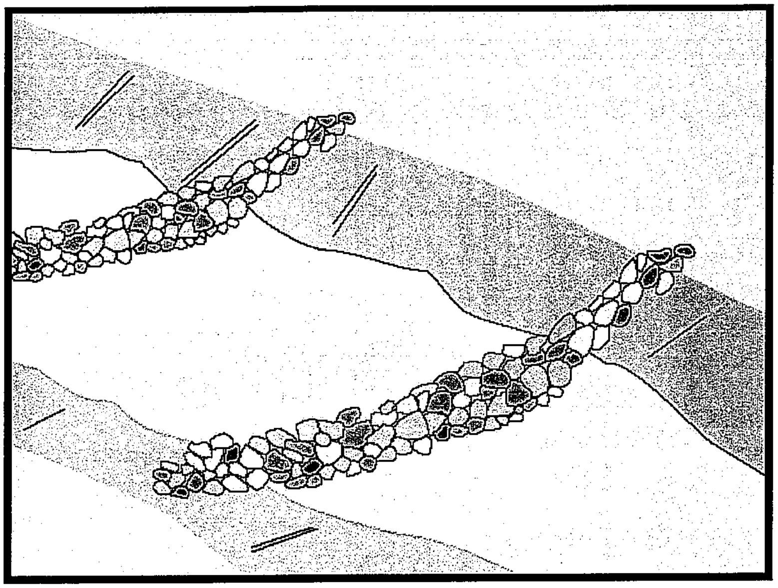
Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

RB-AR24453

Check Dams

SE-4



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

Description and Purpose

A check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. Check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.

Suitable Applications

Check dams may be appropriate in the following situations:

- To promote sedimentation behind the dam.
- To prevent erosion by reducing the velocity of channel flow in small intermittent channels and temporary swales.
- In small open channels that drain 10 acres or less.
- In steep channels where stormwater runoff velocities exceed 5 ft/s.
- During the establishment of grass linings in drainage ditches or channels.
- In temporary ditches where the short length of service does not warrant establishment of erosion-resistant linings.

Limitations

- Not to be used in live streams or in channels with extended base flows.

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- Not appropriate in channels that drain areas greater than 10 acres.
- Not appropriate in channels that are already grass-lined unless erosion is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.
- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.

Implementation

General

Check dams reduce the effective slope and create small pools in swales and ditches that drain 10 acres or less. Reduced slopes reduce the velocity of stormwater flows, thus reducing erosion of the swale or ditch and promoting sedimentation. Use of check dams for sedimentation will likely result in little net removal of sediment because of the small detention time and probable scour during longer storms. Using a series of check dams will generally increase their effectiveness. A sediment trap (SE-3) may be placed immediately upstream of the check dam to increase sediment removal efficiency.

Design and Layout

Check dams work by decreasing the effective slope in ditches and swales. An important consequence of the reduced slope is a reduction in capacity of the ditch or swale. This reduction in capacity must be considered when using this BMP, as reduced capacity can result in overtopping of the ditch or swale and resultant consequences. In some cases, such as a "permanent" ditch or swale being constructed early and used as a "temporary" conveyance for construction flows, the ditch or swale may have sufficient capacity such that the temporary reduction in capacity due to check dams is acceptable. When check dams reduce capacities beyond acceptable limits, there are several options:

- Don't use check dams. Consider alternative BMPs.
- Increase the size of the ditch or swale to restore capacity.

Maximum slope and velocity reduction is achieved when the toe of the upstream dam is at the same elevation as the top of the downstream dam. The center section of the dam should be lower than the edge sections so that the check dam will direct flows to the center of the ditch or swale.

Check dams are usually constructed of rock, gravel bags, sandbags, and fiber rolls. A number of products manufactured specifically for use as check dams are also being used, and some of these products can be removed and reused. Check dams can also be constructed of logs or lumber, and have the advantage of a longer lifespan when compared to gravel bags, sandbags, and fiber rolls. Straw bales can also be used for check dams and can work if correctly installed; but in practice, straw bale check dams have a high failure rate. Check dams should not be constructed from straw bales or silt fences, since concentrated flows quickly wash out these materials.

Rock check dams are usually constructed of 8 to 12 in. rock. The rock is placed either by hand or mechanically, but never just dumped into the channel. The dam must completely span the ditch or swale to prevent washout. The rock used must be large enough to stay in place given the expected design flow through the channel.

Log check dams are usually constructed of 4 to 6 in. diameter logs. The logs should be embedded into the soil at least 18 in. Logs can be bolted or wired to vertical support logs that have been driven or buried into the soil.

Gravel bag and sandbag check dams are constructed by stacking bags across the ditch or swale, shaped as shown in the drawings at the end of this fact sheet.

Manufactured products should be installed in accordance with the manufacturer's instructions.

If grass is planted to stabilize the ditch or swale, the check dam should be removed when the grass has matured (unless the slope of the swales is greater than 4%).

The following guidance should be followed for the design and layout of check dams:

- Install the first check dam approximately 16 ft from the outfall device and at regular intervals based on slope gradient and soil type.
- Check dams should be placed at a distance and height to allow small pools to form between each check dam.
- Backwater from a downstream check dam should reach the toes of the upstream check dam.
- A sediment trap provided immediately upstream of the check dam will help capture sediment. Due to the potential for this sediment to be resuspended in subsequent storms, the sediment trap must be cleaned following each storm event.
- High flows (typically a 2-year storm or larger) should safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams should be removed when grass has matured sufficiently to protect the ditch or swale.
- Gravel bags may be used as check dams with the following specifications:

Materials

Gravel bags used for check dams should conform to the requirements of SE-6, Gravel Bag Berms. Sandbags used for check dams should conform to SE-8, Sandbag Barrier. Fiber rolls used for check dams should conform to SE-5, Fiber Rolls. Straw bales used for check dams should conform to SE-9, Straw Bale Barrier.

Installation

- Rock should be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.
- Tightly abut bags and stack according to detail shown in the figure at the end of this section. Gravel bags and sandbags should not be stacked any higher than 3 ft.
- Fiber rolls and straw bales must be trenched in and firmly staked in place.

Costs

Cost consists of only installation costs if materials are readily available. If material must be imported, costs may increase. For material costs, see SE-5, SE-6, SE-8 and SE-9.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Replace missing rock, bags, bales, etc. Replace bags or bales that have degraded or have become damaged.
- If the check dam is used as a sediment capture device, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- If the check dam is used as a grade control structure, sediment removal is not required as long as the system continues to control the grade.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.

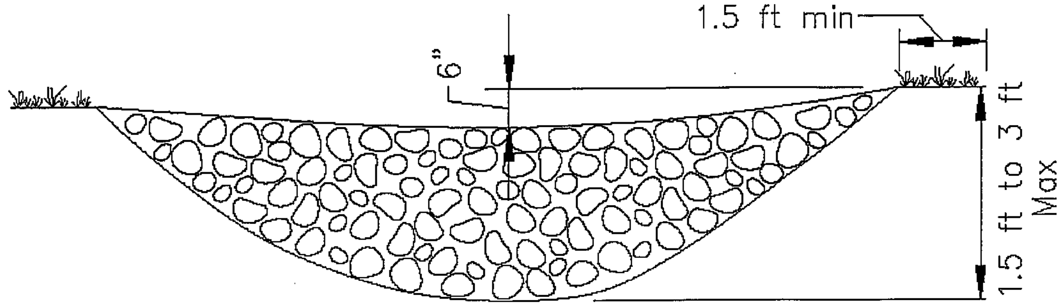
References

Draft – Sedimentation and Erosion Control, and Inventory of Current Practices, USEPA, April 1990.

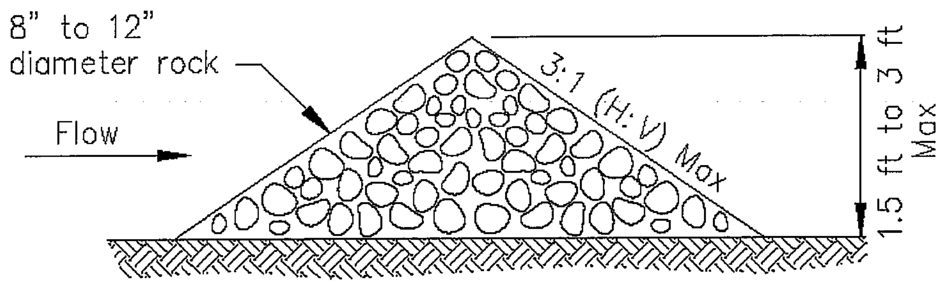
Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

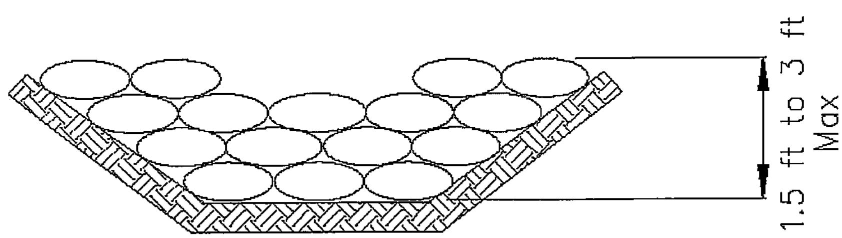


ELEVATION



TYPICAL ROCK CHECK DAM SECTION

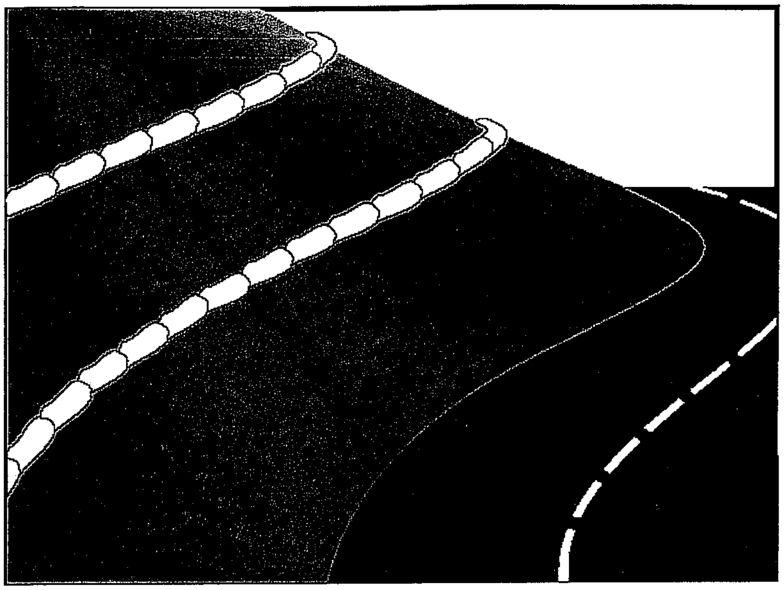
ROCK CHECK DAM
NOT TO SCALE



GRAVEL BAG CHECK DAM ELEVATION
NOT TO SCALE

Gravel Bag Berm

SE-6



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As linear erosion control measure:

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- Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow

- At the top of slopes to divert runoff away from disturbed slopes

- As check dams across mildly sloped construction roads

Limitations

- Gravel berms may be difficult to remove.

- Removal problems limit their usefulness in landscaped areas.

- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.

- Runoff will pond upstream of the filter, possibly causing flooding if sufficient space does not exist.

- Degraded gravel bags may rupture when removed, spilling contents.

- Installation can be labor intensive.

- Berms may have limited durability for long-term projects.

- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel–filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous.

Design and Layout

- Locate gravel bag berms on level contours.

  - Slopes between 20:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 50 ft (a closer spacing is more effective), with the first row near the slope toe.

  - Slopes 2:1 (H:V) or steeper: Gravel bags should be placed at a maximum interval of 25 ft (a closer spacing is more effective), with the first row placed the slope toe.

- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.

- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.

- For installation near the toe of the slope, consider moving the gravel bag barriers away from the slope toe to facilitate cleaning. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Top width = 12 in. minimum for one or two layer construction
  - Side slopes = 2:1 or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Top width = 12 in. minimum for one or two layer construction.
  - Side slopes = 2:1 or flatter.
- Butt ends of bags tightly
- On multiple row, or multiple layer construction, overlapp butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- ***Bag Material:*** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.
- ***Bag Size:*** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- ***Fill Material:*** Fill material should be 0.5 to 1 in. Class 2 aggregate base, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Costs

Gravel filter: Expensive, since off-site materials, hand construction, and demolition/removal are usually required. Material costs for gravel bags are average of $2.50 per empty gravel bag. Gravel costs range from $20-$35 per yd^3.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Remove gravel bag berms when no longer needed. Remove sediment accumulation and clean, re-grade, and stabilize the area. Removed sediment should be incorporated in the project or disposed of.

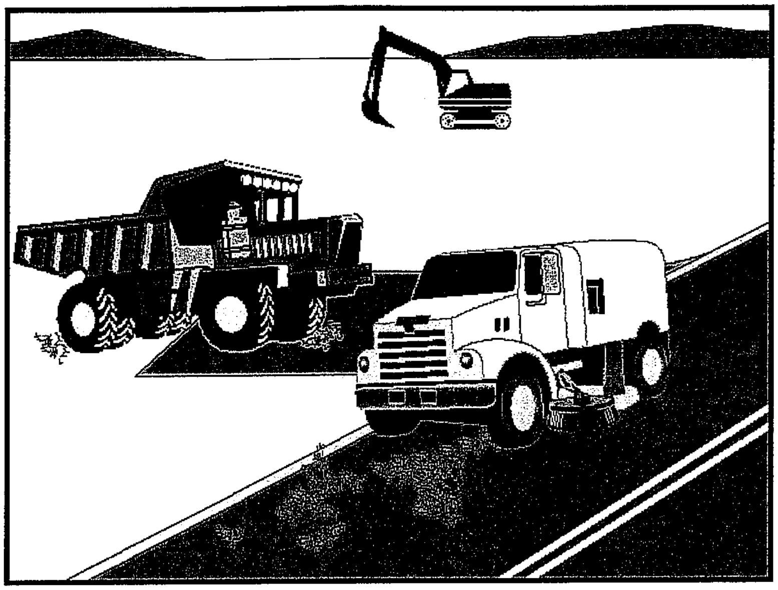
References

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Street Sweeping and Vacuuming SE-7



Objectives

EC	Erosion Control	
SE	Sediment Control	☒
TR	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.

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SE-7 Street Sweeping and Vacuuming

- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.

- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs
Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- When actively in use, points of ingress and egress must be inspected daily.

- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.

- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.

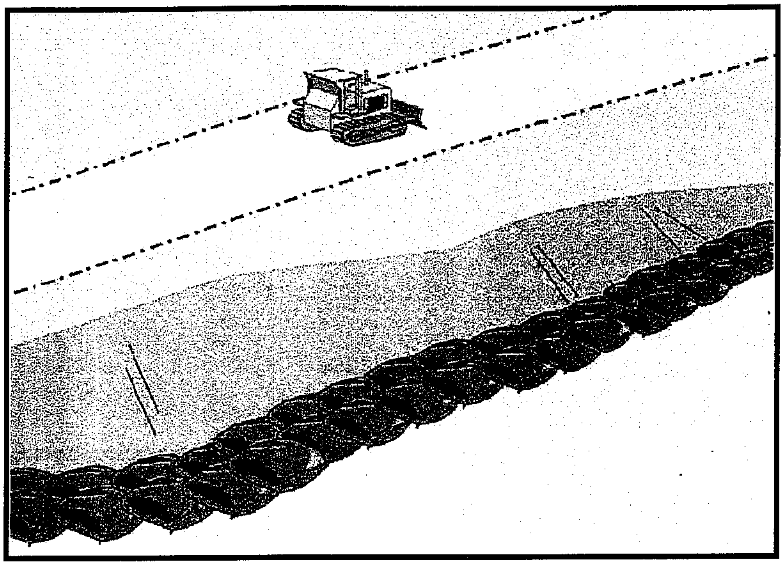
- Adjust brooms frequently; maximize efficiency of sweeping operations.

- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Sandbag Barrier SE-8



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-9 Straw Bale Barrier

Description and Purpose

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept sheet flows. Sandbag barriers pond sheet flow runoff, allowing sediment to settle out.

Suitable Applications

Sandbag barriers may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow

- At the top of slopes to divert runoff away from disturbed slopes
- As check dams across mildly sloped construction roads

Limitations

- It is necessary to limit the drainage area upstream of the barrier to 5 acres.
- Degraded sandbags may rupture when removed, spilling sand.
- Installation can be labor intensive.
- Barriers may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.
- Burlap should not be used for sandbags.

Implementation

General

A sandbag barrier consists of a row of sand-filled bags placed on a level contour. When appropriately placed, a sandbag barrier intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. While the sand-filled bags are porous, the fine sand tends to quickly plug with sediment, limiting the rate of flow through the barrier. If a porous barrier is desired, consider SE-1, Silt Fence, SE-5, Fiber Rolls, SE-6, Gravel Bag Berms, or SE-9, Straw Bale Barriers. Sandbag barriers also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets which erode rills, and ultimately gullies, into disturbed, sloped soils. Sandbag barriers are similar to ground bag berms, but less porous.

Design and Layout

- Locate sandbag barriers on a level contour.
  - Slopes between 20:1 and 2:1 (H:V): Sandbags should be placed at a maximum interval of 50 ft (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: Sandbags should be placed at a maximum interval of 25 ft (a closer spacing is more effective), with the first row placed near the slope toe.
- Turn the ends of the sandbag barrier up slope to prevent runoff from going around the barrier.
- Allow sufficient space up slope from the barrier to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, consider moving the barrier away from the slope toe to facilitate cleaning. To prevent flow behind the barrier, sandbags can be placed perpendicular to the barrier to serve as cross barriers.
- Drainage area should not exceed 5 acres.

- Stack sandbags at least three bags high.
- Butt ends of bags tightly.
- Overlapp butt joints of row beneath with each successive row.
- Use a pyramid approach when stacking bags.
- In non-traffic areas
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Side slope = 2:1 or flatter
- In construction traffic areas
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Side slopes = 2:1 or flatter.

Materials

- ***Sandbag Material:*** Sandbag should be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight of 4 ounces/yd², Mullen burst strength exceeding 300 lb/in² in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355. Use of burlap may not acceptable in some jurisdictions.
- ***Sandbag Size:*** Each sand-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- ***Fill Material:*** All sandbag fill material should be non-cohesive, Class 1 or Class 2 permeable material free from clay and deleterious material.

Costs

Sandbag barriers are more costly, but typically have a longer useful life than other barriers. Empty sandbags cost $0.25 - $0.75. Average cost of fill material is $8 per yd³. Pre-filled sandbags are more expensive at $1.50 - $2.00 per bag.

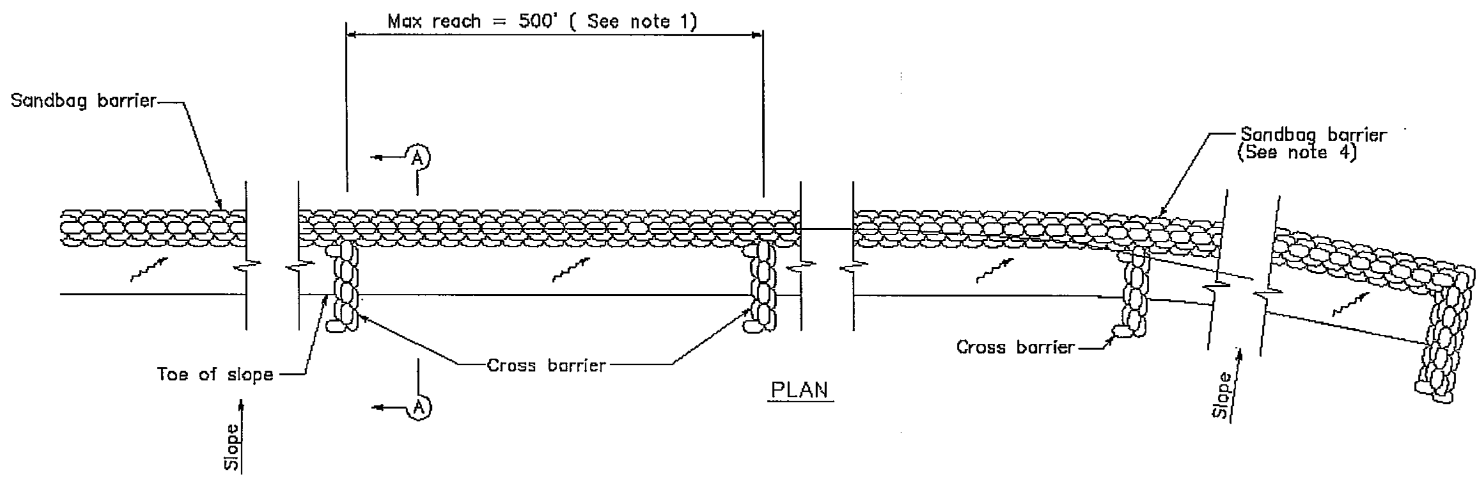
Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Sandbags exposed to sunlight will need to be replaced every two to three months due to degradation of the bags.
- Reshape or replace sandbags as needed.

- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Remove sandbags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

References

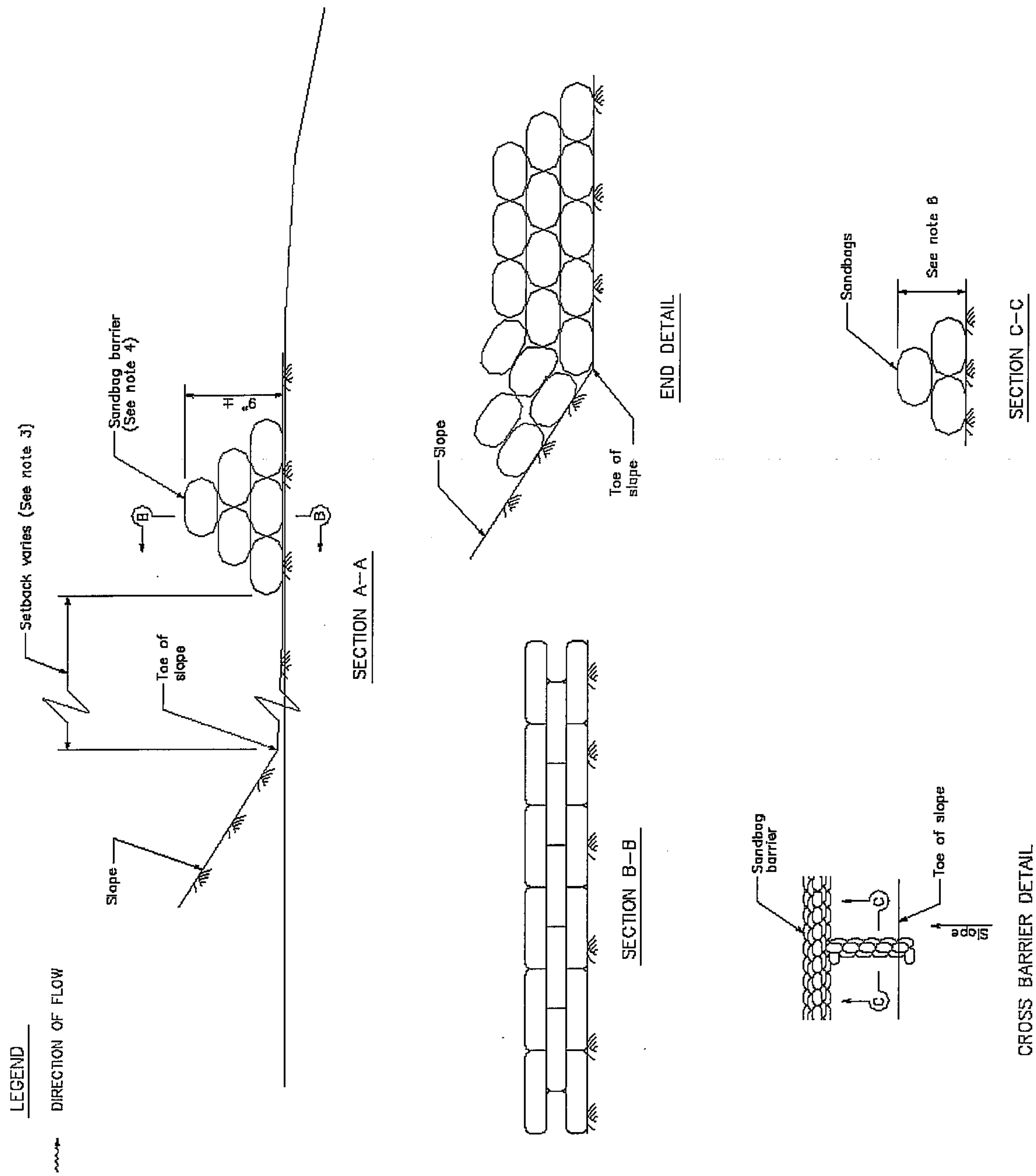
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



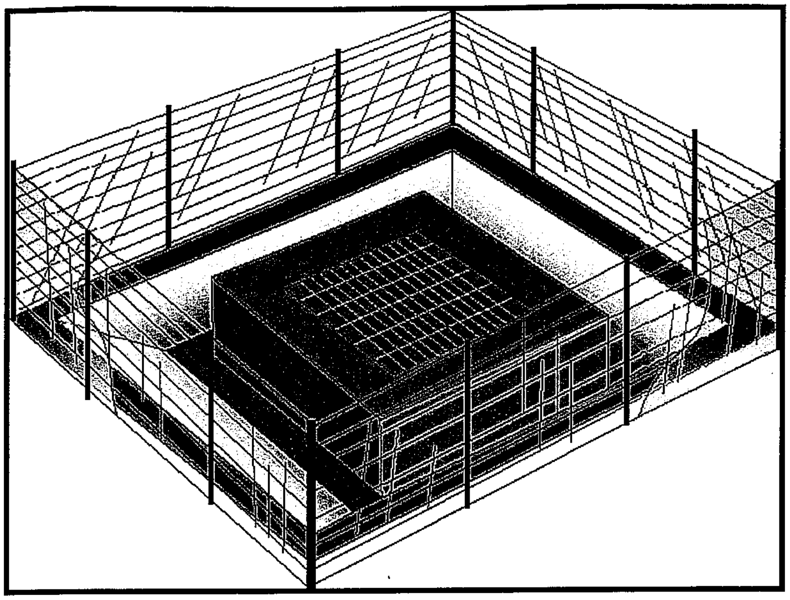
SANDBAG BARRIER

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/2 the height of the linear barrier. In no case shall the reach length exceed 500'.
2. Place sandbags tightly.
3. Dimension may vary to fit field condition.
4. Sandbag barrier shall be a minimum of 3 bags high.
5. The end of the barrier shall be turned up slope.
6. Cross barriers shall be a min of 1/2 and a max of 2/3 the height of the linear barrier.
7. Sandbag rows and layers shall be staggered to eliminate gaps.


LEGEND
DIRECTION OF FLOW
Setback varies (See note 3)
Toe of slope
Slope
Sandbag barrier (See note 4)
SECTION A–A
SECTION B–B
Slope
Toe of slope
END DETAIL
Sandbag barrier
Toe of slope
Slope
CROSS BARRIER DETAIL
Sandbags
See note 6
SECTION C–C

Storm Drain Inlet Protection SE-10



Objectives

EC	Erosion Control	
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction.

Suitable Applications

Every storm drain inlet receiving sediment-laden runoff should be protected.

Limitations

- Drainage area should not exceed 1 acre.
- Straw bales, while potentially effective, have not produced in practice satisfactory results, primarily due to improper installation.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Inlet protection usually requires other methods of temporary protection to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.
- Sediment removal may be difficult in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are

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expected, use other onsite sediment trapping techniques in conjunction with inlet protection.

- Frequent maintenance is required.

- For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.

- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Large amounts of sediment may enter the storm drain system when storm drains are installed before the upslope drainage area is stabilized, or where construction is adjacent to an existing storm drain. In cases of extreme sediment loading, the storm drain itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Inlet protection methods not presented in this handbook should be approved by the local stormwater management agency.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- Limit upstream drainage area to 1 acre maximum. For larger drainage areas, use SE-2, Sediment Basin, or SE-3, Sediment Trap, upstream of the inlet protection device.

- The key to successful and safe use of storm drain inlet protection devices is to know where runoff will pond or be diverted.

  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.

  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.

- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.

- Four types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.
  - Filter Fabric Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.
  - Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).
  - Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.
  - Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.
- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.
- Provide area around the inlet for water to pond without flooding structures and property.
- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.
- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- ***DI Protection Type 1 - Filter Fabric Fence*** - The filter fabric fence (Type 1) protection is shown in the attached figure. Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place filter fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced.

  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.
  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes must be at least 48 in.
  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.
  4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.
  5. Backfill the trench with gravel or compacted earth all the way around.

- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap*** - The excavated drop inlet sediment trap (Type 2) is shown in the attached figures. Install filter fabric fence in accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd^3/acre of drainage area.

- ***DI Protection Type 3 - Gravel bag*** - The gravel bag barrier (Type 3) is shown in the figures. Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability.

  1. Use sand bag made of geotextile fabric (not burlap) and fill with 0.75 in. rock or 0.25 in. pea gravel.
  2. Construct on gently sloping street.
  3. Leave room upstream of barrier for water to pond and sediment to settle.
  4. Place several layers of sand bags – overlapping the bags and packing them tightly together.
  5. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.

- ***DI Protection Type 4 – Block and Gravel Filter*** - The block and gravel filter (Type 4) is shown in the figures. Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction.

  1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place filter fabric over the wire mesh.
  2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.
  3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.
  4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.

Costs

- Average annual cost for installation and maintenance (one year useful life) is $200 per inlet.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- Filter Fabric Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes.

- Gravel Filters. If the gravel becomes clogged with sediment, it must be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.

- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site ore disposed at an appropriate location.

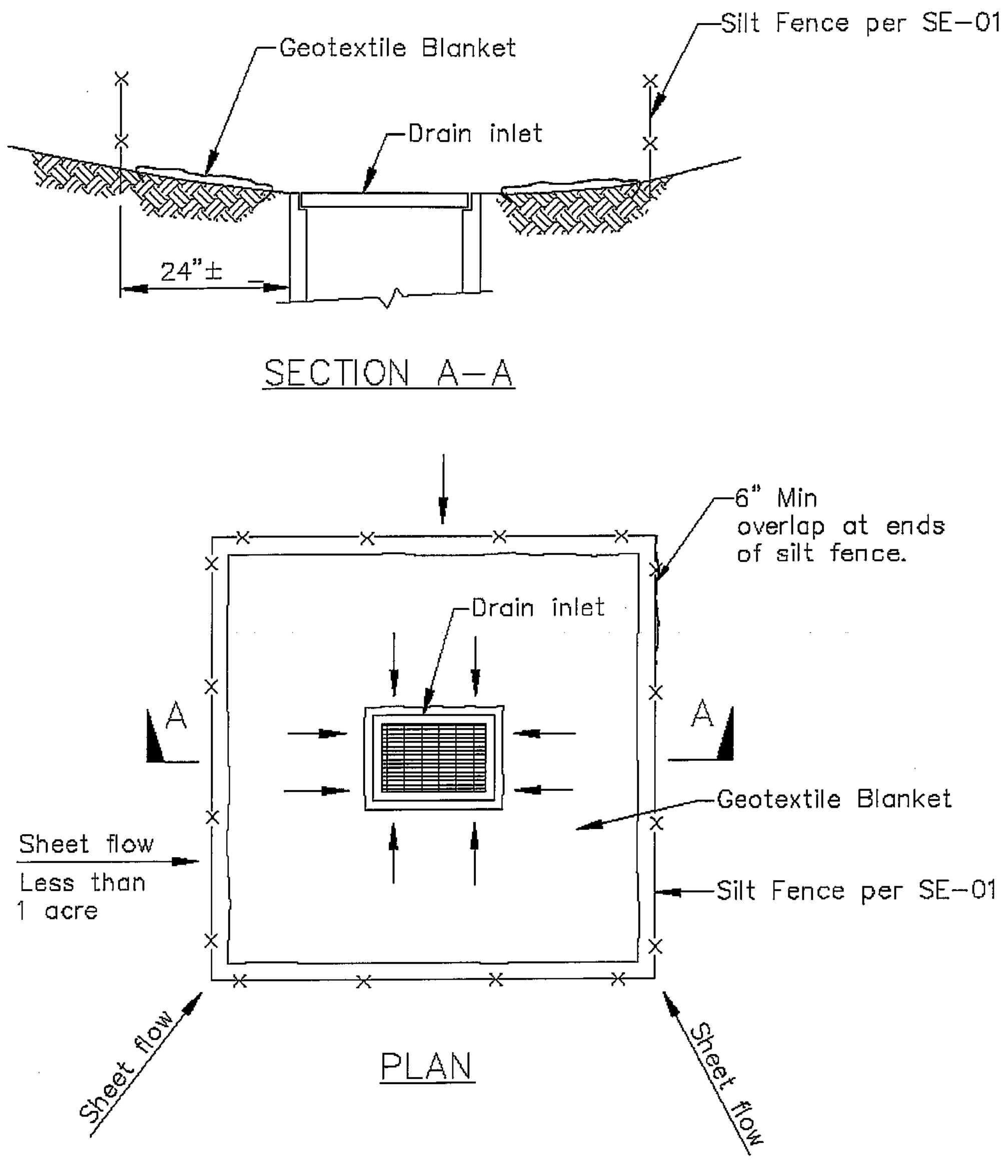
- Remove storm drain inlet protection once the drainage area is stabilized.
  - Clean and regrade area around the inlet and clean the inside of the storm drain inlet as it must be free of sediment and debris at the time of final inspection.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

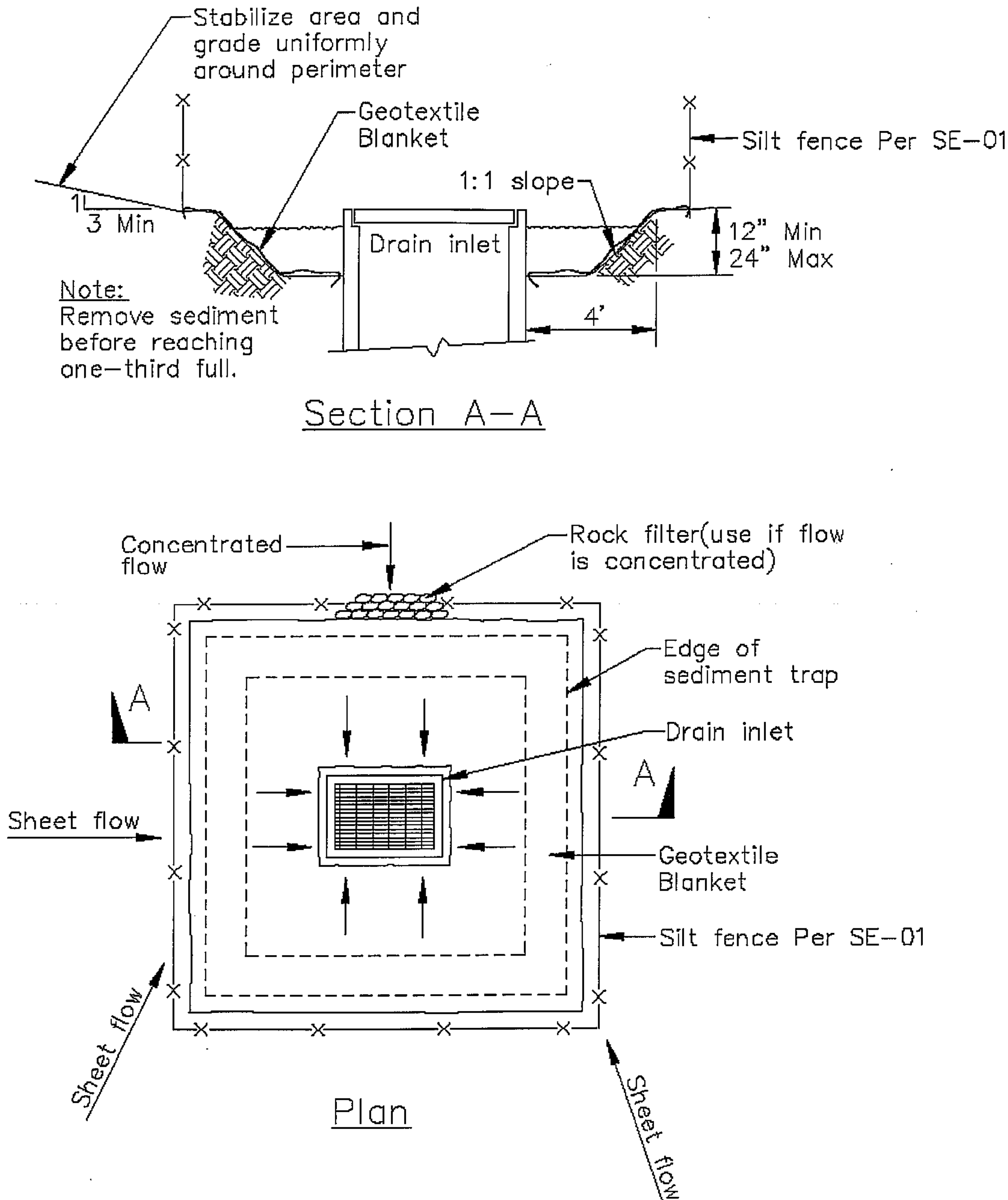
SE-10 Storm Drain Inlet Protection



DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

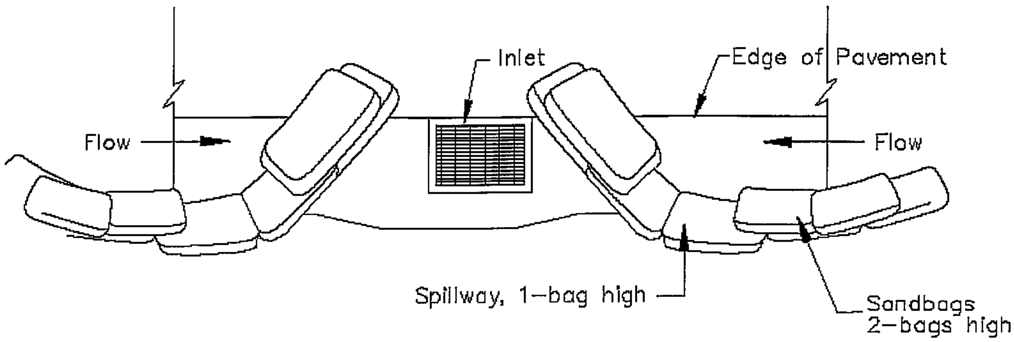
1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.



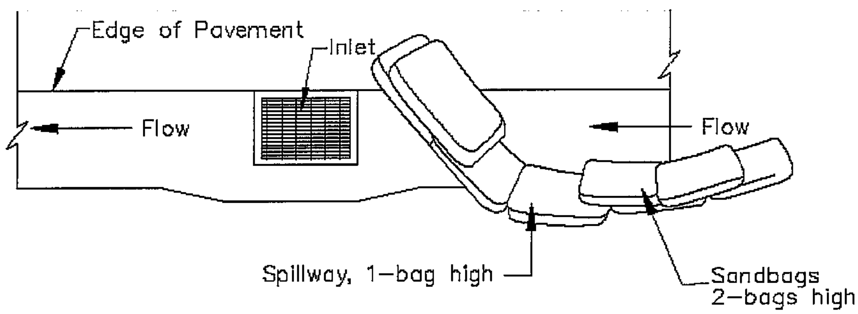
DI PROTECTION TYPE 2

NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP



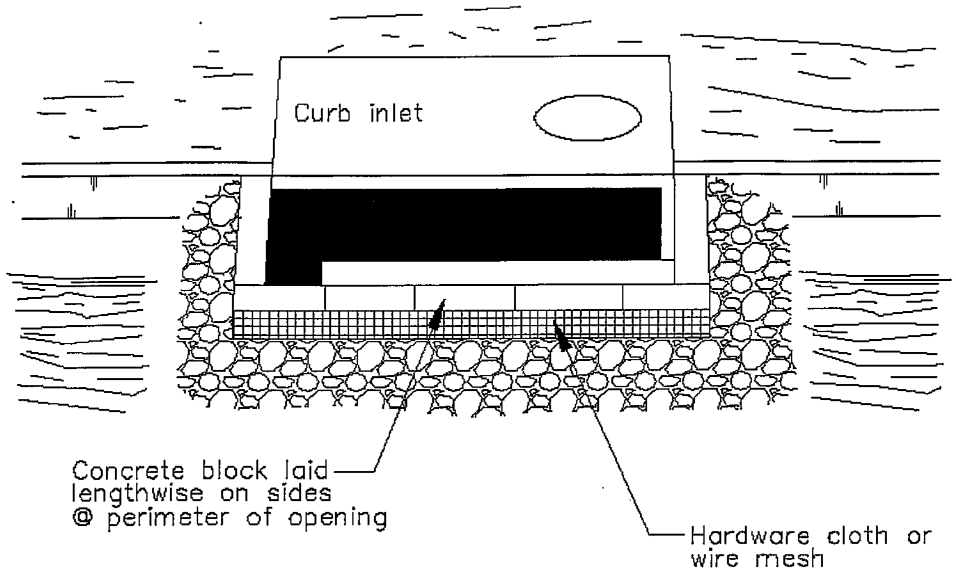
TYPICAL PROTECTION FOR INLET ON GRADE

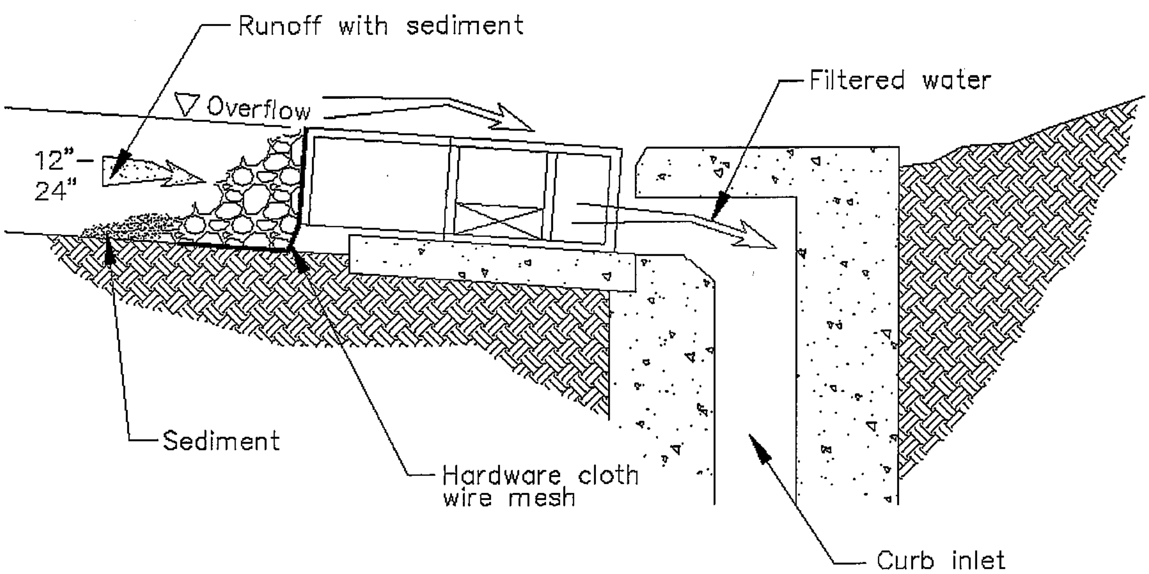
NOTES:

1. Intended for short–term use.
2. Use to inhibit non–storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

DI PROTECTION TYPE 3
NOT TO SCALE

RB-AR24478





DI PROTECTION – TYPE 4
NOT TO SCALE

California Regional Water Quality Control Board
San Diego Region

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TO: Acting Chairman Destache and San Diego Regional Water Quality Control Board Members

FROM: Catherine George Hagan, Senior Staff Counsel
Office of Chief Counsel

DATE: October 26, 2010

SUBJECT: **Tentative Order No. R9-2010-0016, Regulation of Non-Storm Water Discharges, Consideration of Economics and Unfunded State Mandates**

During the California Regional Water Quality Control Board, San Diego Region's (San Diego Water Board) proceedings last year to consider and reissue National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements for Discharges of Runoff from the Municipal Separate Storm Sewer Systems (MS4s) draining the watersheds of Orange County within the San Diego Region (the Orange County MS4 permit), San Diego Water Board members requested that Board counsel respond to public comments and Board member questions on issues such as Water Board regulation of non-storm water discharges, unfunded state mandates and the extent of applicable requirements to consider economic information in adopting MS4 permits. Similar legal comments have been raised in the San Diego Water Board's proceeding to consider Tentative Order No. R9-2010-0016. the Riverside County MS4 Permit (Tentative Order). This legal memorandum, provided for your consideration along with Responses to Comments, addresses some of the key legal issues and has been updated to reflect recent legal developments since the Orange County MS4 proceeding ending in December of 2009.

I. Regulation of Non-Storm Water Discharges

Commenters assert that regardless of whether a discharge is composed entirely of storm water or non-storm water, any pollutants discharged *from* an MS4 are subject to the maximum extent practicable (MEP) standard and related iterative process, despite the Clean Water Act's (CWA) more stringent requirement that discharges of non-storm water into an MS4 be "effectively prohibited." Copermittees in the Orange County MS4 permit proceeding made essentially the same argument there to oppose proposed numeric effluent limitations for non-storm water discharges. Numeric effluent limitations were not adopted for the Orange County MS4 permit and are not proposed in this Tentative Order. But commenters raise the argument that non-storm water discharges from the MS4 need only be subject to the MEP standard and related iterative process in their objections to the Tentative Order's requirement that the Copermittees must effectively prohibit certain categories of previously exempt non-storm water discharges, now identified as sources of pollutants, from entering the MS4.

For reasons stated in the Responses to Comments and elaborated on below, Board counsel does not agree with the comments that conclude non-storm water discharges from the MS4 are subject only to the MEP standard. The CWA employs the strategy of prohibiting the discharge of any pollutant from a point source into waters of the United States unless the discharger of the pollutant(s) obtains an NPDES permit pursuant to CWA Section 402. The 1987 amendment to the CWA includes provision 402(p) that specifically addresses NPDES permitting requirements for storm water discharges from MS4s. Section 402(p) prohibits the discharge of pollutants from specified MS4s to waters of the United States except as authorized by an NPDES permit and identifies two substantive standards for MS4 storm water permits. MS4 permits (1) "shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers[ ]" and (2) "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or State determines appropriate for the control of such pollutants." (CWA § 402(p)(3)(B)(ii-iii).)

In November 1990, the United States Environmental Protection Agency (USEPA) published regulations addressing storm water discharges from MS4s. (Vol. 55 Federal Register (Fed. Reg.) 47990 and following (Nov. 16, 1990) (Phase I Final Rule).) The regulations establish minimum requirements for MS4 permits, and generally focus on the requirement that MS4s implement programs to reduce the amount of pollutants found in storm water discharges to the MEP. The Clean Water Act's municipal storm water MEP standard does not require storm water discharges to strictly meet water quality standards, as is required for other NPDES permitted discharges. Compliance is achieved through an iterative approach of continuous implementation of improved best management practices (BMPs). This distinction reflects Congress's recognition that variability in flow and intensity of storm events render difficult strict compliance with water quality standards by MS4 permittees. In describing the controls that permits must include to reduce pollutants in storm water discharges to the MEP, the statute states that the controls shall include: "management practices, control techniques and system, design and engineering methods, and such other provisions as the [permit writer] determines appropriate for the control of such pollutants." (CWA § 402(p)(3)(B)(iii).)

In contrast, non-storm water discharges from the MS4 that are not authorized by separate NPDES permits, nor specifically exempted (see 40 C.F.R. § 122.26(d)(2)(iv)(B)), are subject to requirements under the NPDES program, including discharge prohibitions, technology-based effluent limitations and water quality-based effluent limitations. (40 C.F.R. § 122.44.) The regulations also require the MS4's program to include an element to detect and remove illicit discharges and improper disposal into the storm sewer. (40 CFR § 122.26(d)(2)(iv)(B).)

While "non-storm water" is not defined in the CWA or federal regulations, the federal regulations define "illicit discharge" as "any discharge to a municipal separate storm sewer that is not composed entirely of storm water and that is not covered by an NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer and discharges resulting from fire fighting activities)." (Id., at § 122.26(b)(2).) This definition is the most closely applicable definition of "non-storm water" contained in federal law. As stated in the Phase I Final Rule, USEPA added the illicit discharge program requirement to begin implementation of the 'effective prohibition' requirement to detect and control certain non-storm water discharges to their municipal system. USEPA stated: "Ultimately, such non-storm water discharges through a municipal separate storm sewer must either be removed from the system or become subject to an NPDES permit (other than the permit for the discharge from the [MS4])." (55 Fed. Reg. 47990, 47995 (Nov. 16, 1990).)[1]

Thus, federal law mandates that permits issued to MS4s must require management practices that will result in reducing storm water pollutants to the MEP yet at the same time requires that non-storm water discharges be effectively prohibited from entering the MS4. The argument that non-storm water discharges, prohibited from entry into the MS4 in the first instance, should be held to comply with only the less stringent MEP standard developed for storm water discharges is contrary to and potentially renders the "effectively prohibit" requirement in section 402(p)(3)(B)(ii) meaningless. Consistent with federal law, unless non-storm water discharges to the MS4 are authorized by a separate NPDES permit or are specifically exempted under federal regulations, non-storm water discharges are appropriately subject to the effective prohibition requirement in the CWA and regional water boards are not limited by the iterative MEP approach to storm water regulation in crafting appropriate regulations for non-storm water discharges.

B. Obligation to Consider Cost (Water Code § 13241)

Many commenters assert that provisions in the Tentative Order are new permit terms that exceed federal law and therefore the San Diego Water Board is required, but has failed, to consider factors in Water Code section 13241, including cost information, prior to approving the Tentative Order.

In *City of Burbank v. State Water Resources Control Board, et al.* ((2005) 35 Cal.4[th] 613) (*Burbank*), the California Supreme Court considered whether regional water boards must

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[1]As released for public comment, the Tentative Order included reference to State Water Board Order WQ 2009-0008 as a precedential order on the topic of regulation of non-storm water discharges. The memorandum prepared by Board counsel for the Orange County MS4 permit included citations to State Water Board Order WQ 2009-0008 in support of the above conclusions. State Water Board Order WQ 2009-0008 arose from the State Water Board's review of amendments to a Los Angeles Water Board MS4 permit to incorporate the implementation of summer dry weather Total Maximum Daily Load waste load allocations. In July 2010, the Superior Court for Los Angeles County remanded the Los Angeles Water Board's permitting action based upon procedural irregularities at the adoption hearing. This remand had the result of setting aside and voiding State Water Board Order WQ 2009-0008. The court set aside the order "without prejudice to the State Water Resources Control Board's consideration of the matters addressed in Order WQ 2009-0008 based on any new administrative record that may come before it . . . ." (*County of Los Angeles, et al. v. State Water Resources Control Board, California Regional Water Quality Control Board, Los Angeles Region, et al.,* Case No. BS1222724 (July 16, 2010) Judgment Granting Writ of Mandate, Exhibit 1, p. 2.). Thus, although commenters are correct that State Water Board Order WQ 2009-0008 is no longer a precedential State Water Board order (and was voided and set aside on October 11, 2010) and references to its precedential effect have been removed through errata, its substantive provisions were not reviewed by the court and it is appropriate for the San Diego Water Board to continue to agree with its reasoning, based upon evaluation of applicable federal authorities.

comply with Water Code section 13241 by taking into account the costs a permit holder will incur in complying with permit requirements when issuing waste discharge requirements under Water Code section 13263, subdivision (a). The court concluded that whether it is necessary to consider such cost information "depends on whether those restrictions meet or exceed the requirements of the federal Clean Water Act." (*Burbank,* 35 Cal.4th at 627.) The court reasoned that "[Water Code s]ection 13377 specifies that wastewater discharge permits must meet the federal standards set by federal law. In effect, section 13377 forbids a regional board's consideration of any economic hardship on the part of the permit holder if doing so would result in the dilution of the requirements set by Congress in the Clean Water Act. That act prohibits the discharge of pollutants into the navigable waters of the United States unless there is compliance with federal law (33 U.S.C. § 1322(a)), and publicly operated wastewater treatment plants such as those before us here must comply with the act's clean water standards, regardless of cost [citations]. Because [Water Code] section 13263 cannot authorize what federal law forbids, it cannot authorize a regional board, when issuing a wastewater discharge permit, to use compliance costs to justify pollutant restrictions that do not comply with federal clean water standards." (*Burbank,* 35 Cal.4th at 625.)

Therefore, while the *Burbank* decision does require an analysis of Water Code section 13241 factors including cost when the state adopts permit conditions that are more stringent than federal law (*id. at 618*) the Tentative Order, including Finding F.6., reflects that all of the challenged provisions of the Tentative Order are required to implement federal law. Thus, the Regional Board is not required to consider economic information to justify a "dilution of the requirements" established in federal law. Nonetheless, as staff has noted extensively in Responses to Comments, to the extent that economic information has been provided in connection with compliance and as to other costs associated with challenged permit provisions, the Tentative Order reflects staff has fully considered this information.

C. Unfunded State Mandates

Commenters in this proceeding have raised the issue of unfunded state mandates in connection with many of the proposed permit provisions. Some commenters have argued that a number of the provisions in the Tentative Order go beyond what is required under federal law and therefore constitute unfunded state mandates that may not be imposed without necessary funding first being provided to the Copermittees. Other commenters assert that the San Diego Water Board lacks jurisdiction to render an opinion on whether any of the Tentative Order's provisions exceed federal law and findings to that effect should be removed. Board counsel disagrees with both types of comments.

<u>State Mandate Law</u>

Briefly, Section 6 of Article XIII B of the California Constitution provides, in relevant part: "Whenever the Legislature or any state agency mandates a new program or higher level of service on any local government, the State shall provide a subvention of funds to reimburse that local government for the costs of the program or higher level of service . . . ." These subvention requirements are commonly referred to as a prohibition on unfunded state mandates. The California Supreme Court has recognized that requirements that flow from federal requirements are not state mandates and are therefore exempt from reimbursement requirements. The Commission on State Mandates (Commission) evaluates local government "test claims" that seek reimbursement for claimed unfunded state mandates. This evaluation culminates with the Commission's written decision, which is a final agency action that may be challenged in superior court. Under mandates law, eligible local governments will receive a reimbursement for each fiscal year that the state mandate remains in effect. The reimbursement is provided as a line item in the Budget Act. If the Legislature fails to provide a subvention of funds, the local government may file a lawsuit to have the mandate declared unenforceable.

Recent Commission Proceedings

In September 2009, the Commission issued a Final Statement of Decision in a storm water permit Test Claim filed by the County of Los Angeles and several additional copermittee test claimants. (*Municipal Storm Water and Urban Runoff Discharges,* 03-TC-04, 03-TC-19, 03-TC-20, and 03-TC-21 (Los Angeles Regional Water Quality Control Board Order No. 01-182 (July 31, 2009) (Los Angeles Test Claim).) The Commission found that all but one of the challenged provisions issued by the Los Angeles Water Board in its MS4 permit did not qualify as unfunded state mandates as they did "not impose costs mandated by the state within the meaning of article XIII B, section 6 of the California Constitution because the claimants have fee authority (under Cal. Const. article XI, § 7) within the meaning of Government Code section 17556, subdivision (d), sufficient to pay for the activities in those parts of the permit." (Los Angeles Test Claim, Statement of Decision, p. 2.)

In March 2010, the Commission issued its final decision in the San Diego County Test Claim, in which 19 of 21 copermittees challenged multiple provisions in Order No. R9-2007-0001 (National Pollutant Discharge Elimination System (NPDES) No. CAS0108758), Waste Discharge Requirements for Discharges of Urban Runoff From the Municipal Separate Storm Sewer Systems (MS4s) within San Diego County (San Diego Test Claim). The Commission partially approved the test claim finding the following permit provisions to be state mandates subject to subvention: (1) conduct and report on street sweeping activities; (2) clean and report on storm sewer cleaning; (3) implement a regional urban runoff management program; (4) assess program effectiveness; (5) conduct public education and outreach; and (6) collaborate among copermittees to implement the program. The Commission found hydromodification and low impact development requirements to be state mandates, but not reimbursable mandates because the local agencies could charge fees for these programs.

In its final decisions, the Commission acknowledged that federal regulations require the co-permittees to secure NPDES permit coverage for their storm water discharges and that NPDES permits must include specific controls. But in the Commission's view, the lack of an explicit provision in the federal regulations replicating the permit requirements results in the permit establishing state as opposed to federal mandates. The State Water Board, together with the San Diego Water Board (concerning the San Diego Test Claim) and the Los Angeles Water Board (concerning the Los Angeles Test Claim), disagree that the respective permits exceed the federal mandate in the CWA and have filed petitions for writ of mandate in Sacramento County Superior Court to challenge the final Commission actions. In the meantime, the provisions found to be reimbursable remain fully enforceable and must be complied with by the copermittees.[2]

With this background, commenters are correct that one factor to be considered in determining whether a requirement is an unfunded state mandate is whether the requirement goes beyond, or exceeds, what is required by federal law. Based upon a Test Claim proceeding to challenge a particular permit in this Tentative Order (once adopted), the Commission will decide whether a particular provision of an adopted order qualifies as an unfunded state mandate for which reimbursement is required. The Commission does not determine the validity of any particular provision; it addresses only whether the State or the local government will be required to pay for that provision. The San Diego Water Board is not, as some commenters assert, precluded from adopting otherwise lawful permit provisions simply because the Commission may subsequently determine that the provisions require reimbursement by the State.

Other commenters assert that the Tentative Order should be silent on the issue of unfunded mandates because the San Diego Water Board lacks jurisdiction to make such a determination. As stated above, the Commission will administratively decide whether one or more provisions are reimbursable mandates. However, it is entirely appropriate for the San Diego Water Board to set forth its legal bases to support the provisions in the Tentative Order, finding them to be necessary and appropriate to meet the federal MEP standard.

Board counsel will be available to answer any questions you may have at the hearing on the Tentative Order.

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[2] See attached memorandum from State Water Board Chief Counsel Michael Lauffer to Regional Water Board Executive Officers.

Linda S. Adams
Secretary for Environmental Protection

State Water Resources Control Board

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Arnold Schwarzenegger
Governor

TO: Regional Water Board Executive Officers **[via email only]**

FROM: Michael A.M. Lauffer
Chief Counsel
OFFICE OF CHIEF COUNSEL

DATE: May 20, 2010

SUBJECT: RECENT DECISIONS ISSUED BY THE COMMISSION ON STATE MANDATES CONCERNING MUNICIPAL STORM WATER PERMITS

In two recent decisions, the Commission on State Mandates (Commission) found that certain provisions within two municipal storm water permits constituted reimbursable state mandates within the meaning of the California Constitution. The Los Angeles Regional Water Quality Control Board (Los Angeles Water Board), the San Diego Regional Water Quality Control Board (San Diego Water Board), and the State Water Resources Control Board (State Water Board) (collectively, the Water Boards) will challenge these decisions in court. In the meantime, regional water quality control boards (regional water boards) should understand the immediate effects of the decisions.

This memorandum briefly summarizes the two decisions and provides information on their immediate consequences, so that the regional water boards have a common understanding of the decisions.

BACKGROUND

State Mandates Law

Section 6 of Article XIII B of the California Constitution provides, in relevant part: "Whenever the Legislature or any state agency mandates a new program or higher level of service on any local government, the State shall provide a subvention of funds to reimburse that local government for the costs of the program or higher level of service. . . ." These subvention requirements are commonly referred to as a prohibition on unfunded state mandates.

Local governments seeking reimbursement for state mandates must file test claims with the Commission. The Commission evaluates test claims and determines whether laws or "executive orders" that are the subject of the test claim constitute state mandates. If the Commission determines a law or executive order is a state mandate, it then determines whether the local government can assess fees to offset the cost of the state mandate. If the

Commission determines the local government cannot assess fees for the state mandate, the state must provide a subvention of funds.

Subsequent proceedings before the Commission determine the local governments entitled to reimbursement and the amount of the reimbursement. Under mandates law, eligible local governments will receive a reimbursement for each fiscal year that the state mandate remains in effect. The reimbursement is provided as a line item in the Budget Act. If the Legislature fails to provide a subvention of funds, the local government may file a suit to have the mandate declared unenforceable.[1]

The Los Angeles Decision

In 2003 and 2007, the County of Los Angeles and 14 cities within the county (the Los Angeles claimants) submitted test claims 03-TC-04, 03-TC-19, 03-TC-20, and 03-TC-21. The test claims asserted that provisions of Los Angeles Water Board Order 01-182 constitute reimbursable state mandates. Order 01-182 is the 2001 renewal of the municipal storm water permit for Los Angeles County and most of its incorporated cities, and serves as a national pollutant discharge elimination system (NPDES) permit. The permit provisions require the Los Angeles claimants to install and maintain trash receptacles at specified transit stops and to inspect certain industrial, construction, and commercial facilities for compliance with local and/or state storm water requirements.

On September 3, 2009, the Commission issued a final decision entitled *In re Test Claim On: Los Angeles Regional Quality Control Board Order No. 01-182, Case Nos.: 03-TC-04, 03-TC-19, 03-TC-20, 03-TC-21* (Los Angeles Decision). The Los Angeles Decision partially approved the test claims. The Commission found the trash receptacle requirement to be a reimbursable state mandate.

The San Diego Decision

In 2007, the County of San Diego and 21 cities within the county (the San Diego claimants) submitted test claim 07-TC-09. The test claim asserted that many provisions of San Diego Water Board Order R9-2007-0001 constitute reimbursable state mandates. Order R9-2007-0001 is the 2007 renewal of the municipal storm water permit for San Diego County and many of its incorporated cities, and serves as an NPDES permit. The challenged permit provisions require the San Diego claimants to: (1) conduct and report on street sweeping activities; (2) clean and report on storm sewer cleaning; (3) implement a regional urban runoff management program; (4) assess program effectiveness; (5) conduct public education and outreach; (6) collaborate among co-permittees to implement the program; (7) implement hydromodification management plans; and (8) implement plans for low impact development.

On March 30, 2010, the Commission issued a final decision entitled *In re Test Claim on: San Diego Regional Quality Control Board Order No. R9-2007-0001, Case No. 07-TC-09* (San Diego Decision). The San Diego Decision partially approved the test claim. The

[1] Gov. Code, § 17612, subd. (c).

Commission's decision took the relatively narrow Los Angeles Decision to its logical conclusion. The Commission found the following permit requirements to be reimbursable state mandates: (1) conduct and report on street sweeping activities; (2) conduct and report on storm sewer cleaning activities; (3) implement a regional urban runoff management program; (4) assess program effectiveness; (5) conduct public education and outreach; and (6) collaborate among co-permittees to implement the program. The Commission found the hydromodification and low impact development requirements to be state mandates, but not reimbursable mandates because the local agencies could charge fees to pay for these programs.

DISCUSSION

The Water Boards will challenge both the Los Angeles and San Diego decisions and seek to have them overturned on a variety of grounds. In the meantime, the Office of Chief Counsel has received questions from the various regional water boards about the immediate consequences of the decisions. The summary below responds to many of those questions, both in terms of what the decisions do – and do not – mean for the municipal storm water program.

1. *The Decisions' Direct Effects Are Limited to the Storm Water Permits Identified in the Test Claims*

The decisions directly affect only the municipal storm water permits identified by the two test claims. That is, the effect of the decisions is limited to the provisions of Los Angeles Water Board Order 01-182 and San Diego Order R9-2007-0001 identified by the Commission as reimbursable state mandates. No other municipal storm water permits (or provisions therein) in California are directly affected by the decisions, even if those permits contain similar provisions.

2. *The Decisions' Effects Cannot Extend to Storm Water Permits Issued to State or Federal Agencies*

Under federal storm water regulations, entities that operate municipal separate storm sewer systems are subject to NPDES permitting requirements. Municipal separate storm sewer systems include systems owned or operated by federal and state agencies. For example, the California Department of Transportation is currently regulated by a municipal storm water permit.

Because state and federal agencies cannot receive state reimbursement pursuant to Article XIII B of the California Constitution, the Commission does not have any jurisdiction over municipal storm water permits issued to those agencies. Reimbursement requirements can only apply to mandates imposed upon "local government."[2]

[2] Cal. Const., art. XIII B, § 6, subd. (a).

3. *The Claimants Must Continue to Comply With the Permits While the Reimbursement Phase Proceeds*

The Los Angeles and San Diego claimants must, respectively, continue to comply with all provisions of their municipal storm water permits. These permits are still valid in their entirety. The Commission proceedings were not about validity of the permits; the proceedings are and have always been about funding. The Commission has determined that the state must reimburse the claimants for the costs of complying with the identified permit provisions, not that the provisions are invalid.

While, as described below, a provision of state law could affect the permits' enforceability should the state fail to provide reimbursement, that provision cannot apply until the Legislature considers a local government claims bill towards the end of the reimbursement phase or affirmatively indicates that it will not provide reimbursement for a specific fiscal year as part of a Budget Act.[3] The reimbursement phase includes, but is not limited to, the Commission's adoption of Parameters and Guidelines, the State Controller's adoption of Claiming Instructions, and the Legislature's consideration of a local government claims bill as part of the annual Budget Act.

4. *If the Legislature Does Not Provide Reimbursement, the Provisions May Become Unenforceable as a Matter of State Law*

As mentioned above, the Legislature ultimately considers a local government claims bill in order to provide the necessary reimbursement. At that point, the Legislature could choose not to provide a reimbursement of funds in the annual Budget Act. If the legislature deletes funding from the annual Budget Act, the affected municipalities could bring suit in Sacramento Superior Court to render unenforceable the permit provisions identified by the Commission as reimbursable mandates.[4] For that fiscal year, the provisions would be unenforceable for the purposes of state law.[5] Alternatively, the Legislature may affirmatively indicate that it will not provide a reimbursement for a particular fiscal year, which as a matter of state law suspends the mandate.[6]

CONCLUSION

The Los Angeles and San Diego decisions could have significant long-term consequences on California's municipal storm water program, but the immediate effects are limited. While the Water Boards' challenges to the Commission's decisions are pending, the regional water boards should understand the following: (1) the decisions' effects are limited to the storm water permits identified in the test claims; (2) the decisions' effects cannot extend to storm water permits issued to state or federal agencies; (3) the claimants must continue to comply with the permits

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[3] Gov. Code, § 17581, subd. (a).

[4] *Id.*, § 17612, subd. (c).

[5] *Ibid.* It is unclear whether a legislative failure to provide the required reimbursement would relieve the permittees of their obligations under federal law to comply with the permits.

[6] *Id.*, § 17581, subd. (a).

while the reimbursement phase proceeds; and (4) the provisions may become unenforceable as a matter of state law if the legislature does not provide reimbursement or affirmatively indicates that it will not provide a reimbursement.

If you have any questions about this matter, please contact Alex P. Mayer of my staff at (916) 341-5051.

cc: **[All via email only]**

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San Diego Region
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TO: Chairman Wright and San Diego Regional Water Quality Control Board Members

Catherine George Hagan

FROM: Catherine George Hagan, Senior Staff Counsel
Office of Chief Counsel

DATE: 5 November 2009

SUBJECT: Regulatory Authority for Imposing Numeric Effluent Limits on Dry Weather, Non-Storm Water Discharges, in Municipal Storm Water Permits

At the July 1, 2009, San Diego Regional Board Meeting, Regional Board members received public comments regarding the inclusion of regulations specific to non-storm water discharges in Tentative Order No. R9-2009-002, the reissuance of National Pollutant Discharge Elimination System (NPDES) Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) draining the watersheds of Orange County within the San Diego Region (South Orange County Municipal Storm Water Requirements). At the July meeting, Regional Board members requested that Board Counsel respond to public comments and Board member questions regarding the Regional Board regulation of non-storm water discharges. Commenters assert that the definition of "storm water" in the federal regulations includes drainage and surface runoff entirely unrelated to precipitation events. They also comment that regardless of whether a discharge is composed entirely of storm water or non-storm water, any pollutants discharged *from* an MS4 are subject to the maximum extent practicable (MEP) standard and related iterative process, despite the Clean Water Act's (CWA) requirement that discharges of non-storm water into an MS4 be "effectively prohibited." As a result, commenters assert that numeric effluent limitations on dry weather, non-storm water discharges are inappropriate. Board members also sought clarity on the claims by copermittees that many provisions in the Tentative Order are unfunded state mandates, requiring reimbursement by the State. This memorandum addresses both the non-storm water and unfunded mandate issues.

I. Regulatory Background

The Clean Water Act (CWA) employs the strategy of prohibiting the discharge of any pollutant from a point source into waters of the United States unless the discharger of the pollutant(s) obtains a NPDES permit pursuant to Section 402 of the Clean Water Act. The 1987 amendment to the CWA includes provision 402(p) that specifically addresses NPDES permitting requirements for storm water discharges from MS4s. Section 402(p) prohibits the discharge of pollutants from specified MS4s to waters of the United States except as authorized by an NPDES permit and identifies two substantive standards for MS4 storm

Supporting Document No. 7
Item No. 12
November 18, 2009

water permits. MS4 permits (1) “shall include a requirement to effectively prohibit non-stormwater discharges into the storm sewers[ ]” and (2) “shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as the Administrator or State determines appropriate for the control of such pollutants.” (CWA Section 402(p)(3)(B)(ii-iii).)

On November 16, 1990, USEPA published regulations addressing storm water discharges from MS4s. (Vol. 55 Federal Register (Fed. Reg.) 47990 and following (Nov. 16, 1990).) The regulations establish minimum requirements for MS4 permits, and generally focus on the requirement that MS4s implement programs to reduce the amount of pollutants found in storm water discharges to the maximum extent practicable. However, the regulations also require the MS4’s program to include an element to detect and remove illicit discharges and improper disposal into the storm sewer. (40 CFR § 122.26(d)(2)(iv)(B).) “Illicit discharges” defined in the regulations is the most closely applicable definition of “non-storm water” contained in federal law and the terms are often used interchangeably. The State Water Board has concluded that “U.S. EPA added the illicit discharge program requirement with the stated intent of implementing the Clean Water Act’s provision requiring permits to ‘effectively prohibit non-storm water discharges.’” (State Board Order WQ 2009-0008 (*County of Los Angeles)*, p. 4.)

II. Definition of Storm Water and Non-Storm Water

Federal regulations define “storm water” as “storm water runoff, snow melt runoff, and surface runoff and drainage.” (40 C.F.R. § 122.26(b)(13).) While “surface runoff and drainage” is not defined in federal law, USEPA’s preamble to the federal regulations demonstrates that the term is related to precipitation events such as rain and/or snowmelt. (55 Fed. Reg. 47990, 47995-96.) For example, USEPA states: “In response to the comments [on the proposed rule] which requested EPA to define the term ‘storm water’ broadly to include a number of classes of discharges which are not in any way related to precipitation events, EPA believes that this rulemaking is not an appropriate forum for addressing the appropriate regulation under the NPDES program of such non-storm water discharges . . . . Consequently, the final definition of storm water has not been expanded from what was proposed.” (*Ibid.*) The State Water Board recently considered and rejected in its precedential *Los Angeles County* order, WQ 2009-0008, the very arguments made here by commenters that storm water includes dry weather flows, completely unrelated to precipitation events. The State Water Board concluded that “U.S. EPA has previously rejected the notion that ‘storm water,’ as defined at 40 Code of Federal Regulations section 122.26(b)(13), includes dry weather flows. In U.S. EPA’s preamble to the storm water regulations, U.S. EPA rejected an attempt to define storm water to include categories of discharges ‘not in any way related to precipitation events.’ [Citations.]” (*County of Los Angeles,* Order WQ 2009-0008, p. 7.)

The storm water regulations themselves identify numerous categories of discharges including landscape irrigation, diverted stream flows, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, and street wash water as “non-storm water.” While these types of discharges may be regulated under storm water permits, they are not considered storm water discharges. (40 CFR § 122.26(d)(2)(iv)(B).) Applicable regulations do not prohibit these and other categories of non-storm water discharges that are not expected to be a source of pollutants. But where, as in the Tentative Permit, certain categories of non-storm water discharges have been identified by the municipality to be sources of pollutants, they are no longer exempt and become subject to the effective prohibition requirement in section 402(p)(3)(B)(ii). This process would be wholly unnecessary if MEP were the governing standard for these non-storm water discharges.

Not only does a review of the storm water regulations and USEPA’s discussion of the definition of storm water in its preamble to these regulations strongly support the interpretation that storm water includes only precipitation-related discharges, the Regional Board is bound to follow the State Water Board’s interpretation of the definition of “storm water” set forth in the precedential State Water Board Order WQ 2009-0008 which rejects the commenters’ interpretation. Therefore, while commenters assert that dry weather, non-precipitation related discharges are nonetheless storm water discharges (and therefore subject to the MEP standard in CWA section 402(p)(3)(B)(iii)), their interpretation is not supported and does not conform to applicable State Water Board precedent.

III. Non-Storm Water Regulation

Oral and written comments received by the Regional Board throughout this proceeding assert that the *discharge* of non-storm water, like storm water, from the MS4 is subject to the MEP standard and may not be regulated appropriately with numeric effluent limitations. Several commenters assert that once pollutants contained in prohibited non-storm water enter the MS4, the MEP standard and related iterative approach to storm water regulation is the most stringent means available to require those discharges to comply with water quality standards. In other words, the commenters assert that it is inappropriate for a Regional Board to regulate non-storm water discharges with numeric effluent limitations. As explained below, this interpretation is incorrect. Building on the effective prohibition against non-storm water discharges, the Clean Water Act requirement to reduce pollutants discharged from the MS4 to the MEP standard necessarily is limited to storm water discharges.

The Clean Water Act’s municipal storm water MEP standard does not require storm water discharges to strictly meet water quality standards, as is required for other NPDES permitted discharges. This distinction reflects Congress’s recognition that variability in flow and intensity of storm events render difficult strict compliance with water quality standards by MS4 permittees. In describing the controls that permits must include to reduce pollutants in storm water discharges to the MEP, the statute states that the controls shall include: “management practices, control techniques and system, design and engineering methods, and such other provisions as the [permit writer] determines appropriate for the control of such pollutants.” (CWA § 402(p)(3)(B)(iii).)

In contrast, non-storm water discharges from the MS4 that are not authorized by separate NPDES permits, nor specifically exempted, are subject to requirements under the NPDES program, including discharge prohibitions, technology-based effluent limitations and water quality-based effluent limitations. (40 C.F.R. § 122.44.) USEPA’s preamble to the storm water regulations also supports the interpretation that regulation of non-storm water discharges through an MS4 is not limited to the MEP standard in CWA section 402(p)(3)(B)(iii):

> "Today's rule defines the term "illicit discharge" to describe any discharge through a municipal separate storm sewer system that is not composed entirely of storm water and that is not covered by an NPDES permit. Such illicit discharges are not authorized under the Clean Water Act. Section 402(p(3)(B) requires that permits for discharges from municipal separate storm sewers require the municipality to "effectively prohibit" non-storm water discharges from the municipal separate storm sewer…Ultimately, such non-storm water discharges through a municipal separate storm sewer must either be removed from the system or become subject to an NPDES permit." (55 Fed. Reg. 47990, 47995.)

USEPA has recently affirmed its support for the Tentative Order's regulatory approach to non-storm water discharges in comments submitted in this proceeding. As noted above, the State Water Board concluded in its recent Order WQ 2009-0008 that "U.S. EPA added the illicit discharge program requirement with the stated intent of implementing the Clean Water Act's provision requiring permits to 'effectively prohibit non-storm water discharges.'" (State Board Order WQ 2009-0008 (*County of Los Angeles)*, p. 4.) Along these same lines, the State Water Board also explained that "the Clean Water Act and the federal storm water regulations assign different performance requirements for storm water and non-storm water discharges. These distinctions in the guidance document . . . , the Clean Water Act, and the storm water regulations make it clear that a regulatory approach for storm water - such as the iterative approach we have previously endorsed - is not necessarily appropriate for non-storm water." (State Water Board Order WQ 2009-0008, *County of Los Angeles),* p. 9.)

Some commenters place extensive reliance on various State Water Board water quality orders, the State Water Board's expert storm water panel (also known as the "Blue Ribbon Panel") report entitled, *The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities* (June 2006), and other references, to assert that it is inappropriate to include numeric effluent limitations for dry weather non-storm water discharges from the MS4. It is important to note that the Blue Ribbon Panel neither considered nor made any determination on how non-storm water discharges from MS4s that adversely affect receiving waters are to be addressed. The discussion of the feasibility of numeric and/or narrative water quality-based effluent limitations and the MEP standard within these documents is applicable to discharges of storm water from MS4 systems, and does not pertain to non-storm water discharges from the MS4. Similarly, commenters also identify a superior court ruling in (*Cities of Arcadia, et al., v. State Water Resources Control Board* (Super. Ct. Orange County, 2007, No. 06CC02974)) (*Arcadia II*) to support its interpretation that numeric effluent limitations are not legally appropriate for the non-storm water discharges identified in the Tentative Order. Again, these references pertain to storm water and not non-storm water discharges and are inapposite here.

Federal law mandates that permits issued to MS4s must require management practices that will result in reducing storm water pollutants to the MEP yet at the same time requires that non-storm water discharges be effectively prohibited from entering the MS4.

Consistent with USEPA's position, the State Water Board has clearly indicated that Regional Boards are not limited by the iterative approach to storm water regulations in crafting appropriate regulations for non-storm water discharges. (State Water Board Order WQ 2009-0008, *County of Los Angeles),* p. 9.) The argument that non-storm water discharges, prohibited from entry into the MS4 in the first instance, should be held to comply with only the less stringent MEP standard developed for storm water discharges in recognition of the variable quality of storm events, is contrary to and potentially renders the "effectively prohibit" requirement in section 402(p)(3)(B)(ii) meaningless. While water quality based effluent limits, expressed as numeric effluent limitations, are not *required* to be imposed on dry weather, non-storm water discharges from the MS4, it is legally permissible to do so.[1]

IV. Water Code Section 13241

Many commenters assert that provisions in the Tentative Order, including NELs, storm water action levels (SALs), and implementation of the Baby Beach TMDL requirements, are new permit terms that exceed federal law. Therefore, the commenters argue that the Regional Board is required, but has failed, to consider Water Code section 13241 factors, including economic considerations, prior to approving any of these provisions. The City of Dana Point cites extensively to the California Supreme Court case, *City of Burbank v. State Water Resources Control Board, et al.* ((2005) 35 Cal.4th 613) (*Burbank*), particularly the concurring opinion of Justice Brown, as supportive of its assertions.

The *Burbank* court stated: "[Water Code s]ection 13377 specifies that wastewater discharge permits must meet the federal standards set by federal law. In effect, section 13377 forbids a regional board's consideration of any economic hardship on the part of the permit holder if doing so would result in the dilution of the requirements set by Congress in the Clean Water Act. That act prohibits the discharge of pollutants into the navigable waters of the United States unless there is compliance with federal law (33 U.S.C. § 1322(a)), and publicly operated wastewater treatment plants such as those before us here must comply with the act's clean water standards, regardless of cost [citations]. Because [Water Code] section 13263 cannot authorize what federal law forbids, it cannot authorize a regional board, when issuing a wastewater discharge permit, to use compliance costs to justify pollutant restrictions that do not comply with federal clean water standards." (*Burbank,* 35 Cal.4th at 625.*)*

While the Burbank decision does require an analysis of Water Code section 13241 factors when the state adopts permit conditions that are more stringent than federal law (*id. at 618*) the Tentative Order reflects that all of the challenged provisions are required to implement federal law. Thus, the Regional Board is not required to consider economic information to justify a "dilution of the requirements" established in federal law. Nonetheless, as staff has

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[1] Commenters have also claimed that TMDLs are inappropriately included as numeric effluent limitations on both dry and wet weather discharges. This is not the case. The Tentative Order requires the Copermittees to implement BMPs capable of achieving the interim and final Waste Load Allocations (WLA) and Numeric Targets in the approved TMDL. The BMPs apply to the discharges, while compliance with the WLAs and Numeric Targets occurs in receiving waters. Further, the Copermittees have 10 years to meet the final allocations and targets established for wet weather. Finally, these provisions within the Tentative Order comply with federal regulations [40 CFR 122.33(d)(1)(vii)(B)] by being consistent with the assumptions and requirements of the Waste Load Allocations of an adopted and applicable TMDL.

noted extensively in responses to comments, to the extent that economic information has been provided in connection with compliance and other costs associated with challenged permit provisions, staff has fully considered this information. Under these circumstances, the *Burbank* case does not require more.

V. Unfunded State Mandates

Both prior to and at the July 1, 2009, Regional Board meeting on an earlier version of the Tentative Order, commenters raised the issue of unfunded state mandates in connection with many of the proposed permit provisions. Board members indicated that they would appreciate clarification about the subject of unfunded state mandates. In recently submitted written comments, the City of Dana Point and others again assert that a number of the provisions in the Tentative Order go beyond what is required under federal law and therefore constitute unfunded state mandates that may not be imposed absent necessary funding first being made available to Permittees.

Commenters are correct that one factor to be considered in determining whether a requirement is an unfunded state mandate is whether the requirement goes beyond, or exceeds, what is required by federal law. However, the commenters are incorrect that the provisions in the Tentative Order exceed federal law. Moreover, there are a number of other factors that also must be established before a requirement will be found to be an unfunded state mandate warranting state reimbursement. Finally, unless and until a particular provision is determined by the State of California, Commission on State Mandates (Commission) to be an unfunded state mandate for which reimbursement is required, the Regional Board is not, as some commenters assert, precluded from adopting such provisions.

<u>State Mandate Law</u>

Article XIIIB, Section 6 of the California Constitution requires subvention of funds to reimburse local governments for state-mandated programs in specified situations. The process for establishing that a requirement is subject to reimbursement as an unfunded state mandate involves the filing by a local agency of a Test Claim with the Commission on State Mandates. There are several exceptions and limitations to the subvention requirements that provide bases for the Commission to determine that one or more provisions in a Test Claim are not subject to subvention. Article XIIIB, Section 6 provides, "Whenever the Legislature or any state agency mandates a new program or higher level of service on any local government, the State shall provide a subvention of funds to reimburse that local government for the costs of the program or increased level of service." Implementing statutes clarify that no subvention of funds is required if: (1) the mandate imposes a requirement that is mandated by a federal law or regulation and results in costs mandated by the federal government, unless the statute or executive order mandates costs that exceed the mandate in that federal law or regulation (Govt. Code, § 17556, subd. (c)); or (2) the local agency proposed the mandate (*id.*, subd. (a)); or (3) the local agency has the authority to levy service charges, fees, or assessments sufficient to pay (*id.*, subd. (d)).

Numerous judicial decisions have further defined limitations on the requirements for subvention of funds. Specifically, subvention is only required if expenditure of tax monies is required, and not if the costs can be reallocated or paid for with fees. *(County of Los Angeles v. Commission on State Mandates* (2003) 110 Cal.App.4th 1176; *Redevelopment Agency v. Commission on State Mandates* (1997) 55 Cal.App.4th 976.) In addition, reimbursement to local agencies is required only for the costs involved in carrying out functions peculiar to government, not for expenses incurred by local agencies as an incidental impact of laws that apply generally to all state residents and entities. Laws of general application are not entitled to subvention. *County of Los Angeles v. State of California* (1987) 43 Cal.3d 46. The fact that a requirement may single out local governments is not dispositive; where local agencies are required to perform the same functions as private industry, no subvention is required. *City of Richmond v. Commission on State Mandates* (1998) 64 Cal.App.4th 1190.

If the Commission determines that provisions in a permit in fact constitute reimbursable state mandates, the determination may be challenged through the judicial process. There also exists a Commission process for determining appropriate reimbursement of state mandates. If a determination that a provision constitutes an unfunded state mandate is upheld, the State likely would decide whether to reimburse the local agency for the program or the Regional Board could decide to withdraw a provision from a permit.

<u>Recent Commission Proceedings</u>

Recently, the Commission issued a Final Statement of Decision in a storm water permit Test Claim filed by the County of Los Angeles and several additional co-permittee test claimants. (*Municipal Storm Water and Urban Runoff Discharges,* 03-TC-04, 03-TC-19, 03-TC-20, and 03-TC-21 (Los Angeles Regional Water Quality Control Board Order No. 01-182 (July 31, 2009) (County of Los Angeles Test Claim).) In the Commission's Statement of Decision, the Commission found that all but one of the challenged provisions issued by the Los Angeles Water Board in its MS4 permit did not qualify as unfunded state mandates as they did "not impose costs mandated by the state within the meaning of article XIII B, section 6 of the California Constitution because the claimants have fee authority (under Cal. Const. article XI, § 7) within the meaning of Government Code section 17556, subdivision (d), sufficient to pay for the activities in those parts of the permit." (County of Los Angeles Test Claim, Statement of Decision, p. 2.)

As you know, on June 20, 2008, the County of San Diego filed a Test Claim with the State of California, Commission on State Mandates (Commission), challenging multiple provisions in Order No. R9-2007-001 (National Pollutant Discharge Elimination System (NPDES) No. CAS0108758), Waste Discharge Requirements for Discharges of Urban Runoff From the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego County Regional Airport Authority), adopted on January 24, 2007 (2007 MS4 Permit). The County filed the Test Claim on behalf of 18 of the 20 MS4 Co-permittees (Claimants). Only the San Diego Unified Port District and the San Diego County Regional Airport Authority did not join in the Test Claim. The San Diego Water Board and State Water Board responded to the Test Claim. It is still pending and a draft staff analysis has not yet been issued for comment.

A similar process would need to be followed by the Orange County permittees in order to establish that any of the Tentative Order's provisions constitute unfunded state mandates entitling them to reimbursement by the state.

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

Resolution No. 98-08

APPROVING BEST MANAGEMENT PRACTICES
FOR
MUNICIPAL STORM WATER AND URBAN RUNOFF MANAGEMENT PROGRAMS
IN
LOS ANGELES COUNTY

(NPDES NO. CAS614001)

WHEREAS, THE CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION FINDS:

1. Pursuant to the requirements of Order No. 96-054, Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges Within the County of Los Angeles (Permit), the Principal Permittee, in consultation with Permittees, has developed a model program for Industrial/Commercial Education. This program must include Best Management Practices (BMPs) to control/minimize the discharge of pollutants to receiving waters.

2. The Permit required the City of Los Angeles to conduct a study on pollutants entering storm drains from street and sidewalk washing operation by: (i) characterizing municipal street washing and sidewalk washing; (ii) assessing the impacts of such activities; and (iii) recommending appropriate BMPs to control any adverse impact. Accordingly, the City of Los Angeles has completed and submitted a final report entitled *A Study of Pollutants Entering Storm Drains from Street and Sidewalk Washing Operations in Los Angeles, California* that includes recommended BMPs for said activities.

3. The Permit also requires that the BMPs be approved by the Regional Board before the Permittees incorporate them into their regulatory programs.

4. The BMPs have been evaluated and are considered appropriate for the respective program/activity.

THEREFORE BE IT RESOLVED THAT:

1. The Best Management Practices contained in the following Attachments are approved:

   a. Attachment 1 -- Industrial/Commercial Program (Site Visit); and

   b. Attachment 2 -- Sidewalk and Street Washing.

2. Permittees consider these BMPs in their regulatory programs in accordance with the provisions of Order No. 96-054.

I, Dennis Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 13, 1998.

Dennis A. Dickerson

DENNIS A. DICKERSON
Executive Officer

BMP List Index

Table 1 is an index to all BMP lists and their SIC codes.

Table 1
Index of BMP Lists for Industrial/Commercial Facilities

Attachment 1		
Page Section	*SIC Codes (exceptions in parentheses)*	*Industry Types*
A	24 (2434)	Timber Products Facilities
B	26	Paper and Allied Products Mfg Facilities
C	28 (283)	Chemicals and Allied Products Mfg Facilities
D	29	Asphalt Paving and Roofing Materials Manufacturers and Lubricant Manufacturers
E	32	Glass, Clay, Concrete, and Gypsum Product Facilities
F	33	Primary Metals Facilities
G	10	Metal Mining Facilities
H	12	Coal Mines and Coal Mining-Related Facilities
I	13	Oil & Gas Extraction Facilities
J	14	Mineral Mining and Processing Facilities
K	4953	Hazardous Waste Treatment, Storage or Disposal Facilities
L	4953	Landfills and Land Application Sites
M	5015	Automobile Salvage Yards
N	5093	Scrap & Waste Recycling
O	4911	Steam Electric Power Generating Facilities
P	40 41 42 43 5171	Vehicle and Equipment Maintenance Areas at Land Transportation Facilities
Q	44	Vehicle and Equipment Maintenance Areas at Water Transportation Facilities
R	373	Ship & Boat Building or Repairing Yards
S	45	Vehicle and Equipment Maintenance and Deicing Areas at Air Transportation Facilities
T	4952	Treatment Works

Page Section Refers to the Best Management Practices List for the Industrial/Commercial Education Site Visit Program (January 5, 1998) 4/13/98

Table 1
Index of BMP Lists for Industrial/Commercial Facilities

Attachment 1

Page Section	*SIC Codes (exceptions in parentheses)*	*Industry Types*
U	20 21	Food and Kindred Products Facilities
V	22 23	Textile Mills, Apparel, and Other Fabric Product Manufacturing Facilities
W	2434 25	Wood and Metal Furniture and Fixture Manufacturing Facilities
X	27	Printing and Publishing Facilities
Y	30 39	Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries
Z	31	Leather Tanning and Finishing Facilities
AA	34	Fabricated Metal Products Industry
AB	35 (357) 37 (373)	Facilities that Manufacture Transportation Equip., Industrial, or Commercial Machinery
AC	357 38 36	Manufacturers of Electronic and Electrical Equipment

Attachment 2

Page Section	*SIC Codes (exceptions in parentheses)*	*Commercial Types*
AD	5013 5014 7532-7534 7536-7539	Vehicle Service Facilities
AE	5541	Gasoline Stations
AF	5812	Restaurants

Page Section Refers to the Best Management Practices List for the Industrial/Commercial Education Site Visit Program (January 5, 1998)

Resolution No. 98-08

ATTACHMENT 2

Recommended Best Management Practices
for
Municipal Sidewalk and Street Washing Operations

TYPE OF DISCHARGE	RECOMMENDED BMPS
SIDEWALK WASH WATER	1. Remove trash, debris, and free standing oil/grease spills/leaks (use absorbent material, if necessary) from the area before washing; and 2. Use high-pressure, low volume spray washing using only potable water with no cleaning agents at an average usage of 0.006 gallon per square feet of sidewalk area.
STREET/ALLEY WASH WATER FROM AREAS WITH UNSANITARY CONDITIONS*	Collect and divert wash water to the sanitary sewer - publicly-owned treatment works (POTW). Note: POTW approval may be needed.

* This BMP is only to be applied in areas impacted by transient populations. Each Permittee is required to apply this BMP in areas where the congregation of transient populations can reasonably be expected to result in a significant threat to water quality.

4/13/98
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DRAFT MEMORANDUM

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DATE: January 30, 2012

TO: Shahram Kharaghani, City of Los Angeles, Watershed Protection Division (WPD)

COPY TO: Robert Vega, WPD
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SUBJECT: Proposed Conditions to Allow for the Continued Exemption of Landscape Irrigation Discharges

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During the December 15, 2011 workshop on the reissuance of the Los Angeles Region municipal separate storm sewer system (MS4) permit, Los Angeles Regional Water Quality Control Board (Regional Board) staff proposed refining the list of conditionally exempted non-stormwater discharges. One proposed refinement included removing landscape irrigation from the exempted non-stormwater discharge category (Regional Board Presentation, Slide #9: Proposed Enhancements – 1).

Implementing a strict prohibition on landscape irrigation would require a considerable amount of public agency funding to enforce the prohibition that does not appear to be commensurate with the net environmental benefit. Municipalities would expend substantial resources tracking down minute flows and minor discharges, regardless of any documented impact to receiving waters. In addition, a strict prohibition would be fraught with implementation issues. For example, municipalities would be responsible for addressing and eliminating irrigation runoff on a property by property basis, including flows that occur during any hour of the day or night. For a city the size of Los Angeles, the resources and staff hours to inspect and eliminate such discharges would be fiscally irresponsible.

While strictly prohibiting irrigation runoff may not be practical, MS4 Permittees can implement programs that will result in reduced landscape runoff in a cost effective and efficient manner. The Ventura County MS4 permit (R4-2010-0108) continues to include landscape irrigation as an exempted discharge, but requires additional conditions to be met (implement conservation programs to minimize this type of discharge by using less water). The approach required in the Ventura County permit represents a reasonable approach to address the issue.

Using the Ventura County MS4 Permit as the starting point, more explicit conditions to continue to allow for the discharge of potable landscape irrigation runoff could include:

- Enacting municipal ordinance that specifies water efficient landscaping standards
- Working with local water purveyors to develop and implement a work plan to reduce and minimize landscape irrigation runoff
- Implementing the IC/ID program

These measures focus on both reducing the amount of water that is used for irrigation (by working with local water purveyors) as well as minimizing runoff itself (via a municipal ordinance).

The additional conditional exemptions could be expressed in the permit as follows (yellow highlighted text; Ventura Permit language provided for context):

Type of Discharges:	**Conditions under which allowed:**	**Required conditions for discharge to occur:**
Ventura Permit Language		
Reclaimed and potable landscape irrigation runoff	Segregation of flow to prevent introduction of pollutants	Implement conservation programs to minimize this type of discharge by using less water.
Proposed Language		
Reclaimed landscape irrigation runoff	Segregation of flow to prevent introduction of pollutants	Implement conservation programs to minimize this type of discharge by using less water.
Potable landscape irrigation runoff	Provided that discharges from potable landscape irrigation runoff are minimized through the implementation of an ordinance specifying water efficient landscaping standards, as well as an outreach and education program focusing on water conservation and landscape water use efficiency.	For this type of water to be discharged, each Permittee shall, within its respective jurisdiction: 1. Enact municipal ordinance that specifies water landscape irrigation standards. Permittee shall have legal authority to enforce the ordinance and levy fines; in addition, Permittee may coordinate with local water purveyor, where applicable, to enforce landscape water use efficiency requirements for existing landscaping; and 2. Coordinate with the water purveyor(s) within its jurisdiction to develop and implement a work plan that results in a coordinated outreach and education program to minimize the discharge of irrigation water runoff consistent with the Provisions YYY of the Public Information and Participation program. 3. Implement the Illicit Connection and Illegal Discharge program consistent with Provision XXX.

DEPARTMENT OF HEALTH

Edward G. Rendell, Governor
Calvin B. Johnson, M.D., M.P.H., Secretary of Health

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Pennsylvania Department of Health

Fact Sheet on Cyanuric Acid and Stabilized Chlorine Products

1. **What is cyanuric acid? –** Cyanuric acid is a weak acid that is marketed as a chlorine "stabilizer" for swimming pools. Other terms used by the pool supply industry are "isocyanurates", "conditioner" or "CYA". When exposed to the ultraviolet rays of the sun, the free chlorine in the pool water will break down and escape. Cyanuric acid is intended to reduce this loss of chlorine.

2. **What are dichlor and trichlor? –** Dichlor and trichlor are two solid chlorine compounds that are widely used as disinfectants in swimming pools. Both are often marketed as "stabilized" chlorine. Dichlor usually comes in a granular form and is marketed for the residential swimming pool market. It is not often used in commercial pools because it is unsuitable for commercial disinfectant feeders. Trichlor is often sold in a tablet or stick form for use in an erosion feeder for small commercial pools, such as those at hotels and motels. Both dichlor and trichlor release cyanuric acid into the pool water, so it is not necessary to add cyanuric acid to a pool that uses either of these compounds as the primary disinfectant.

3. **So what does cyanuric acid do? –** Cyanuric acid forms a weak "bond" with the free chlorine in the pool water, effectively trapping it from escaping and protecting it from the sun's UV rays. Properly managed, cyanuric acid has been shown to reduce the amount of chlorine that needs to be added in order to maintain the minimum residual in an outdoor pool. In a small pool with a moderate bather load, cyanuric acid can significantly reduce the costs spent on chemical disinfectants.

4. **Is there a trade-off? –** Yes, by forming temporary bonds with the free chlorine, cyanuric acid will reduce the overall effectiveness of the chlorine. The amount of time it takes to kill bacteria can be significant increased with the use of cyanuric acid. For this reason, the Pennsylvania Department of Health recommends that all outdoor pools that use cyanuric acid as a stabilizer maintain a minimum free chlorine residual of 2 parts per million (abbreviated ppm or 2 mg/L).

5. **I have an indoor pool, should I use cyanuric acid?** – No. Remember that cyanuric acid is intended to reduce the loss of free chlorine that is caused by the sun's UV rays. Indoor pools are not exposed to direct sunlight and therefore, there is no benefit in using cyanuric acid or trichlor or diclor in indoor pools.

6. **How much cyanuric acid should be used in a swimming pool? –** Chemical suppliers recommend that the optimal range for cyanuric acid is 30-50 ppm, although a study published by the University at California at Davis[1], indicates that there is still significant savings in chemical costs in levels as low as two or three parts per million. Other authorities recommend about 20 ppm for a good cost-to-benefit

ratio[2]. At levels above 50 ppm, pools reach the point of “diminishing returns” where the reduction in chlorine effectiveness and cost of buying cyanuric acid outweighs the benefits.

7. **How much is too much cyanuric acid? –** While Pennsylvania has no upper limit in the Public Swimming and Bathing Code, other states have set maximum levels in the range of 80 to 100 ppm. The Pennsylvania Department of Health recommends that cyanuric acid levels should never exceed 80 ppm.

8. **What are the effects of higher levels of cyanuric acid? –** As the level of cyanuric acid rises, the “killing power” of the free chlorine residual weakens. At above 50 ppm of cyanuric acid, the time it takes to kill bacteria in the water is much longer compared to swimming pool water without cyanuric acid. As the level of cyanuric acid builds up, the chlorine will become increasingly less effective in keeping the water clean and problems such as increased cloudiness in the pool water, high bacterial test results, and even algae growth can occur.

9. **Should cyanuric acid be used in hot tubs or spas? –** At even moderate levels of cyanuric acid, the amount of time it takes chlorine to kill *pseudomonas aeruginosa* (the bacteria that causes “hot tub itch”) can be as much as a hundred times as long as in a hot tub or spa without cyanuric acid. For this reason, the Pennsylvania Department of Health does not recommend the use of cyanuric acid or stabilized chlorine in any hot tubs or spas.

10. **How does one test for cyanuric acid?** – Any pool operator who is interested in using cyanuric acid or stabilized chlorine should purchase a cyanuric acid test kit from their pool chemical supplier and be sure that they understand how to use it properly. The best way to manage the problems that come with too much cyanuric acid is to avoid them by testing the cyanuric acid level regularly and ensure that they never exceed 80 ppm. Cyanuric acid levels should be tested at least once a week. Never add more cyanuric acid before checking the current level.

11. **My pool as cyanuric acid levels above 80 ppm, how can I reduce them?** – Unlike chlorine, cyanuric acid is never “used up”. Once you have added it to the pool water, it will remain in the water. Adding more cyanuric acid will continue to increase the levels. The best way to reduce cyanuric acid is to partially drain the pool and add fresh water. Note that some cyanuric acid can cling to the plumbing and filtration system, so even after completely draining and refilling the pool, there will probably still be detectable levels of cyanuric acid in the water.

12. **My pool uses bromine as a disinfectant, should I use cyanuric acid? –** No, bromine does not experience the same breakdown when exposed to sunlight that chlorine does. There is no benefit to adding cyanuric acid to a pool that uses bromine as the primary disinfectant.

Summary of Pennsylvania Department of Health Recommendations

1. Cyanuric acid and stabilized chlorine (diclor or trichlor) should be used in outdoor swimming pools only. It should never be used in indoor swimming pools or spas and hot tubs.
2. Both dichlor and trichlor release cyanuric acid to the pool water and it is never necessary to put additional cyanuric acid into a pool that uses dichlor or trichlor.
3. Pools that use cyanuric acid should maintain a free chlorine residual of 2 parts per million (ppm)
4. Cyanuric acid levels should be tested at least once a week and before any additional cyanuric acid is added..
5. Cyanuric acid levels should never exceed 80 ppm.

References

1- Williams, Kent. “Cyanurics – Benefit or bomb?”. Professional Pool Operators of America. Newcastle, California, 1997.
2- Williams, Kent. Aquatic Facility Operator Manual, 3rd edition. National Recreation and Park Society. 1999.

18_The pathological Effects of Melamine and Cyanuric acid pubmed_result-1

1. J Comp Pathol. 2012 Feb 6. [Epub ahead of print]

The Pathological Effects of Melamine and Cyanuric Acid in the Diet of Walking Catfish (Clarius batrachus).

Pirarat N, Katagiri T, Chansue N, Ponpornpisit A, Endo M, Maita M.

Department of Pathology, Faculty of Veterinary Science, Chulalongkorn University, Bangkok 10330, Thailand.

The toxicity of melamine and its analogue in man and animals has been reported widely. The aim of the present study was to examine the pathological effects of feeding melamine and cyanuric acid, separately or in combination, to walking catfish (Clarius batrachus). The catfish developed darkening of the skin as early as 3days post feeding. Melamine-related crystals were distributed multifocally throughout the liver, kidney, heart, spleen and corpuscle of Stannius of fish fed melamine and cyanuric acid in combination. Oil red O staining and electron microscopy revealed that the melamine-related crystals had structure resembling that of plastic polymer crystals. Elevations in the serum concentrations of alanine transaminase, aspartate transaminase, creatinine and uric acid were related to the crystal-associated granulomatous inflammation in the liver and kidney of affected fish. None of the catfish died during the 2-week experiment. Melamine and cyanuric acid are therefore systemically toxic to fish in addition to causing renal crystal formation and renal damage as seen in man and animals. The finding of extrarenal crystals implies that the metabolism and biotransformation of these toxic compounds should be further investigated in aquatic animals.

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Preliminary Evaluation of Los Angeles County MS4 Dry Weather Monitoring Data
November 30, 2011

Background:

- Order No. 01-182 and Monitoring and Reporting Program No. 6948 require Los Angeles County MS4 Co-Permittees (hereinafter referred to as the Discharger) to implement a monitoring program to assess whether discharges from the MS4 cause or contribute to exceedances of applicable water quality standards.
- Core monitoring required at seven mass emission stations:
  - Ballona Creek
  - Malibu Creek
  - Los Angeles River
  - San Gabriel River (representing the upper portion of the San Gabriel River Watershed Management Area)
  - Coyote Creek (representing the lower portion of the San Gabriel River Watershed Management Area)
  - Dominguez Channel
  - Santa Clara River

  In addition to wet weather monitoring requirements, a minimum of two dry weather samples required each year. Monitoring required for conventional (BOD, TSS, pH, fecal coliform, oil and grease), priority pollutants, and a variety of other nonconventional pollutants (e.g., nutrients, dissolved oxygen, salinity/conductivity).

- Tributary monitoring also required. Monitoring station locations are rotated so that a minimum total of six tributaries are monitored each year. In addition to wet weather monitoring requirements, a minimum of one dry weather sample required each year at each tributary station.

Purpose:

- To evaluate dry weather monitoring results to determine if pollutants of concern exist that may merit development of effluent limitations and/or other special provisions.

Approach:

- Dry weather monitoring data was taken from the Los Angeles County Public Works website (http://ladpw.org/wmd/npdes/report_directory.cfm) for the period from 2005 to 2011 to reflect the most recent/current data. The Annual Stormwater Monitoring Reports provided 15 dates where dry weather samples were collected from 2005 to 2011.
- For each pollutants parameter, the most stringent applicable water quality objective/criterion was identified from the Los Angeles Region Water Quality Control Plan (Basin Plan) and the California Toxics Rule (CTR) at 40 CFR 131.38. A few things to note regarding objectives/criteria:
  - For hardness-dependent metals, criteria where derived by using the lowest reported hardness value for each mass emission station for the period of 2005 to 2011.
  - Basin plan objectives/criteria for minerals (i.e., total dissolved solids, sulfate, and chloride) apply to specific stream reaches within a watershed. For purposes of this

analysis , the low end of the range of objectives based on protection of the agricultural use for where site-specific objectives have not been determined were used as the basis for the objective.
  - Readily available temperature data was not available to derive applicable ammonia objectives.
  - The most stringent Basin Plan coliform bacteria objectives (fecal coliform and total coliform) were used as a not to exceed value for purposes of evaluating exceedances. This is an oversimplification of the basis for the Basin Plan objectives, but necessary given that there were an insufficient number of samples taken within the objective time frame. Also, it was assumed that primary contact recreation beneficial use (REC-1) applies to Ballona Creek and Dominguez Channel.
- For simplicity, and to be consistent with the approach used in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (i.e., the Statewide Implementation Policy of SIP), the maximum pollutant concentration was compared to the most stringent applicable water quality objective/criterion to determine if there was potential to cause or contribute to water quality standard exceedances.
- The number of samples that exceeded criteria at each mass emission station was determined, and then an evaluation of the severity of the exceedances was performed based on the number and relative magnitude of exceedances of applicable objectives/criteria. Three levels of relative severity were used, as defined below:
  - Low Severity (less than one-third of the 15 data points exceed criteria)
  - Somewhat Severe (roughly half of the 15 data points exceed criteria, but the data set included several instances where pollutant concentrations significantly exceeded violations of the applicable objectives/criteria)
  - High Severity (most of the 15 sets of data exceed criteria).

Results:

- Mass Emission Stations
  - Attachment A provides a summary of those pollutants that exceeded applicable water quality objectives/criteria based on evaluation of the 15 sets of data for the period of 2005 to 2011 for each of the mass emission stations.
  - Generally, all priority pollutant organic parameters were reported as below detection levels at PQLs consistent with the MLs listed in the SIP.
  - The primary pollutants of concern include coliform bacteria, chloride, copper, and selenium. Reported coliform bacteria, chloride, and total dissolved solids effluent concentrations appear to consistently exceed criteria in all watersheds at relatively high levels.
- Tributary Stations
  - Due to rotating basis for monitoring, need to consider data older than 2005. Limited data makes definitive analysis uncertain. Preliminary review of data indicates coliform bacteria consistently found at levels that may cause or contribute to water quality standard exceedances.

Conclusions/Possible Next Steps:

- Mass emission station monitoring provides basis for establishing numeric effluent limitations in each watershed management area; tributary monitoring could refine the list of pollutants for which effluent limitations are established, but paucity of data may be a concern.
- Potential options to address dry weather flows:
  - **Option 1** - Establish effluent limitations for pollutants of concern that apply during dry weather, coupled with continued dry weather monitoring to presence/absence of pollutants over time.
    - Sub-Option A – Require immediate compliance with effluent limitations
    - Sub-Option B – Provide compliance schedule to comply
  - **Option 2** - Establish effluent action levels for pollutants of concern that apply during dry weather, coupled with continued dry weather monitoring to presence/absence of pollutants over time. Exceedance of action level(s) then requires action plan and schedule from Discharger on approach(es) to achieve action levels.
  - **Option 3** – Use non-stormwater prohibitions/exceptions and illicit discharge minimum control measure (MCM) as basis for dry weather controls (status quo)
- Other issues that need to be addressed:
  - If Option 1 or 2, need to decide on what constitutes end-of-pipe/location for application of effluent limitations or action levels
  - If Option 1 or 2, then need to customize the application of limits to be consistent with applicable beneficial uses and site-specific objectives
  - Revision as necessary of existing Order non-stormwater prohibitions/exceptions
  - Need to ensure consistency/compatibility with illicit discharge MCM

point of discharge

by reference

Wes.

X lawn irrigation

X lake dewatering

TMDL – separate

LFDs

Attachment B - Special Protections for Areas of Special Biological Significance, Governing Point Source Discharges of Storm Water and Nonpoint Source Waste Discharges

I. PROVISIONS FOR POINT SOURCE DISCHARGES OF STORM WATER AND NONPOINT SOURCE WASTE DISCHARGES

The following terms, prohibitions, and special conditions (hereafter collectively referred to as special conditions) are established as limitations on point source storm water and nonpoint source discharges. These special conditions provide Special Protections for marine aquatic life and natural water quality in Areas of Special Biological Significance (ASBS), as required for State Water Quality Protection Areas pursuant to California Public Resources Code Sections 36700(f) and 36710(f). These Special Protections are adopted by the State Water Board as part of the California Ocean Plan (Ocean Plan) General Exception.

The special conditions are organized by category of discharge. The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Water Boards) will determine categories and the means of regulation for those categories [e.g., Point Source Storm Water National Pollutant Discharge Elimination System (NPDES) or Nonpoint Source].

A. PERMITTED POINT SOURCE DISCHARGES OF STORM WATER

1. General Provisions for Permitted Point Source Discharges of Storm Water

   a. Existing storm water discharges into an ASBS are allowed only under the following conditions:

      (1) The discharges are authorized by an NPDES permit issued by the State Water Board or Regional Water Board;

      (2) The discharges comply with all of the applicable terms, prohibitions, and special conditions contained in these Special Protections; and

      (3) The discharges:

         (i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

         (ii) Are designed to prevent soil erosion;

         (iii) Occur only during wet weather;

         (iv) Are composed of only storm water runoff.

   b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

   c. The discharge of trash is prohibited.

d. Only discharges from existing storm water outfalls are allowed. Any proposed or new storm water runoff discharge shall be routed to existing storm water discharge outfalls and shall not result in any new contribution of waste to an ASBS (i.e., no additional pollutant loading). "Existing storm water outfalls" are those that were constructed or under construction prior to January 1, 2005. "New contribution of waste" is defined as any addition of waste beyond what would have occurred as of January 1, 2005. A change to an existing storm water outfall, in terms of re-location or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges are prohibited except as provided below:

(1) The term "non-storm water discharges" means any waste discharges from a municipal separate storm sewer system (MS4) or other NPDES permitted storm drain system to an ASBS that are not composed entirely of storm water.

(2) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability or occur naturally:

(i) Discharges associated with emergency fire fighting operations.

(ii) Foundation and footing drains.

(iii) Water from crawl space or basement pumps.

(iv) Hillside dewatering.

(v) Naturally occurring groundwater seepage via a storm drain.

(vi) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

2. Compliance Plans for Inclusion in Storm Water Management Plans (SWMP) and Storm Water Pollution Prevention Plans (SWPPP).

The discharger shall specifically address the prohibition of non-storm water runoff and the requirement to maintain natural water quality for storm water discharges to an ASBS in an ASBS Compliance Plan to be included in its SWMP or a SWPPP, as appropriate to permit type. If a statewide permit includes a SWMP, then the discharger shall prepare a stand-alone compliance plan for ASBS discharges. The ASBS Compliance Plan is subject to approval by the Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (for permits issued by Regional Water Boards).

a. The Compliance Plan shall include a map of surface drainage of storm water runoff, showing areas of sheet runoff, prioritize discharges, and describe any structural Best

Management Practices (BMPs) already employed and/or BMPs to be employed in the future. Priority discharges are those that pose the greatest water quality threat and which are identified to require installation of structural BMPs. The map shall also show the storm water conveyances in relation to other features such as service areas, sewage conveyances and treatment facilities, landslides, areas prone to erosion, and waste and hazardous material storage areas, if applicable. The SWMP or SWPPP shall also include a procedure for updating the map and plan when changes are made to the storm water conveyance facilities.

b. The ASBS Compliance Plan shall describe the measures by which all non-authorized non-storm water runoff (e.g., dry weather flows) has been eliminated, how these measures will be maintained over time, and how these measures are monitored and documented.

c. For Municipal Separate Storm Sewer System (MS4s), the ASBS Compliance Plan shall require minimum inspection frequencies as follows:

(1) The minimum inspection frequency for construction sites shall be weekly during rainy season;

(2) The minimum inspection frequency for industrial facilities shall be monthly during the rainy season;

(3) The minimum inspection frequency for commercial facilities (e.g., restaurants) shall be twice during the rainy season; and

(4) Storm water outfall drains equal to or greater than 18 inches (457 mm) in diameter or width shall be inspected once prior to the beginning of the rainy season and once during the rainy season and maintained to remove trash and other anthropogenic debris.

d. The ASBS Compliance Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff, that are necessary to comply with these special conditions, will be achieved through BMPs. Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that such installation would pose a threat to health or safety. BMPs to control storm water runoff discharges (at the end-of-pipe) during a design storm shall be designed to achieve on average the following target levels:

(1) Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in pollutant loading during storm events, for the applicant's total discharges. ~~The baseline for the reduction is the effective date of the Exception.~~

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within four (4) years of the effective date.

e. The ASBS Compliance Plan shall address erosion control and the prevention of anthropogenic sedimentation in ASBS. The natural habitat conditions in the ASBS shall not be altered as a result of anthropogenic sedimentation.

f. The ASBS Compliance Plan shall describe the non-structural BMPs currently employed and planned in the future (including those for construction activities), and include an implementation schedule. The ASBS Compliance Plan shall include non-structural BMPs that address public education and outreach. Education and outreach efforts must adequately inform the public that direct discharges of pollutants from private property not entering an MS4 are prohibited. The ASBS Compliance Plan shall also describe the structural BMPs, including any low impact development (LID) measures, currently employed and planned for higher threat discharges and include an implementation schedule. To control storm water runoff discharges (at the end-of-pipe) during a design storm, permittees must first consider, and use where feasible, ~~using~~ LID practices to infiltrate, use, or evapotranspirate storm water runoff on-site, if LID practices would be the most effective at reducing pollutants from entering the ASBS.

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g. The BMPs and implementation schedule shall be designed to ensure that natural water quality conditions in the receiving water are achieved and maintained by either reducing flows from impervious surfaces or reducing pollutant loading, or some combination thereof.

h. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents in storm water runoff that alter natural ocean water quality and the sources of these constituents.

(2) The report shall describe BMPs that are currently being implemented, BMPs that are identified in the SWMP or SWPPP for future implementation, and any additional BMPs that may be added to the SWMP or SWPPP to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the BMPs.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits), the discharger shall revise its ASBS Compliance Plan to incorporate any new or modified BMPs that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised SWMP or SWPPP, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural ocean water quality conditions due to the same constituent.

(5) ~~Compliance with~~ The requirements of this section are in addition to the ~~this section does not excuse violations of any~~ terms, prohibitions, ~~or~~ and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within one year from the effective date of the Exception, the discharger shall submit a written ASBS Compliance Plan to the State Water Board Executive Director (statewide permits) or Regional Water Board Executive Officer (Regional Water Board permits) that describes its strategy to comply with these special conditions, including the requirement to maintain natural water quality in the affected ASBS. The ASBS Compliance Plan shall include a time schedule to implement appropriate non-structural and structural controls (implementation schedule) to comply with these special conditions for inclusion in the discharger's SWMP or SWPPP, as appropriate to permit type.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these special conditions shall be implemented.

d. Within four (4) years of the effective date of the Exception, any structural controls identified in the ASBS Compliance Plan that are necessary to comply with these special conditions shall be operational.

e. Within four (4) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85th percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water, pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85th percentile threshold of reference water quality data, and the pre-storm receiving water levels, for any constituent, ~~then natural ocean water quality is exceeded~~ the discharger must comply with section I.A.2.h. See attached Flowchart. Sampling results that are above the levels specified in this subsection are considered action levels and do not constitute a violation of these Special Protections.

f. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. for municipalities, a demonstration of significant hardship to discharger ratepayers, by showing the relationship of storm water fees to annual household income for residents within the discharger's jurisdictional area, and the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for other governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

B. NONPOINT SOURCE DISCHARGES

1. General Provisions for Nonpoint Sources

a. Existing nonpoint source waste discharges are allowed into an ASBS only under the following conditions:

(1) The discharges are authorized under waste discharge requirements, a conditional waiver of waste discharge requirements, or a conditional prohibition issued by the State Water Board or a Regional Water Board.

(2) The discharges are in compliance with the applicable terms, prohibitions, and special conditions contained in these Special Protections.

(3) The discharges:

(i) Are essential for flood control or slope stability, including roof, landscape, road, and parking lot drainage;

(ii) Are designed to prevent soil erosion;

(iii) Occur only during wet weather;

(iv) Are composed of only storm water runoff.

b. Discharges composed of storm water runoff shall not alter natural ocean water quality in an ASBS.

c. The discharge of trash is prohibited.

d. Only existing nonpoint source waste discharges are allowed. "Existing nonpoint source waste discharges" are discharges that were ongoing prior to January 1, 2005. "New nonpoint source discharges" are defined as those that commenced on or after January

1, 2005. A change to an existing nonpoint source discharge, in terms of re-location or alteration, in order to comply with these special conditions, is allowed and does not constitute a new discharge.

e. Non-storm water discharges from nonpoint sources (those not subject to an NPDES Permit) are prohibited except as provided below:

(1) The term “non-storm water discharges” means any waste discharges that are not composed entirely of storm water.

(2) The following non-storm water discharges are allowed, provided that the discharges are essential for emergency response purposes, structural stability, slope stability, or occur naturally:

(i) Discharges associated with emergency fire fighting operations.

(ii) Foundation and footing drains.

(iii) Water from crawl space or basement pumps.

(iv) Hillside dewatering.

(v) Naturally occurring groundwater seepage via a storm drain.

(vi) Non-anthropogenic flows from a naturally occurring stream via a culvert or storm drain, as long as there are no contributions of anthropogenic runoff.

(3) Authorized non-storm water discharges shall not cause or contribute to a violation of the water quality objectives in Chapter II of the Ocean Plan nor alter natural ocean water quality in an ASBS.

f. At the San Clemente Island ASBS, discharges incidental to military training and research, development, test, and evaluation operations are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed in the two military closure areas in the vicinity of Wilson Cove and Castle Rock. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

g. At the San Nicolas Island and Begg Rock ASBS, discharges incidental to military research, development, testing, and evaluation of, and training with, guided missile and other weapons systems, fleet training exercises, small-scale amphibious warfare training, and special warfare training are allowed. Discharges incidental to underwater demolition and other in-water explosions are not allowed. Discharges must not result in a violation of the water quality objectives, including the protection of the marine aquatic life beneficial use, anywhere in the ASBS.

h. All other nonpoint source discharges not specifically authorized above are prohibited.

2. Planning and Reporting

a. The nonpoint source discharger shall develop an ASBS Pollution Prevention ~~P~~lan, including an implementation schedule, to address storm water runoff and any other nonpoint source discharges from its facilities. The ASBS Pollution Prevention Plan must be equivalent in contents to an ASBS Compliance Plan as described in I (A)(2) in this document. The ASBS Pollution Prevention Plan is subject to approval by the Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements).

b. The ASBS Pollution Prevention Plan shall address storm water discharges (wet weather flows) and, in particular, describe how pollutant reductions in storm water runoff that are necessary to comply with these special conditions, will be achieved through Management Measures and associated Management Practices (Management Measures/Practices). Structural BMPs need not be installed if the discharger can document to the satisfaction of the State Water Board Executive Director or Regional Water Board Executive Officer that such installation would pose a threat to health or safety. Management Measures to control storm water runoff during a design storm shall achieve on average the following target levels:

(1) ~~Set as the~~ Table B Instantaneous Maximum Water Quality Objectives in Chapter II of the Ocean Plan; or

(2) A 90% reduction in ~~By reducing~~ pollutant loading during storm events, for the applicant's total discharges~~, by 90%~~.

The baseline for these determinations is the effective date of the Exception, except for those structural BMPs installed between January 1, 2005 and adoption of these Special Protections, and the reductions must be achieved and documented within four (4) years of the effective date.

c. If the results of the receiving water monitoring described in IV.B. of these special conditions indicate that the storm water runoff or other nonpoint source pollution is causing or contributing to an alteration of natural ocean water quality in the ASBS, the discharger shall submit a report to the State Water Board and the Regional Water Board within 30 days of receiving the results.

(1) The report shall identify the constituents that alter natural water quality and the sources of these constituents.

(2) The report shall describe Management Measures/Practices that are currently being implemented, Management Measures/Practices that are identified in the ASBS Pollution Prevention Plan for future implementation, and any additional Management Measures/Practices that may be added to the Pollution Prevention Plan to address the alteration of natural water quality. The report shall include a new or modified implementation schedule for the Management Measures/Practices.

(3) Within 30 days of the approval of the report by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements), the discharger shall revise its ASBS Pollution Prevention Plan to

incorporate any new or modified Management Measures/Practices that have been or will be implemented, the implementation schedule, and any additional monitoring required.

(4) As long as the discharger has complied with the procedures described above and is implementing the revised ASBS Pollution Prevention Plan, the discharger does not have to repeat the same procedure for continuing or recurring exceedances of natural water quality conditions due to the same constituent.

(5) ~~Compliance with~~ The requirements of this section are in addition to the ~~this section does not excuse violations of any~~ terms, prohibitions, ~~or~~ and conditions contained in these Special Protections.

3. Compliance Schedule

a. On the effective date of the Exception, all non-authorized non-storm water discharges (e.g., dry weather flow) are effectively prohibited.

b. Within one year from the effective date of the Exception, the discharger~~s~~ shall submit a written ASBS Pollution Prevention Plan to the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) that describes its strategy to comply with these special conditions, including the requirement to maintain natural ocean water quality in the affected ASBS. The Pollution Prevention Plan shall include a time schedule to implement appropriate non-structural and structural controls to comply with these special conditions for inclusion in the discharger's Pollution Prevention Plan.

c. Within 18 months of the effective date of the Exception, any non-structural controls that are necessary to comply with these Special Protections shall be implemented.

d. Within four (4) years of the effective date of the Exception, any structural controls identified in the ASBS Pollution Prevention Plan that are necessary to comply with these special conditions shall be operational.

e. Within four (4) years of the effective date of the Exception, all dischargers must comply with the requirement that their discharges into the affected ASBS maintain natural ocean water quality. If the initial results of post-storm receiving water quality testing indicate levels higher than the 85^{th} percentile threshold of reference water quality data and the pre-storm receiving water levels, then the discharger must re-sample the receiving water pre- and post-storm. If after re-sampling the post-storm levels are still higher than the 85^{th} percentile threshold of reference water quality data and the pre-storm receiving water levels, for any constituent, ~~then natural ocean water quality is exceeded~~ the discharger must comply with section I.B.2.c. See attached Flowchart. Sampling results that are above the levels specified in this subsection are considered action levels and do not constitute a violation of these Special Protections.

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f. The Executive Director of the State Water Board (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) may only authorize additional time to comply with the special conditions d. and e., above if good cause exists to do so. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in d. or e. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality.

The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate; or

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process, and a demonstration that funding was unavailable or inadequate.

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II. ADDITIONAL REQUIREMENTS FOR PARKS AND RECREATION FACILITIES

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with parks and recreation facilities shall comply with the following:

A. The discharger shall include a section in an ASBS Compliance Plan (for NPDES dischargers) or an ASBS Pollution Prevention Plan (for nonpoint source dischargers) to address storm water runoff from parks and recreation facilities.

   1. The plan shall identify all pollutant sources, including sediment sources, which may result in waste entering storm water runoff. Pollutant sources include, but are not limited to, roadside rest areas and vistas, picnic areas, campgrounds, trash receptacles, maintenance facilities, park personnel housing, portable toilets, leach fields, fuel tanks, roads, piers, and boat launch facilities.

   2. The plan shall describe BMPs or Management Measures/Practices that will be implemented to control soil erosion (both temporary and permanent erosion controls) and reduce or eliminate pollutants in storm water runoff in order to achieve and maintain natural water quality conditions in the affected ASBS. The plan shall include BMPs or Management Measures/Practices to ensure that trails and culverts are maintained to prevent erosion and minimize waste discharges to ASBS.

3. The plan shall include BMPs or Management Measures/Practices to prevent the discharge of pesticides or other chemicals, including agricultural chemicals, in storm water runoff to the affected ASBS.

4. The plan shall include BMPs or Management Measures/Practices that address public education and outreach. The goal of these BMPs or Management Measures/Practices is to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The BMPs or Management Measures/Practices shall include signage at camping, picnicking, beach and roadside parking areas, and visitor centers, or other appropriate measures, which notify the public of any applicable requirements of these Special Protections and identify the ASBS boundaries.

5. The plan shall include BMPs or Management Measures/Practices that address the prohibition against the discharge of trash to ASBS. The BMPs or Management Measures/Practices shall include measures to ensure that adequate trash receptacles are available for public use at visitor facilities, including parking areas, and that the receptacles are adequately maintained to prevent trash discharges into the ASBS. Appropriate measures include covering trash receptacles to prevent trash from being wind blown and periodically emptying the receptacles to prevent overflows.

6. The plan shall include BMPs or Management Measures/Practices to address runoff from parking areas and other developed features to ensure that the runoff does not alter natural water quality in the affected ASBS. BMPs or Management Measures/Practices shall include measures to reduce pollutant loading in runoff to the ASBS through installation of natural area buffers (LID), treatment, or other appropriate measures.

B. Maintenance and repair of park and recreation facilities must not result in waste discharges to the ASBS. The practice of road oiling must be minimized or eliminated, and must not result in waste discharges to the ASBS.

III. ADDITIONAL REQUIREMENTS – WATERFRONT AND MARINE OPERATIONS

In addition to the provisions in Section I (A) or I (B), respectively, a discharger with waterfront and marine operations shall comply with the following:

A. For discharges related to waterfront and marine operations, the discharger shall develop a Waterfront and Marine Operations Management Plan (Waterfront Plan). This plan shall contain appropriate Management Measures/Practices to address nonpoint source pollutant discharges to the affected ASBS.

1. The Waterfront Plan shall contain appropriate Management Measures/Practices for any waste discharges associated with the operation and maintenance of vessels, moorings, piers, launch ramps, and cleaning stations in order to ensure that beneficial uses are protected and natural water quality is maintained in the affected ASBS.

2. For discharges from marinas and recreational boating activities, the Waterfront Plan shall include appropriate Management Measures, described in The Plan for California's Nonpoint Source Pollution Control Program, for marinas and recreational boating, or

equivalent practices, to ensure that nonpoint source pollutant discharges do not alter natural water quality in the affected ASBS.

3. The Waterfront Plan shall include Management Practices to address public education and outreach to ensure that the public is adequately informed that waste discharges to the affected ASBS are prohibited or limited by special conditions in these Special Protections. The management practices shall include appropriate signage, or similar measures, to inform the public of the ASBS restrictions and to identify the ASBS boundaries.

4. The Waterfront Plan shall include Management Practices to address the prohibition against trash discharges to ASBS. The Management Practices shall include the provision of adequate trash receptacles for marine recreation areas, including parking areas, launch ramps, and docks. The plan shall also include appropriate Management Practices to ensure that the receptacles are adequately maintained and secured in order to prevent trash discharges into the ASBS. Appropriate Management Practices include covering the trash receptacles to prevent trash from being windblown, staking or securing the trash receptacles so they don't tip over, and periodically emptying the receptacles to prevent overflow.

5. The discharger shall submit its Waterfront Plan to the by the State Water Board Executive Director (statewide waivers or waste discharge requirements) or Executive Officer of the Regional Water Board (Regional Water Board waivers or waste discharge requirements) within six months of the effective date of these special conditions. The Waterfront Plan is subject to approval by the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The plan must be fully implemented within 18 months of the effective date of the Exception.

B. The discharge of chlorine, soaps, petroleum, other chemical contaminants, trash, fish offal, or human sewage to ASBS is prohibited. Sinks and fish cleaning stations are point source discharges of wastes and are prohibited from discharging into ASBS. Anthropogenic accumulations of discarded fouling organisms on the sea floor must be minimized.

C. Limited-term activities, such as the repair, renovation, or maintenance of waterfront facilities, including, but not limited to, piers, docks, moorings, and breakwaters, are authorized only in accordance with Chapter III.E.2 of the Ocean Plan.

D. If the discharger anticipates that the discharger will fail to fully implement the approved Waterfront Plan within the 18 month deadline, the discharger shall submit a technical report as soon as practicable to the State Water Board Executive Director or the Regional Water Board Executive Officer, as appropriate. The technical report shall contain reasons for failing to meet the deadline and propose a revised schedule to fully implement the plan.

E. The State Water Board or the Regional Water Board may, for good cause, authorize additional time to comply with the Waterfront Plan. Good cause means a physical impossibility or lack of funding.

If a discharger claims physical impossibility, it shall notify the Board in writing within thirty (30) days of the date that the discharger first knew of the event or circumstance that caused or would cause it to fail to meet the deadline in Section III.A.5. The notice shall describe the reason for the noncompliance or anticipated noncompliance and specifically refer to this

Section of this Exception. It shall describe the anticipated length of time the delay in compliance may persist, the cause or causes of the delay as well as measures to minimize the impact of the delay on water quality, the measures taken or to be taken by the discharger to prevent or minimize the delay, the schedule by which the measures will be implemented, and the anticipated date of compliance. The discharger shall adopt all reasonable measures to avoid and minimize such delays and their impact on water quality. The discharger may request an extension of time for compliance based on lack of funding. The request for an extension shall require:

1. a demonstration of significant hardship by showing that the discharger has made timely and complete applications for all available bond and grant funding, and either no bond or grant funding is available, or bond and/or grant funding is inadequate.

2. for governmental agencies, a demonstration and documentation of a good faith effort to acquire funding through that agency's budgetary process , and a demonstration that funding was unavailable or inadequate.

IV. MONITORING REQUIREMENTS

Monitoring is mandatory for all dischargers to assure compliance with the Ocean Plan. Monitoring requirements include both: (A) core discharge monitoring, and (B) ocean receiving water monitoring. The State and Regional Water Boards must approve sampling site locations and any adjustments to the monitoring programs. All ocean receiving water and reference area monitoring must be comparable with the Water Boards' Surface Water Ambient Monitoring Program (SWAMP).

Safety concerns: Sample locations and sampling periods must be determined considering safety issues. Sampling may be postponed upon notification to the State and Regional Water Boards if hazardous conditions prevail.

Analytical Chemistry Methods: All constituents must be analyzed using the lowest minimum detection limits comparable to the Ocean Plan water quality objectives. For metal analysis, all samples, including storm water effluent, reference samples, and ocean receiving water samples, must be analyzed by the approved analytical method with the lowest minimum detection limits (currently Inductively Coupled Plasma/Mass Spectrometry) described in the Ocean Plan.

A. CORE DISCHARGE MONITORING PROGRAM

1. General sampling requirements for timing and storm size:
   Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event. Runoff samples shall be collected during the same storm and at approximately the same time when post-storm receiving water is sampled, and analyzed for the same constituents as receiving water and reference site samples (see section IV B) as described below.

2. Runoff flow measurements

a. For municipal/industrial storm water outfalls in existence as of December 31, 2007, 18 inches (457mm) or greater in diameter/width (including multiple outfall pipes in combination having a width of 18 inches, runoff flows must be measured or calculated, using a method acceptable to and approved by the State and Regional Water Boards.

b. This will be reported annually for each precipitation season to the State and Regional Water Boards.

3. Runoff samples – storm events

a. For outfalls equal to or greater than 18 inches (0.46m) in diameter or width:

(1) samples of storm water runoff shall be collected ~~analyzed~~ during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination~~,~~; and

(2) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

(3) If an applicant has no outfall greater than 36 inches, then storm water runoff from the applicant's largest outfall shall be further collected~~analyzed~~ during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates).

b. For outfalls equal to or greater than 36 inches (0.91m) in diameter or width:

(1) samples of storm water runoff shall be collected ~~analyzed~~ during the same storm as receiving water samples and analyzed for oil and grease, total suspended solids, and, within the range of the southern sea otter indicator bacteria or some other measure of fecal contamination; and

(2) samples of storm water runoff shall be further collected ~~analyzed~~ during the same storm as receiving water samples and analyzed for Ocean Plan Table B metals for protection of marine life, Ocean Plan polynuclear aromatic hydrocarbons (PAHs), current use pesticides (pyrethroids and OP pesticides), and nutrients (ammonia, nitrate and phosphates); and

(3) samples of storm water runoff shall be collected and analyzed for critical life stage chronic toxicity (one invertebrate or algal species) at least once during each storm season when receiving water is sampled in the ASBS.

c. For an applicant not participating in a regional monitoring program [see below in Section IV (B)] in addition to (a.) and (b.) above, a minimum of the two largest outfalls or 20 percent of the larger outfalls, whichever is greater, shall be sampled (flow weighted composite samples) at least three times annually during wet weather (storm event) and analyzed for all Ocean Plan Table A constituents, Table B constituents for marine aquatic life protection (except for toxicity, only chronic toxicity for three species shall be required), DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, and Ocean Plan indicator bacteria. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one (the largest) such discharge shall be sampled annually in each Region.

4. The Executive Director of the State Water Board (statewide permits) or Executive Officer of the Regional Water Board (Regional Water Board permits) may reduce or suspend core monitoring once the storm runoff is fully characterized. This determination may be made at any point after the discharge is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

B. Ocean Receiving Water and Reference Area Monitoring Program

In addition to performing the Core Discharge Monitoring Program in Section II.A above, all applicants having authorized discharges must perform ocean receiving water monitoring. In order to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS, dischargers may choose either (1) an individual monitoring program, or (2) participation in a regional integrated monitoring program.

1. Individual Monitoring Program: The requirements listed below are for those dischargers who elect to perform an individual monitoring program to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within the affected ASBS. In addition to Core Discharge Monitoring, the following additional monitoring requirements shall be met:

   a. Three times annually, during wet weather (storm events), the receiving water at the point of discharge from the outfalls described in section (IV)(A)(3)(c) above shall be sampled and analyzed for Ocean Plan Table A constituents, Table B constituents for marine aquatic life, DDT, PCBs, Ocean Plan PAHs, OP pesticides, pyrethroids, nitrates, phosphates, salinity, chronic toxicity (three species), and Ocean Plan indicator bacteria.

      The sample location for the ocean receiving water shall be in the surf zone at the point of discharges; this must be at the same location where storm water runoff is sampled. Receiving water shall be sampled ~~at approximately the same time~~ prior to (pre-storm) and during (or immediately after) the same storm (post storm). Post storm sampling shall be during the same storm and at approximately the same time as when the runoff is sampled. Reference water quality shall also be sampled three times annually and analyzed for the same constituents pre-storm and post-storm, during the same storm~~s~~ seasons when receiving water is sampled. Reference stations will be determined by the State Water Board's Division of Water Quality and the applicable Regional Water Board(s).

   b. Sediment sampling shall occur at least three times during every five (5) year period. The subtidal sediment (sand or finer, if present) at the discharge shall be sampled and analyzed for Ocean Plan Table B constituents for marine aquatic life, DDT, PCBs, PAHs, pyrethroids, and OP pesticides. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed.

   c. A quantitative survey of intertidal benthic marine life shall be performed at the discharge and at a reference site. The survey shall be performed at least once every five (5) year period. The survey design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The results of the survey shall be completed and submitted to the State Water Board and Regional Water Board at least six months prior to the end of the permit cycle.

d. Once during each five (5) year period, a bioaccumulation study shall be conducted to determine the concentrations of metals and synthetic organic pollutants at representative discharge sites and at representative reference sites. The study design is subject to approval by the Regional Water Board and the State Water Board's Division of Water Quality. The bioaccumulation study may include California mussels (*Mytilus californianus*) and/or sand crabs (*Emerita analoga* or *Blepharipoda occidentalis*). Based on the study results, the Regional Water Board and the State Water Board's Division of Water Quality, may adjust the study design in subsequent permits, or add or modify additional test organisms (such as shore crabs or fish), or modify the study design appropriate for the area and best available sensitive measures of contaminant exposure.

e. Marine Debris: Representative quantitative observations for trash by type and source shall be performed along the coast of the ASBS within the influence of the discharger's outfalls. The design, including locations and frequency, of the marine debris observations is subject to approval by the Regional Water Board and State Water Board's Division of Water Quality.

f. The monitoring requirements of the Individual Monitoring Program in this section are minimum requirements. After a minimum of one (1) year of continuous water quality monitoring of the discharges and ocean receiving waters, the Executive Director of the State Water Board (statewide permits) or Executive officer of the Regional Water Board (Regional Water Board permits) may require additional monitoring, or adjust, reduce or suspend receiving water and reference station monitoring. This determination may be made at any point after the discharge and receiving water is fully characterized, but is best made after the monitoring results from the first permit cycle are assessed.

2. Regional Integrated Monitoring Program: Dischargers may elect to participate in a regional integrated monitoring program, in lieu of an individual monitoring program, to fulfill the requirements for monitoring the physical, chemical, and biological characteristics of the ocean receiving waters within their ASBS. This regional approach shall characterize natural water quality, pre- and post-storm, in ocean reference areas near the mouths of identified open space watersheds and the effects of the discharges on natural water quality (physical, chemical, and toxicity) in the ASBS receiving waters, and should include benthic marine aquatic life and bioaccumulation components. The design of the ASBS stratum of a regional integrated monitoring program may deviate from the otherwise prescribed individual monitoring approach (in Section IV.B.1) if approved by the State Water Board's Division of Water Quality and the Regional Water Boards.

a. Ocean reference areas shall be located at the drainages of flowing watersheds with minimal development (in no instance more than 10% development), and shall not be located in CWA Section 303(d) listed waterbodies or have tributaries that are 303(d) listed. Reference areas shall be free of wastewater discharges and anthropogenic non-storm water runoff. A minimum of low threat storm runoff discharges (e.g. stream highway overpasses and campgrounds) may be allowed on a case-by-case basis. Reference areas shall be located in the same region as the ASBS receiving water monitoring occurs. The reference areas for each Region are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean reference water samples must be collected from each station, each from a separate storm during the same storm season that receiving water is sampled.. A minimum of one reference location shall be sampled for each ASBS receiving water site sampled per responsible party. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

b. ASBS ocean receiving water must be sampled in the surf zone at the location where the runoff makes contact with ocean water (i.e. at "point zero"). Ocean receiving water stations must be representative of worst-case discharge conditions (i.e. co-located at a large drain greater than 36 inches, or if drains greater than 36 inches are not present in the ASBS then the largest drain greater than18 inches.) Ocean receiving water stations are subject to approval by the participants in the regional monitoring program and the State Water Board's Division of Water Quality and the applicable Regional Water Board(s). A minimum of three ocean receiving water samples must be collected during each storm season from each station, each from a separate storm. A minimum of one receiving water location shall be sampled in each ASBS per responsible party in that ASBS. For parties discharging to ASBS in more than one Regional Water Board region, at a minimum, one reference station and one receiving water station shall be sampled in each region.

c. Reference and receiving water sampling shall commence during the first full storm season following the adoption of these special conditions, and post-storm samples shall be collected during the same storm event when ~~annual~~ storm water runoff is sampled. Sampling shall occur in a minimum of two storm seasons. For those ASBS dischargers that have already participated in the Southern California Bight 2008 ASBS regional monitoring effort, sampling may be limited to only one storm season.

d. Receiving water and reference samples shall be analyzed for the same constituents as storm water runoff samples. At a minimum, constituents to be sampled and analyzed in reference and discharge receiving waters must include oil and grease, total suspended solids, Ocean Plan Table B metals for protection of marine life, Ocean Plan PAHs, pyrethroids, OP pesticides, ammonia, nitrate, phosphates, and critical life stage chronic toxicity for three species. In addition, within the range of the southern sea otter, indicator bacteria or some other measure of fecal contamination shall be analyzed.

3. Waterfront and Marine Operations: In addition to the above requirements for ocean receiving water monitoring, additional monitoring must be performed for marinas and boat launch and pier facilities:

   a. For all marina or mooring field operators, in mooring fields with 10 or more occupied moorings, the ocean receiving water must be sampled for Ocean Plan indicator bacteria, residual chlorine, copper, zinc, grease and oil, methylene blue active substances (MBAS), and ammonia nitrogen.

      (1) For mooring field operators opting for an individual monitoring program (Section IV.B.1 above), this sampling must occur weekly (on the weekend) from May through October.

      (2) For mooring field operators opting to participate in a regional integrated monitoring program (Section IV.B.2 above), this sampling must occur monthly from May through

October on a high use weekend in each month. The Water Boards may allow a reduction in the frequency of sampling, through the regional monitoring program, after the first year of monitoring.

b. For all mooring field operators, the subtidal sediment (sand or finer, if present) within mooring fields and below piers shall be sampled and analyzed for Ocean Plan Table B metals (for marine aquatic life beneficial use), acute toxicity, PAHs, and tributyltin. For sediment toxicity testing, only an acute toxicity test using the amphipod *Eohaustorius estuarius* must be performed. This sampling shall occur at least three times during a five (5) year period. For mooring field operators opting to participate in a regional integrated monitoring program, the Water Boards may allow a reduction in the frequency of sampling after the first sampling effort's results are assessed.

Glossary

At the point of discharge(s) – Means in the surf zone immediately where runoff from an outfall meets the ocean water (a.k.a., at point zero).

Areas of Special Biological Significance (ASBS) – Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of State Water Quality Protection Areas.

Design storm – For purposes of these Special Protections, a design storm is defined as the volume of runoff produced from one inch of precipitation per day or, if this definition is inconsistent with the discharger's applicable storm water permit, then the design storm shall be the definition included in the discharger's applicable storm water permit.

Development – Relevant to reference monitoring sites, means urban, industrial, agricultural, grazing, mining, and timber harvesting land uses.

Higher threat discharges - permitted storm drains discharging equal to or greater than 18 inches, industrial storm drains, agricultural runoff discharged through an MS4, discharges associated with waterfront and marina operations (e.g., piers, launch ramps, mooring fields, and associated vessel support activities, except for passive discharges defined below), and direct discharges associated with commercial or industrial activities to ASBS.

Low Impact Development (LID) – A sustainable practice that benefits water supply and contributes to water quality protection. Unlike traditional stormwater management, which entails collecting and conveying storm water runoff through storm drains, pipes, or other conveyances to a centralized storm water facility, LID focuses on using site design and storm water management to maintain the site's pre-development runoff rates and volumes. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to the source of rainfall.

Marine Operations – Marinas or mooring fields that contain slips or mooring locations for 10 or more vessels.

Management Measure (MM) - economically achievable measures for the control of the addition of pollutants from various classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. For example, in the "marinas and recreational boating" land-use category specified in the Plan for California's Nonpoint Source Pollution Control Program (NPS Program Plan) (SWRCB, 1999), "boat cleaning and maintenance" is considered a MM or the source of a specific class or type of NPS pollution.

Management Practice (MP) - the practices (e.g., structural, non-structural, operational, or other alternatives) that can be used either individually or in combination to address a specific MM class or classes of NPS pollution. For example, for the "boat cleaning and maintenance" MM, specific MPs can include, but are not limited to, methods for the selection of environmentally sensitive hull paints or methods for cleaning/removal of hull copper anti-fouling paints.

Municipal Separate Storm Sewer System (MS4) – A municipally-owned storm sewer system regulated under the Phase I or Phase II storm water program implemented in compliance with Clean Water Act section 402(p). Note that an MS4 program's boundaries are not necessarily congruent with the permittee's political boundaries.

Natural Ocean Water Quality - The water quality (based on selected physical, chemical and biological characteristics) that is required to sustain marine ecosystems, and which is without apparent human influence, *i.e.*, an absence of significant amounts of: (a) man-made constituents (*e.g.,* DDT); (b) other chemical (*e.g.,* trace metals), physical (temperature/thermal pollution, sediment burial), and biological (*e.g.*, bacteria) constituents at concentrations that have been elevated due to man's activities above those resulting from the naturally occurring processes that affect the area in question; and (c) non-indigenous biota (*e.g.,* invasive algal bloom species) that have been introduced either deliberately or accidentally by man. Discharges "*shall not alter natural ocean water quality*" as determined by a comparison to the range of constituent concentrations in reference areas agreed upon via the regional monitoring program(s). If monitoring information indicates that *natural ocean water quality* is not maintained, but there is sufficient evidence that a discharge is not contributing to the alteration of natural water quality, then the Regional Water Board may make that determination. In this case, sufficient information must include runoff sample data that has equal or lower concentrations for the range of constituents at the applicable reference area(s).

Nonpoint source – Nonpoint pollution sources generally are sources that do not meet the definition of a point source. Nonpoint source pollution typically results from land runoff, precipitation, atmospheric deposition, agricultural drainage, marine/boating operations or hydrologic modification. Nonpoint sources, for purposes of these Special Protections, include discharges that are not required to be regulated under an NPDES permit.

Non-storm water discharge – Any runoff that is not the result of a precipitation event. This is often referred to as "dry weather flow."

Non-structural control – A Best Management Practice that involves operational, maintenance, regulatory (e.g., ordinances) or educational activities designed to reduce or eliminate pollutants in runoff, and that are not structural controls (i.e. there are no physical structures involved).

Physical impossibility - means any act of God, war, fire, earthquake, windstorm, flood or natural catastrophe; unexpected and unintended accidents not caused by discharger or its employees' negligence; civil disturbance, vandalism, sabotage or terrorism; restrain by court order or public authority or agency; or action or non-action by, or inability to obtain the necessary authorizations or approvals from any governmental agency other than the permittee.

Representative sites and monitoring procedures – Are to be proposed by the discharger, with appropriate rationale, and subject to approval by Water Board staff.

Sheet-flow – Runoff that flows across land surfaces at a shallow depth relative to the cross-sectional width of the flow. These types of flow may or may not enter a storm drain system before discharge to receiving waters.

Storm Season – also referred to as rainy season, means the months of the year from the onset of rainfall during autumn until the cessation of rainfall in the spring.

Structural control – A Best Management Practice that involves the installation of engineering solutions to the physical treatment or infiltration of runoff.

Surf Zone - The surf zone is defined as the submerged area between the breaking waves and the shoreline at any one time.

Surface Water Ambient Monitoring Program (SWAMP) comparable – means that the monitoring program must 1) meet or exceed 2008 SWAMP Quality Assurance Program Management Plan (QAPP) Measurement Quality Objectives, or 2) have a Quality Assurance Project Plan that has been approved by SWAMP; in addition data must be formatted to match the database requirements of the SWAMP Information Management System. Adherence to the measurement quality objectives in the Southern California Bight 2008 ASBS Regional Monitoring Program QAPP and data base management comprises being SWAMP comparable.

Waterfront Operations - Piers, launch ramps, and cleaning stations in the water or on the adjacent shoreline.

RB-AR24533

U.S. ENVIRONMENTAL PROTECTION AGENCY

Model Ordinances to Protect Local Resources

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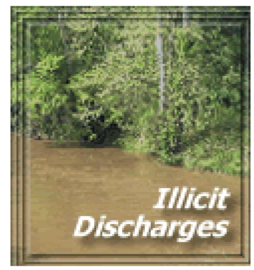

Section I. Purpose/Intent.

The purpose of this ordinance is to provide for the health, safety, and general welfare of the citizens of (_____) through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This ordinance establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this ordinance are:

1. To regulate the contribution of pollutants to the municipal separate storm sewer system (MS4) by

stormwater discharges by any user
2. To prohibit Illicit Connections and Discharges to the municipal separate storm sewer system
3. To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this ordinance

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Section II. Definitions.

For the purposes of this ordinance, the following shall mean:

Authorized Enforcement Agency. employees or designees of the director of the municipal agency designated to enforce this ordinance.

Best Management Practices (BMPs). schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act. The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

Construction Activity. Activities subject to NPDES Construction Permits. Currently these include construction projects resulting in land disturbance of 5 acres or more. Beginning in March 2003, NPDES Storm Water Phase II permits will be required for construction projects resulting in land disturbance of 1 acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous Materials. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge. Any direct or indirect non-storm water discharge to the storm drain system, except as exempted in Section X of this ordinance.

Illicit Connections. An illicit connection is defined as either of the following: Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the storm drain system including but not limited to any conveyances which allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency or, Any drain or conveyance connected from a commercial or industrial land use to the storm drain system which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity. Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit. means a permit issued by EPA (or by a State under authority delegated pursuant to 33 USC § 1342(b)) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Storm Water Discharge. Any discharge to the storm drain system that is not composed entirely of storm water.

Person. means any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant. Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm Drainage System. Publicly-owned facilities by which storm water is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Storm Water. Any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Stormwater Pollution Prevention Plan.A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to Stormwater, Stormwater Conveyance Systems, and/or Receiving Waters to the Maximum Extent Practicable.

Wastewater. Any water or other liquid, other than uncontaminated storm water, discharged from a facility.

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Section III. Applicability.

This ordinance shall apply to all water entering the storm drain system generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

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Section IV. Responsibility for Administration.

The ______ [authorized enforcement agency] shall administer, implement, and enforce the provisions of this ordinance. Any powers granted or duties imposed upon the authorized enforcement agency may be delegated in writing by the Director of the authorized enforcement agency to persons or entities acting in the beneficial interest of or in the employ of the agency.

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Section V. Severability.

The provisions of this ordinance are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this Ordinance or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this Ordinance.

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Section VI. Ultimate Responsibility.

The standards set forth herein and promulgated pursuant to this ordinance are minimum standards; therefore this ordinance does not intend nor imply that compliance by any person will ensure that there will be no contamination, pollution, nor unauthorized discharge of pollutants.

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Section VII. Discharge Prohibitions.

Prohibition of Illegal Discharges.

No person shall discharge or cause to be discharged into the municipal storm drain system or watercourses any materials, including but not limited to pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards, other than storm water.

The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

1. The following discharges are exempt from discharge prohibitions established by this ordinance: water line flushing or other potable water sources, landscape irrigation or lawn watering, diverted stream flows, rising ground water, ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains (not including active groundwater dewatering systems), crawl space pumps, air conditioning condensation, springs, non-commercial washing of vehicles, natural riparian habitat or wet-land flows, swimming pools (if dechlorinated - typically less than one PPM chlorine), fire fighting activities, and any other water source not containing Pollutants.
2. Discharges specified in writing by the authorized enforcement agency as being necessary to protect public health and safety.
3. Dye testing is an allowable discharge, but requires a verbal notification to the authorized enforcement agency prior to the time of the test.
4. The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with

all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Prohibition of Illicit Connections.

1. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
2. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
3. A person is considered to be in violation of this ordinance if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.

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Section VIII. Suspension of MS4 Access.

Suspension due to Illicit Discharges in Emergency Situations.

The ___________ [authorized enforcement agency] may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, or to the health or welfare of persons, or to the MS4 or Waters of the United States. If the violator fails to comply with a suspension order issued in an emergency, the authorized enforcement agency may take such steps as deemed necessary to prevent or minimize damage to the MS4 or Waters of the United States, or to minimize danger to persons.

Suspension due to the Detection of Illicit Discharge.

Any person discharging to the MS4 in violation of this ordinance may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The authorized enforcement agency will notify a violator of the proposed termination of its MS4 access. The violator may petition the authorized enforcement agency for a reconsideration and hearing.

A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the authorized enforcement agency.

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Section IX. Industrial or Construction Activity Discharges.

Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the __________ [authorized enforcement agency] prior to the allowing of discharges to the MS4.

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Section X. Monitoring of Discharges.

A. Applicability.

This section applies to all facilities that have storm water discharges associated with industrial activity, including construction activity.

B. Access to Facilities.

1. The ___________ [authorized enforcement agency] shall be permitted to enter and inspect facilities subject to regulation under this ordinance as often as may be necessary to determine compliance with this ordinance. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to representatives of the authorized enforcement agency.
2. Facility operators shall allow the ______________ [authorized enforcement agency] ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records that must be kept under the conditions of an NPDES permit to discharge storm water, and the performance of any additional duties as defined by state and federal law.
3. The _____________ [authorized enforcement agency] shall have the right to set up on any permitted facility such devices as are necessary in the opinion of the authorized enforcement agency to conduct monitoring and/or sampling of the facility's storm water discharge.
4. The _____________ [authorized enforcement agency] has the right to require the discharger to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be

maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

5. Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the operator at the written or oral request of the _____________ [authorized enforcement agency] and shall not be replaced. The costs of clearing such access shall be borne by the operator.
6. Unreasonable delays in allowing the _____________ [authorized enforcement agency] access to a permitted facility is a violation of a storm water discharge permit and of this ordinance. A person who is the operator of a facility with a NPDES permit to discharge storm water associated with industrial activity commits an offense if the person denies the authorized enforcement agency reasonable access to the permitted facility for the purpose of conducting any activity authorized or required by this ordinance.
7. If the _____________ [authorized enforcement agency] has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the authorized enforcement agency may seek issuance of a search warrant from any court of competent jurisdiction.

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Section XI. Requirements to Prevent, Control, and Reduce Storm Water Pollutants by the Use of Best Management Practices.

__________ [Authorized enforcement agency] will adopt requirements identifying Best Management Practices for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the U.S. The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premise, which is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a stormwater pollution prevention plan (SWPPP) as necessary for compliance with requirements of the NPDES permit.

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Section XII. Watercourse Protection.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

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Section XIII. Notification of Spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or water of the U.S. said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the authorized enforcement agency in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the ____________________ [authorized enforcement agency] within three business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

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Section XIV. Enforcement.

A. Notice of Violation.

Whenever the _________ [authorized enforcement agency] finds that a person has violated a prohibition or failed to meet a requirement of this Ordinance, the authorized enforcement agency may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

1. The performance of monitoring, analyses, and reporting;
2. The elimination of illicit connections or discharges;
3. That violating discharges, practices, or operations shall cease and desist;
4. The abatement or remediation of storm water pollution or contamination hazards and the restoration of any affected property; and
5. Payment of a fine to cover administrative and remediation costs; and
6. The implementation of source control or treatment BMPs.

If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

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Section XV. Appeal of Notice of Violation.

Any person receiving a Notice of Violation may appeal the determination of the authorized enforcement agency. The notice of appeal must be received within days from the date of the Notice of Violation. Hearing on the appeal before the appropriate authority or his/her designee shall take place within 15 days from the date of receipt of the notice of appeal. The decision of the municipal authority or their designee shall be final.

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Section XVI. Enforcement Measures After Appeal.

If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, __ within days of the decision of the municipal authority upholding the decision of the authorized enforcement agency, then representatives of the authorized enforcement agency shall enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

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Section XVII. Cost of Abatement of the Violation.

Within __ days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the amount of the assessment within __ days. If the amount due is not paid within a timely manner as determined by the decision of the municipal authority or by the expiration of the time in which to file an appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this article shall become liable to the city by reason of such violation. The liability shall be paid in not more than 12 equal payments. Interest at the rate of percent per annum shall be assessed on the balance beginning on the __ st day following discovery of the violation.

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Section XVIII. Injunctive Relief.

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this Ordinance. If a person has violated or continues to violate the provisions of this ordinance, the authorized enforcement agency may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

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Section XIX. Appeal of Notice of Violation.

In lieu of enforcement proceedings, penalties, and remedies authorized by this Ordinance, the authorized enforcement agency may impose upon a violator alternative compensatory actions, such as storm drain stenciling, attendance at compliance workshops, creek cleanup, etc.

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Section XX. Violations Deemed A Public Nuisance.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this Ordinance is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

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Section XXI. Criminal Prosecution.

Any person that has violated or continues to violate this ordinance shall be liable to criminal prosecution to the fullest extent of the law, and shall be subject to a criminal penalty of _______ dollars per violation per day and/or imprisonment for a period of time not to exceed _____ days.

The authorized enforcement agency may recover all attorney's fees court costs and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

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Section XXII. Remedies Not Exclusive.

The remedies listed in this ordinance are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

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Section XXIII. Adoption of Ordinance.

This ordinance shall be in full force and effect __ days after its final passage and adoption. All prior ordinances and parts of ordinances in conflict with this ordinance are hereby repealed.

PASSED AND ADOPTED this ____ day of ___________, 19__, by the following vote:

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URL: http://www.epa.gov/owow/NPS/ordinance/mol5.htm

RB-AR24547

United States Environmental Protection Agency | Office of Water Washington, D.C. | EPA 832-F-99-022 September 1999

EPA

Storm Water Management Fact Sheet

Non-Storm Water Discharges to Storm Sewers

DESCRIPTION

Identifying and eliminating non-storm water discharges to storm sewers is an important and very cost-effective Best Management Practice (BMP) for improving runoff water quality. Non-storm water discharges can include discharges of process water, air conditioner condensate, non-contact cooling water, vehicle wash water, or sanitary wastes, and are typically the result of unauthorized connections of sanitary or process wastewater drains to storm sewers. These connections are common, yet often go undetected. Typically these discharges are significant sources of pollutants, and, unless regulated by an NPDES permit, they are also illegal.

Environmental impact evaluations have shown that the elimination of non-storm water discharges is an effective BMP, because such discharges may contain a significant loading of pollutants.

Several studies exist on the contents of non-storm water discharges. Pitt and Shawley (1982) reported that non-storm water discharges were found to contribute substantial quantities of a variety of pollutants, even though the individual concentrations of each pollutant were not high. During extended periods of base flow conditions, the lower concentration was offset, leading to a substantial loading of pollutants. Gartner, Lee and Associates, Ltd. (1983) conducted an extensive survey of non-storm water discharges in the Humber River watershed (Toronto). Out of 625 outfalls, about 10 percent were considered significant pollutant sources. Further investigations identified many industrial and sanitary non-storm water discharges into the storm drainage system.

Sources found in industrial areas included liquid dripping from animal hides stored in tannery yards, and washdowns of storage yards at meat packing facilities. Therefore, it is anticipated that elimination of non-storm water discharges will be a highly effective BMP.

Identifying and eliminating non-storm water discharges has rarely been done at industrial facilities. Part of the problem is education: many facility operators are unaware of what constitutes a non-storm water discharge and what the potential environmental impacts of these discharges are. Compliance with NPDES permit requirements for the presence of non-storm water discharges will greatly improve the implementation of this BMP.

APPLICABILITY

Almost every industrial facility that has not been tested or evaluated for the presence of potential non-storm water discharges should be so evaluated. Typically NPDES permit certification includes:

- Identification of potential non-storm water discharges.
- Results of a site evaluation for the presence of non-storm water discharges.
- The evaluation criteria or test method used.
- The date of testing and/or evaluation.
- The on-site drainage points that were directly observed during the test and/or evaluation.

This certification must be signed in accordance for the facility's NPDES storm water permit. A sample certification form is shown in Figure 1.

ADVANTAGES AND DISADVANTAGES

Identifying and eliminating non-storm water discharges can be an easy and cost-effective method for preventing runoff contamination and pollution of receiving water bodies. However, identifying these discharges may be problematic. Possible problems in identifying non-storm water discharges include:

- A non-storm water discharge may not occur on the date of the test or evaluation.
- The method used to test or evaluate the discharge may not be applicable to the situation.
- A lack of available data on the location of storm drains and sanitary sewers, especially in older industrial facilities, may make identifying an illicit connection difficult.

KEY PROGRAM COMPONENTS

Key program criteria include identifying and locating non-storm water entries into storm drainage and investigating their sources.

For any effective investigation of pollution within a storm water system, all pollutant sources must be included. For many pollutants, storm water may contribute the smaller portion of the total pollutant mass discharge from a storm drainage system. In addition to conventional storm water runoff associated with rainfall, pollutant sources may include dry-weather entries occurring during both warm and cold months and snowmelt runoff. Consequently, much less pollution reduction benefit will occur if only storm water is considered in a control plan for controlling storm drainage discharges.

The investigations may also identify illicit point source outfalls that do not carry storm water. Obviously, these outfalls also need to be controlled and permitted. Figure 1 can be used as a sample worksheet to report non-storm water discharges.

There are four primary methods for investigating non-storm water discharges.

Visual Inspection

The simplest method for detecting non-storm water connections in the storm water collection system is to observe all discharge points during periods of dry weather. Key parameters to look for are the presence of stains, smudges, odors, and other abnormal conditions.

Sanitary and Storm Sewer Map Review

A review of a plant schematic is another simple way to determine if there are any unauthorized connections to the storm water collection system. A sanitary or storm sewer map, or plant schematic, is a map of pipes and drainage systems used to carry

NON-STORM WATER DISCHARGE ASSESSMENT AND CERTIFICATION			Worksheet Completed By: ____ Title: ____ Date: ____ Signature: ____		
Date of Test or Evaluation	Outfall Directly Observed During the Test (Identify as indicated on the site map)	Method Used to Test or Evaluate Discharge	Describe Results from Test for the Presence of Non-Storm Water Discharge	Identify Potential Significant Sources	Name of Person Who Conducted the Test or Evaluation

Source: U. S. EPA, 1992.

FIGURE 1 SAMPLE WORKSHEET FOR RECORDING NON-STORM WATER DISCHARGES

process wastewater, non-contact cooling water, and sanitary wastes. These maps (especially as-built plans) should be reviewed to verify that there are no unauthorized connections. However, a common problem at many sites is that they often do not have accurate or current schematics.

Dye Testing

Another method for detecting improper connections to the storm water collection system is dye testing. A dye test can be performed by simply releasing a dye (either pellet or powder) into either the sanitary or process wastewater system. Discharge points from the storm water collection system are then examined for color change.

Sampling and Chemical Analysis

Sewer mapping and visual inspection are also helpful in identifying locations for sampling. Chemical tests are needed to supplement the visual or physical inspections. Chemical tests can help quantify the approximate components of the discharge mixture at the outfall or discharge point. Samples should be collected, stored, and analyzed in accordance with standard quality assurance and quality control (QA/QC) procedures. Statistical analysis of the chemical test results can be used to estimate the relative magnitudes of the various flow sources. In most cases, non-storm water discharges are made up of many separate sources of flow, such as leaking domestic water systems, sanitary discharges, ground water infiltration, automobile washwater, etc. Key parameters that can be helpful in identifying the source of the non-storm water flows include biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), specific conductivity, temperature, fluoride, hardness, ammonia, ammonium, potassium, surfactant fluorescence, pH, total available chlorine, and toxicity screening. It may be possible to identify the source of the non-storm water discharge by examining the flow for specific chemicals.

Just as high levels of pathogenic bacteria are usually associated with a discharge from a sanitary waste water source, the presence of certain chemicals is generally associated with specific industries. Table 1, includes a listing of various chemicals that may be associated with a variety of activities.

IMPLEMENTATION

Identification of non-storm water discharges should be part of every facility's maintenance program. Facilities should conduct annual inspections for non-storm water discharges, even if previous tests have found no such discharges. New processes, building additions, or other plant changes may have brought about unauthorized connections to the storm water conveyance system.

COSTS

The above methods are mostly time-intensive; therefore, the cost is dependent on the level of effort employed, and on the level of expertise. Visual inspections are the least expensive of the three. Dye testing may be more cost effective for buildings that do not have current schematics of their sanitary and storm sewer systems. The cost of disconnecting illicit discharges from the storm water system will vary depending on the type and location of the connection.

The full use of all of the applicable procedures is most likely necessary to identify all pollutant sources. For example, attempting to reduce costs by examining only a certain class of outfalls, or using inappropriate testing procedures, will significantly reduce the utility of the testing program and result in inaccurate conclusions.

REFERENCES

1. California Environmental Protection Agency, Draft, 1992. *Staff Proposal for Modification to Water Quality Order No. 91-13 DWQ Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities*.

2. Gartner, Lee and Associates, Ltd., 1983. *Toronto Area Watershed Management Strategy Study, Technical Report No. 1, Humber River and Tributary Dry Weather Outfall Study*. Ontario Ministry of the Environment, Toronto, Ontario.

TABLE 1 CHEMICALS COMMONLY FOUND IN INDUSTRIAL DISCHARGES

Chemical	Industries
Acetic Acid	Acetate rayon, pickle and beetroot manufacture
Alkalis	Cotton and straw kiering, cotton manufacture
Ammonia	Gas and coke manufacture, chemical manufacture
Arsenic	Sheep-dipping, felt mongering
Chlorine	Laundries, paper mills, textile bleaching
Chromium	Plating, chrome tanning, aluminum anodizing
Cadmium	Plating
Citric Acid	Soft drinks and citrus fruit processing
Copper	Plating, pickling, rayon manufacture
Cyanides	Plating, metal cleaning, case-hardening, gas manufacture
Fats, Oils	Wool scouring, laundries, textiles, old refineries
Fluorides	Gas and coke manufacture, chemical manufacture, fertilizer plants,
Formalin	Manufacture of synthetic resins and penicillin
Hydrocarbons	Petrochemical and rubber factories
Hydrogen Peroxide	Textile bleaching, rocket motor testing
Lead	Battery manufacture, lead mining, paint manufacture, gasoline
Metcaptins	Oil refining, pulp mills
Mineral Acids	Chemical manufacture, mines, iron and copper pickling, brewing, textiles
Nickel	Plating
Nitro Compounds	Explosives and chemical works
Organic Acids	Distilleries and fermentation plants
Phenols	Gas and coke manufacture, synthetic resin manufacture, textiles,
Silver	Plating and photography
Starch	Food, textile, wallpaper manufacture
Sugars	Dairies, foods, sugar refining, preserves, wood process
Sulfides	Textiles, tanneries, gas manufacture, rayon manufacture
Sulfites	Wood process, vicose manufacture, bleaching
Tannic Acid	Tanning, sawmills
Tartaric Acid	Dyeing, wine, leather, and chemical manufacture
Zinc	Galvanizing, plating, viscose manufacture, rubber process

Source: Pitt *et al.,* 1992.

3. Pitt, R. and G. Shawley, 1982. *A Demonstration of Non-Point Pollution Management on Castro Valley Creek*, Alameda County Flood Control District (Hayward, California) and U.S. EPA, Washington, DC.

4. Pitt, R., D. Barbe, D. Adrian, and R. Field, 1992. *Investigation of Inappropriate Pollution Entries Into Storm Drainage Systems -- A Users Guide*, U.S. EPA, Edison, New Jersey.

5. Pitt, R., and R. Field, 1992. Non-Storm Water Discharges into Storm Drainage Systems. NTIS Report No. PB92-158559.

6. U.S. EPA, 1992. *Storm Water Management For Industrial Activities: Developing Pollution Prevention Plans and Best Management Practice.* EPA 833-R-92-006.

7. Washington State Department of Ecology, February, 1992. *Storm Water Management Manual for the Puget Sound Basin*.

ADDITIONAL INFORMATION

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From: "Dettle, John" <JDettle@TorranceCA.gov>
To: rpurdy@waterboards.ca.gov
Date: 7/12/2012 5:31 PM
Subject: FW: Hazardous Spill?
Attachments: IMG_0252.jpg

Hi Renee,

This is what the water from an old fire sprinkler system looks like when it is flushed out.   It's rusty water.

These companies need to get an NPDES Permit but I think these discharges are still "conditionally exempt".

John C. Dettle, P.E.

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. R4-2003-0108

WASTE DISCHARGE REQUIREMENTS
for
DISCHARGES OF GROUNDWATER FROM POTABLE WATER SUPPLY WELLS
TO SURFACE WATERS
IN
COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES

(GENERAL NPDES PERMIT NO. CAG994005)

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) finds:

General Permit Background

1. On September 22, 1989, the United States Environmental Protection Agency (USEPA) granted the State of California, through the State Water Resources Control Board (State Board) and the Regional Boards, the authority to issue general National Pollutant Discharge Elimination System (NPDES) permits pursuant to 40 Code of Federal Regulations (40 CFR) parts 122 and 123.

2. 40 CFR section 122.28 provides for issuance of general permits to regulate a category of point sources if the sources:

   a. Involve the same or substantially similar types of operations;
   b. Discharge the same type of waste;
   c. Require the same type of effluent limitations or operating conditions;
   d. Require similar monitoring; and
   e. Are more appropriately regulated under a general permit rather than individual permits.

3. General waste discharge requirements and NPDES permits enable Regional Board staff to expedite the processing of requirements, simplify the application process for dischargers, better utilize limited staff resources, and avoid the expense and time involved in repetitive public noticing, hearings, and permit adoptions.

4. On May 12, 1997, this Regional Board adopted the *General National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Groundwater Discharges from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (NPDES No. CAG994001, Order No. 97-045 and NPDES No. CAG994002, Order No. 97-043). These existing General Permits covered discharges of ground water from construction dewatering, subterranean seepage dewatering, including discharges from potable water well development and test pumping, aquifer testing, monitoring well construction and similar discharges. This new waste discharge requirements will replace the coverage for potable water supply well discharges covered under Order No. 97-045 and Order No. 97-043.

Discharge Description

5. Discharges covered by this permit include groundwater from potable water supply wells generated during the following activities:

   a. Groundwater generated during well purging for data collection purposes;
   b. Groundwater extracted from major well-rehabilitation and redevelopment activities; and
   c. Groundwater generated from well drilling, construction, and development.

6. Pursuant to section 2, Article X, California Constitution, and section 275 of the California Water Code on preventing waste and unreasonable use of waters of the state, this Regional Board encourages, wherever practicable, water conservation and/or re-use of wastewater. To obtain coverage under this Order, the discharger shall first investigate the feasibility of conservation, land disposal and/or reuse of the wastewater.

Storm Water Regulations and Permits

7. This Regional Board adopted *Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles* contained in Order No. 01-182 [NPDES No. CAS614001] and *Waste Discharge Requirements for Municipal Stormwater and Urban Runoff Discharges within Ventura County Flood Control District, County of Ventura, and the Cities of Ventura County* contained in Order No. 00-108 [NPDES No. CAS004002] on July 15, 1996, and July 27, 2000, respectively. These Orders prohibit non-stormwater discharges to storm drain systems unless they are covered by separate NPDES permits. This prohibition, in general, does not apply to rising groundwater, uncontaminated groundwater infiltration discharges, discharges from potable water distribution system releases[1], foundation and footing drains discharges, and water from crawl space pumps. The municipality may allow discharge of these types of discharges into the storm drain system. However, the municipality or the Regional Board may prohibit these discharges if they are determined to cause, or threaten to cause, degradation of water quality, violation of water quality objectives, cause nuisance and/or impair beneficial uses of receiving waters.

Basis for Fee

8. Title 23 of the California Code of Regulations (CCR), Division 3, Chapter 9, Article 1, section 2200, *Annual Fee Schedule,* requires that all discharges subject to a specific general permit shall pay the same annual fee.

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1 "Potable Water Distribution Systems Releases" means sources of flows from drinking water storage, supply and distribution systems including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing; and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities not involving chemical addition(s). It does not include wastewater discharges from activities that occur at wellheads, such as well construction, well development (i.e., aquifer pumping tests, well purging, etc.), or major well maintenance.

Applicable Plans, Policies, and Regulations

9. On June 13, 1994, this Regional Board adopted a revised basin plan, *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan). The Basin Plan incorporates, by reference, State Water Resources Control Board's Water Quality Control Plans and policies on ocean waters [*Water Quality Control Plan for Ocean Waters in California*, March 22, 1990], temperature [*Water Quality Control Plan for Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*, Amended September 18, 1975] and anti-degradation [*Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Board Resolution No. 68-16, October 28, 1968].

10. The Basin Plan contains water quality objectives for, and lists the beneficial uses of, specific water bodies (receiving waters) in the Los Angeles Region. Typical beneficial uses covered by this Order include the following:

    a. Inland surface waters above an estuary - municipal and domestic supply, industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, aquaculture, warm and cold freshwater habitats, inland saline water and wildlife habitats, water contact and noncontact recreation, fish migration, and fish spawning.

    b. Inland surface waters within and below an estuary - industrial service supply, marine and wetland habitats, estuarine and wildlife habitats, water contact and noncontact recreation, commercial and sport fishing, aquaculture, migration of aquatic organisms, fish migration, fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

    c. Coastal Zones (both nearshore and offshore) - industrial service supply, navigation, water contact and noncontact recreation, commercial and sport fishing, marine habitat, wildlife habitat, fish migration and spawning, shellfish harvesting, and rare, threatened, or endangered species habitat.

11. The State Board adopted a Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975.

12. The State Board adopted a *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* in May 1974 (Policy). The Policy contains narrative and numerical water quality objectives that are designed to prevent water quality degradation and protect beneficial uses in enclosed bays and estuaries.

    The Policy also lists principles of management that include the State Board’s goal to phase out all discharges (excluding cooling waters), particularly industrial process water, to enclosed bays and estuaries as soon as practicable. The waste described above is not considered an industrial process wastewater.

13. Under 40 CFR section 122.44(d), *Water Quality Standards and State Requirements*, "Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, or toxic pollutants), which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." Where numeric effluent limitations for a pollutant or pollutant parameter have not been established in the applicable state water quality control plan, 40 CFR section 122.44(d)(1)(vi) specifies that water quality-based effluent limitations (WQBELs) may be set based on USEPA criteria, and may be supplemented where necessary by other relevant information to attain and maintain narrative water quality criteria, and to fully protect designated beneficial uses.

14. On May 18, 2000, the U.S. EPA promulgated the numeric criteria for priority pollutants for the State of California, known as the California Toxics Rule (CTR) and as codified as 40 CFR section 131.38. Toxic pollutant limits are prescribed in this Order to implement the CTR. 40 CFR section 122.44(d)(1)(ii) requires each toxic pollutant be analyzed with respect to its reasonable potential when determining whether a discharge (1) causes; (2) has the reasonable potential to cause; or (3) contributes to the exceedance of a receiving water quality objective. Performing a reasonable potential analysis (RPA) for each pollutant does this. In performing the RPA, the permitting authority uses procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity).

15. A reasonable potential analysis has been conducted using monitoring data supplied by water purveyors as part of their self-monitoring program and as part of supplemental data required for issuing new NPDES permits. Attachment A is a screening table showing those compounds with potential to be in potable water discharge above the CTR but generally at a concentration below the maximum contaminant level.

16. Effluent limitation guidelines requiring the application of best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and best available technology economically achievable (BAT), were promulgated by the USEPA for some pollutants in this discharge. Effluent limitations for pollutants not subject to the USEPA effluent limitation guidelines are based on one of the following: best professional judgment (BPJ) of BPT, BCT or BAT; current plant performance; or WQBELs. The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria which are taken from the CTR. These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water. The attached fact sheet for this Order includes specific bases for the effluent limitations.

17. Best professional judgment (BPJ) was used in developing technology-based effluent limits in this tentative order. BPJ is defined as the highest quality technical opinion developed by the permit writer after consideration of all reasonably available and pertinent data or information that forms the basis for the terms and conditions of a NPDES permit. The authority for BPJ is contained in Section 402(a)(1) of the Clean Water Act.

18. The Basin Plan also implements the State Board's adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Water in California". This policy which is also referred to as the "Anti-degradation Policy", protects surface and ground waters from degradation. In particular, this policy protects waterbodies where existing quality is higher than that necessary for the protection of beneficial uses.

    This permit complies with State and Federal "Anti-degradation" policies. The conditions and effluent limitations established in this Order for discharges of groundwater from potable water wells to surface waters in this Region ensure that the existing beneficial uses and quality of surface waters in this Region will be maintained and protected. Discharges regulated by this Order should not adversely impact water quality if the terms and conditions of this Order are met.

19. Water Quality Objectives and Effluent Limits in this General Permit are based on:

    - The plans, policies and water quality objectives and criteria contained in the 1994 Basin Plan, as amended including the Antidegradation Policy;
    - California Toxic Rule (CTR) (40 CFR § 131.38);
    - CCR section 64431 of Title 22 (Drinking Water Standards);
    - Applicable Federal Regulations (including 40 CFR Parts 122 and 131);
    - Department of Health Services (DHS);
    - Office of Environmental Health Hazard Assessment (OEHHA); and
    - Best Professional Judgement.

20. Because this Order is intended to serve as a general NPDES permit and covers discharges to all surface waters in the Los Angeles Region, the effluent limitations established pursuant to this general order are established to protect the most protective water quality objective for the surface water beneficial uses in the Los Angeles Region.

21. USEPA regulations, policies, and guidance documents upon which BPJ was developed may include in part, the following:

    - Technical Support Document for Water Quality Based Toxics Control, March 1991 (EPA-505/2-90-001);
    - Whole Effluent Toxicity (WET) Control Policy, July 1994; and
    - USEPA NPDES Permit Writer's Manual, December 1996 (EPA-833-B-96-003).

22. The SWRCB adopted *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the *State Implementation Plan* or *SIP*) on March 2, 2000. The SIP was amended by Resolution No. 2000-30, on April 26, 2000, and the Office of Administrative Law approved the SIP on April 28, 2000. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California which are subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the Federal Clean Water Act. This policy also establishes the following: implementation provisions for priority pollutant criteria promulgated by USEPA through the CTR and for

priority pollutant objectives established by Regional Water Quality Control Boards in their water quality control plans (Basin Plans) and chronic toxicity control provisions.

23. The SIP authorizes the RWQCB to grant Categorical Exceptions from meeting the priority pollutant criteria/objectives, if determined to be necessary to implement control measures regarding drinking water conducted to fulfill statutory requirements under the Safe drinking water Act or California Health and Safety Code. Generally, discharges of potable water at the well head are done to fulfill DHS statutory requirements, and to ensure steady and safe drinking water supply to end-users. The potable water discharges under this permit are mostly intermittent, short duration, high flow discharges that comply with DHS maximum contaminant levels, for protection of human health. Therefore, potable well discharges as qualified under this permit have been determined to pose no significant threat to water quality and meet the conditions for categorical exception under SIP.

24. To satisfy the Categorical Exception requirements of section 5.3 of the SIP, dischargers seeking enrollment under this general permit will be required to submit project-specific information to the Executive Officer on the discharge and its water quality effects. The information required by the SIP includes:

    (1) A detailed description of the proposed action, including the proposed method of completing the action;
    (2) A time schedule;
    (3) A discharge and receiving water quality monitoring plan (before project initiation, during the project, and after project completion, with the appropriate quality assurance and quality control procedures);
    (4) CEQA documentation;
    (5) Contingency plans;
    (6) Identification of alternate water supply (if needed); and
    (7) Residual waste disposal plans.
    (8) Additionally, upon completion of the project, the discharger shall provide certification by a qualified biologist that the receiving water beneficial uses have been restored.

25. The effluent limitations from potable water supply well discharge regulated under this permit are calculated assuming no dilution. For most practical purposes, discharges from potable water supply wells do not flow directly into receiving waters with enough volume to consider dilution credit or to allocate a mixing zone. Most discharges of groundwater regulated under this general permit are to storm drain systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams.

    An exception to this policy may be applied based on approved mixing zone study and based on demonstration of compliance with water quality objectives in the receiving water as prescribed in the Basin Plan. This exception process is more appropriate for an individual permit, and would not be appropriate for a general permit, that should be protective of most stringent water quality objectives and beneficial uses. If a discharger requests that a dilution credit be included in the computation of effluent limit or that a mixing zone be allowed, an individual permit will be required. However, if no mixing zone is proposed, this general permit provides coverage for all discharges to receiving water bodies in Coastal Watersheds of Los Angeles and Ventura Counties.

26. Section 301(b)(2) of the Federal Clean Water Act (Clean Water Act) requires that all NPDES permits prescribe the application of Best Available Technology (BAT) in the determination of technology-based effluent limitations.

27. Effluent limitations and toxic effluent standards established pursuant to Sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto, are applicable to the dischargers herein.

28. The requirements contained in this Order were derived using Best Professional Judgement (BPJ) and are based on the Basin Plan, CTR, Federal and State Plans, policies, guidelines, and as they are met, will be in conformance with the goals and objectives of the aforementioned water quality control plans, water quality criteria, and will protect and maintain existing and potential beneficial uses of the receiving waters.

Watershed Management Approach

29. The SWRCB 1998 Water Quality Assessment (WQA) identified the water quality conditions of water bodies in the state. Impaired water bodies are listed on the 1998 California 303(d) List.

30. This Regional Board has implemented a Watershed Management Approach (WMA) to address water quality protection in the region. Watershed management may include diverse issues as defined by stakeholders to identify comprehensive solutions to protect, enhance, and restore water quality and beneficial uses. To achieve this goal, the watershed management approach integrates the Regional Board's many diverse programs, particularly Total Maximum Daily Loads (TMDLs), to better assess cumulative impacts of pollutants from all point and nonpoint sources to more efficiently develop watershed-specific solutions that balance the environmental and economic impacts within a watershed. The TMDLs will establish waste load allocations (WLAs) and load allocations (LAS) for point and nonpoint sources, and will result in achieving water quality standards for the waterbody.

Notification

31. The Regional Board has notified interested agencies, parties, and persons of its intent to issue general waste discharge requirements for discharges of groundwater from potable water supply wells to surface waters and has provided them with an opportunity to submit their written views and recommendations.

32. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharges to be regulated under this Order and to the tentative requirements.

33. This Order shall serve as a general NPDES permit pursuant to section 402 of the Clean Water Act, or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator, USEPA, has no objections.

34. The issuance of waste discharge requirements that serve as an NPDES permit for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 (California Environmental Quality Act) of the Public Resources Code in accordance with California Water Code Section 13389.

35. However, for the portions of this order effecting a Categorical Exception to the CTR to satisfy statutory requirements to ensure safe drinking water supply, the Regional Board must comply with CEQA. The issuance of this permit involves discharges of potable water in the vicinity of water supply well head to fulfill statutory requirements of programs implemented by the Department of Health Services (DHS), and to ensure safe and steady supply of fresh and clean water to end-users. In addition, this permit issuance involves the renewal of authorized potable water discharges under existing general NPDES permits. The potable water discharges under this permit are mostly intermittent, short duration, high flow discharges that comply with the DHS maximum contaminant levels for protection of human health. Therefore, potable water discharges as qualified under this permit have been determined to pose no significant threat to water quality. The Regional Board actions on issuing this permit for existing and new potable water discharges, and on the exceptions is exempt from CEQA in accordance with California Code of Regulations, Title 14, Section 15061 (b)(3) which states that CEQA only applies to projects which have the potential for causing adverse environmental effects.

36. Pursuant to California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board. A petition must be sent to the State Water Resources Control Board, P.O. Box 100, Sacramento, California 95812, within 30 days of adoption of the Order.

IT IS HEREBY ORDERED that dischargers authorized under this Order and General Permit, in order to meet the provisions contained in Division 7 of the California Water Code, and regulations adopted thereunder, and the provisions of the Federal Clean Water Act, and regulations and guidelines adopted thereunder, shall comply with the following:

A. Eligibility

1. This order covers discharges of groundwater defined in Finding No. 5, Discharge Description, in the vicinity of well heads from potable water supply wells.

2. To be covered under this Order, a discharger must:

    a. Demonstrate that pollutant concentrations in the discharge will not cause violation of any applicable water quality objectives for the receiving waters, including discharge prohibitions, and/or;

b. Perform reasonable potential analysis using a representative sample of groundwater to be discharged from potable water supply well. The sample shall be analyzed and the data compared to the water quality screening criteria for the constituents listed on Attachment A.

i. If analytical data exceeds the screening criteria, further sampling may be required, if appropriate.

ii. If analytical data exceeds the screening criteria but not greater than the maximum contaminant levels (MCLs), enrollment will be authorized for temporal short-term discharges under this permit and effluent limitation E.1, and E.2 will be applicable.

iii. If the analytical data exceeds the MCL, enrollment will be authorized if condition 1) or 2), below is satisfied.

1) Treatment is provided to meet the eligibility requirement ii), above, or

2) In accordance with SIP, submit documentation listed below in a timely manner, for approval of categorical exemption by the Executive Officer of the Regional Board.

(a) A detailed description of the proposed action, including the proposed method of completing the action;
(b) A time schedule;
(c) A discharge and receiving water quality monitoring plan (before project initiation, during the project, and after project completion, with the appropriate quality assurance and quality control procedures);
(d) CEQA documentation;
(e) Contingency plans;
(f) Identification of alternate water supply (if needed); and
(g) Residual waste disposal plans.

iv. If analytical data meets the screening criteria, full enrollment under this general permit will be authorized and section E.2 will not be applicable.

c. The discharge shall not cause acute nor chronic toxicity in receiving waters;

d. The discharger shall be able to comply with the terms or provisions of this General Permit.

3. New discharges and existing discharges regulated under existing general or individual permits, which meet the eligibility criteria, may be regulated under this Order.

4. For the purpose of renewal of existing individual NPDES permits with this General Permit, provided that all the conditions of this General Permit are met, renewal is effective upon issuance of a notification by the Executive Officer and issuance of a new monitoring program.

5. When an individual NPDES permit with more specific requirements is issued to a discharger, the applicability of this Order to that discharger is automatically terminated on the effective date of the individual permit.

B. Authorization

To be authorized to discharge under this Order, the discharger must submit a Report of Waste Discharge (ROWD) and an application for an NPDES permit in accordance with the requirements of Part C of this Order. Upon receipt of the application, the Executive Officer shall determine the applicability of this Order to such a discharge. If the discharge is eligible, the Executive Officer shall notify the discharger that the discharge is authorized under the terms and conditions of this Order and prescribe an appropriate monitoring and reporting program. For new discharges, the discharge shall not commence until receipt of the Executive Officer' s written determination of eligibility for coverage under this general permit or until an individual NPDES permit is issued by the Regional Board.

C. Report Of Waste Discharge

1. Deadline for Submission

   a. Renewal of permits for existing dischargers covered under individual permits that meet the eligibility criteria in Part A and have submitted a ROWD will consist of a letter of determination from the Executive Officer of coverage under this Order.

   b. Existing potable water well dischargers covered under Order No. 97-045 or Order No. 97-043 will be sent a Notice of Intent (NOI) form that must be completed and returned to the Regional Board within 60 days of receipt; otherwise, permit coverage will be revoked. Existing dischargers enrolling under this Order are required to collect representative groundwater sample(s) and analyze the samples for all the constituents listed on Attachment A. Dischargers shall conduct this analysis and submit the result with an NOI; otherwise, the existing authorization will be terminated. However, instead of an NOI, the Executive Officer may require an existing discharger to submit a new ROWD, may revise an existing discharger's monitoring and reporting programs, may require an existing discharger to participate in a regional monitoring program, or any combination of the foregoing.

   c. New dischargers shall file a complete application at least 45 days before commencement of the discharge.

2. Report of Waste Discharge Forms

a. Dischargers shall use the appropriate USEPA Forms or equivalent forms approved by the Regional Board or the Executive Officer.

b. The discharger, upon request, shall submit any additional information that the Executive Officer deems necessary to determine whether the discharge meets the criteria for coverage under this Order, or to prescribe an appropriate monitoring and reporting program, or both.

c. The discharger must obtain and analyze (using appropriate sampling and laboratory methods) a representative sample(s) of the groundwater to be treated and discharged under this Order. The analytical method(s) used shall be capable of achieving a detection limit at or below the minimum level (ML[2]), otherwise, a written explanation shall be provided. The analytical result shall be submitted with the NPDES application. The data shall be tabulated and shall include the results for every constituent listed on Attachment A.

d. The ROWD shall include, but is not limited to, the following information:

i. A feasibility study on reuse and/or alternative disposal methods of the treated groundwater;
ii. The type of chemicals that will be used (if any) during the construction and development of wells;
iii. Description of the groundwater treatment collection and discharge system (if required);
iv. Flow diagram of influent, treatment , and discharge system (if required); and
v. Pollution Prevention Plan (PLAN) in order to reduce or prevent pollutants in the discharge.

e. The ROWD shall be accompanied by the first annual fee (if appropriate) in accordance with the *Annual Fee Schedule*. The check or money order shall be made payable to the "State Water Resources Control Board".

D. Discharge Prohibitions

1. The discharge of wastes other than those which meet eligibility requirements in Part A of this Order is prohibited unless the discharger obtains coverage under another general permit or an individual permit that regulates the discharge of such wastes.

[2] The minimum levels are those published by the State Water Quality Control Board in the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. See attached Appendix I.

2. The purposeful or knowing discharge of polychlorinated biphenyls (PCBs) is prohibited.

3. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

E. Effluent Limitations

1. Discharge of an effluent in excess of the following limitations is prohibited.

Constituents	Units	Discharge Limitations	
		Daily Maximum	**Monthly Average**
Total Suspended Solids	mg/L	150	50
Turbidity	NTU	150	50
$BOD_5 20^oC$	mg/L	30	20
Settleable Solids	ml/L	0.3	0.1
Residual Chlorine	mg/L	0.1	---

2. In addition to effluent limitations E.1., the following discharges eligible under section A.2.b.ii shall comply with the following effluent limits. The discharge of an effluent in excess of these limitations is prohibited. In a letter of determination, the Executive Officer shall indicate the applicability of this limitation to the particular discharge.

Constituents	Units	Discharge Limitations
		Daily Maximum
Copper (Cu)	µg/L	1000
Lead (Pb)	µg/L	50
Total Chromium	µg/L	50
1,1 Dichloroethane	µg/L	5
1,1 Dichloroethylene	µg/L	6
1,1,1 Trichloroethane	µg/L	200
1,1,2 Trichloroethane	µg/L	5
1,1,2,2 Tetrachloroethane	µg/L	1
1,2 Dichloroethane	µg/L	0.5
1,2-Trans Dichloroethylene	µg/L	10
Tetrachloroethylene	µg/L	5
Trichloroethylene	µg/L	5
Carbon Tetrachloride	µg/L	0.5
Vinyl Chloride	µg/L	0.5
Total Trihalomethanes	µg/L	80

Constituents	Units	Discharge Limitations Daily Maximum
Benzene	μg/L	1
Methyl tertiary butyl ether (MTBE)	μg/L	5

3. The pH of the discharge shall at all times be within the range of 6.5 and 8.5.

4. The temperature of the discharge shall not exceed 100ºF.

5. Attachment B establishes the applicable effluent limits for mineral and nitrogen constituents for discharges covered by this Order. The discharge of an effluent with mineral and nitrogen constituents in excess of applicable limits established in Attachment B is prohibited. In the letter of determination, the Executive Officer shall indicate the watershed/stream reach limitations in Attachment B applicable to the particular discharge.

6. Pass-through or uncontrollable discharges of PCBs shall not exceed daily average concentrations of 14 ng/L into fresh waters or 30 ng/L into estuarine waters.

7. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test less than 70% survival.

8. The discharge shall meet effluent limitations and toxic and effluent standards established pursuant to sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto.

F. Receiving Water Limitations

1. The discharge shall not cause the following to be present in receiving waters:

   a. Toxic pollutants at concentrations that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health;

   b. Biostimulatory substances at concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses;

   c. Chemical substances in amounts that adversely affect any designated beneficial use;

   d. Visible floating materials, including solids, liquids, foams, and scum;

e. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the receiving water or on objects in the water;

f. Suspended or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses;

g. Taste or odor-producing substances in concentrations that alter the natural taste, odor, and/or color of fish, shellfish, or other edible aquatic resources; cause nuisance; or adversely affect beneficial uses;

h. Substances that result in increases of $BOD_5 20^{\circ}C$ that adversely affect beneficial uses;

i. Fecal coliform concentrations which exceed a log mean of 200 per 100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10% of total samples during any 30-day period exceed 400 per 100 ml; or

j. Concentrations of toxic substances that are toxic to, or cause detrimental physiological responses in, human, animal, or aquatic life.

2. The discharge shall not cause the following to occur in the receiving waters:

a. The dissolved oxygen to be depressed below:

WARM[3] designated waters	5 mg/L
COLD[3] designated waters	6 mg/L
COLD and SPWN[3] designated waters	7 mg/L

b. The pH to be depressed below 6.5 or raised above 8.5, and the ambient pH levels to be changed from natural conditions in inland waters more than 0.5 units or in estuaries more than 0.2 units;

c. The temperature at any time or place and within any given 24-hour period to be altered by more than $5^{\circ}F$ above natural temperature; but at no time be raised above $80^{\circ}F$ for waters with a beneficial use of WARM (Warm Freshwater Habitat);

d. The turbidity to increase to the extent that such an increase causes nuisance or adversely affects beneficial uses; such increase shall not exceed 20% when the natural turbidity is over 50 NTU or 10% when the natural turbidity is 50 NTU or less;

[3] Beneficial Uses WARM - Warm Freshwater Habitat; COLD -Cold Freshwater Habitat; SPWN - Spawning, Reproduction, and/or Early Development.

e. Residual chlorine in concentrations that persist and impairs beneficial uses; or

f. Any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses or increase pesticide concentration in bottom sediments or aquatic life.

3. The discharge shall not alter the color, create a visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters.

4. The discharge shall not degrade surface water communities and populations, including vertebrate, invertebrate, and plant species.

5. The discharge shall not damage, discolor, nor cause formation of sludge deposits on flood control structures or facilities nor overload their design capacity.

6. The discharge shall not cause problems associated with breeding of mosquitoes, gnats, black flies, midges, or other pests.

G. Provisions

1. The Executive Officer may require any discharger authorized under this Order to apply for and obtain an individual NPDES permit with more specific requirements. The Executive Officer may require any discharger authorized to discharge under this permit to apply for an individual permit only if the discharger has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual permit, the authority to discharge under this General Permit is no longer applicable.

2. The discharger shall comply with all the applicable items of the *Standard Provisions and Reporting for Waste Discharge Requirements* (Standard Provisions), which are part of this General Permit (Attachment C). If there is any conflict between provisions stated herein and the Standard Provisions, those provisions stated herein prevail.

3. The discharger shall develop a Pollution Prevention Plan (PLAN), for implementation if necessary. All PLANs developed by water purveyors must be able to: (1) identify and evaluate sources of pollutants associated with potable water well head activities that may affect the quality of wastewater discharge and (2) develop a site specific best management practices (BMPs) program to reduce or prevent to the maximum extent practicable pollutants and soil erosion.

   The PLAN should address all wellhead activities that include but not limited to; short-term and long-term aquifer pumping tests, well construction, development or redevelopment of wells, and well purging during well sampling. The objective of the BMP program is to minimize, to the extent possible, adverse environmental impacts and to prevent significant detrimental effects on receiving water.

4. New and emergent chemicals including perchlorate, 1-4 Dioxane, and NDMA have been detected sporadically in potable water aquifers in this Region. It is necessary that water suppliers monitor these compounds in their discharges and to take appropriate best management practices (BMPs) action to mitigate their presence if detected in significant concentration in groundwater. Periodic monitoring of these compounds will be included in the Monitoring and Reporting Program.

5. Prior to application, the discharger shall submit for Executive Officer' s approval the list of chemicals and proprietary additives that may affect the discharge, including rates/quantities of application, compositions, characteristics, and material safety data sheets, if any.

6. Oil or oily materials, chemicals, refuse, or other materials that may cause pollution in storm water and/or urban runoff shall not be stored or deposited in areas where they may be picked up by rainfall/urban runoff and discharged to surface waters. Any spill of such materials shall be contained, removed and cleaned immediately.

7. This Order neither exempt the discharger from compliance with any other laws, regulations, or ordinances that may be applicable, nor legalize the waste disposal facility.

8. The discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

9. Pursuant to 40 CFR section 122.61(b), coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

10. Pursuant to 40 CFR sections 122.62 and 122.63, this Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order. In addition, if receiving water quality is threatened due to discharges covered under this permit, this permit will be reopened to incorporate more stringent effluent limitations for the constituents creating the threat. TMDLs have not been developed for all the parameters and receiving waters on the 303(d) list. When TMDLs are developed this permit may be reopened to incorporate appropriate limits. In addition, if TMDL identifies that a particular discharge covered under this permit is a load that needs to be reduced; this permit will be reopened to incorporate appropriate TMDL based limit and/or to remove any applicable exemptions.

11. Any discharge authorized under this Order may request to be excluded from the coverage of this Order by applying for an individual permit.

H. Monitoring And Reporting Requirements

1. The Executive Officer is hereby authorized to prescribe a Monitoring and Reporting Program for each authorized discharger. This program may include participation of the discharger in a regional monitoring program.

2. The discharger shall comply with Monitoring and Reporting Requirements stated in Part B of the Standard Provisions (Attachment C).

3. The discharger shall retain records of all monitoring information and data used to complete the Report of Waste Discharge and application for coverage under this Order for at least five years from the date of sampling, measurement, report, or application. The retention period shall be extended during any unresolved litigation regarding the discharge or when requested by the Executive Officer.

4. The monitoring report shall specify the USEPA analytical method used, the Method Detection Limit (MDL) and the Minimum Level (ML)[4] for each pollutant. For the purpose of reporting compliance with numerical limitations, performance goals, and receiving water limitations, analytical data shall be reported with one of the following methods, as the case may be:

   a. An actual numerical value for sample results greater than or equal to the ML; or

   b. "Detected, but Not Quantified (DNQ)" if results are greater than or equal to the laboratory's MDL but less than the ML. The estimated[5] chemical concentration of the sample shall also be reported; or

   c. "Not-Detected (ND)" for sample result less than the laboratory's MDL with the MDL indicated for the analytical method used.

   The ML employed for an effluent analysis shall be lower than the permit limit established for a given parameter, unless the Discharger can demonstrate that a particular ML is not attainable and obtains approval for a higher ML from the Executive Officer. At least once a year, the Discharger shall submit a list of the analytical methods employed for each test and associated laboratory quality assurance and quality control procedures.

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4 The minimum levels are those published by the State Water Resources Control Board in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, March 2, 2000. (See Appendix I)

5 Estimated chemical concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

5. The discharger shall maintain all sampling, measurement and analytical results, including: the date, exact place, and time of sampling or measurement; individual(s) who did the sampling or measurement; the date(s) analyses were done; analysts' names; and analytical techniques or methods used.

6. All sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR part 136, unless other test procedures have been specified in this Order or by the Executive Officer.

7. All chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services or other state agency authorized to undertake such certification.

8. The discharger shall calibrate and maintain all monitoring instruments and equipment to insure accuracy of measurements, or shall insure that both activities will be conducted.

9. For parameters/constituents where both monthly average and daily maximum limits are prescribed, but where monitoring frequency is less than four times a month, the following procedure shall apply:

   If analysis of a representative sample yields a result greater than the monthly average limit for a parameter/constituent, the sampling frequency for that parameter/constituent shall increase to weekly within one week of receiving the laboratory result until at least three consecutive weekly samples are obtained and compliance with the monthly average has been demonstrated, and the discharger has submitted for Executive Officer approval a program that will ensure future compliance with the monthly average limit.

10. The discharger shall file with the Regional Board (Attention: Information Technology Unit) technical reports on self-monitoring work conducted according to the Monitoring and Reporting Program specified by the Executive Officer and submit other reports as requested by the Regional Board.

11. In reporting the monitoring data, the discharger shall arrange the data in tabular form so that the date, constituents, and concentrations are readily discernible. The data shall be summarized to demonstrate compliance with waste discharge requirements.

12. For every item where the requirements are not met, the discharger shall submit a statement of the actions undertaken or proposed that will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.

13. The discharger shall file a report of any material change or proposed change in the character, location or volume of the discharge.

14. The discharger shall notify this Regional Board within 24 hours by telephone of any adverse condition resulting from the discharge, such notification shall be affirmed in writing within five working days.

I. Compliance And Enforcement

1. The discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act and the Water Code and is subject to enforcement action and/or permit termination.

2. The Clean Water Act and the Water Code provide for civil and criminal penalties for violations of waste discharge requirements.

J. Expiration Date And Continuation Of This Order

This Order expires on August 7, 2008; however, for those dischargers authorized to discharge under this Order, it shall continue in full force and effect until a new order is adopted.

K. Reauthorization

Upon re-issuance of a new general permit order, dischargers authorized under this Order shall file a Notice of Intent or a new Report of Waste Discharge within 60 days of notification by the Executive Officer.

I, Dennis A. Dickerson, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on August 7, 2003.

Dennis A. Dickerson
Executive Officer

ATTACHMENT A

SCREENING LEVELS FOR POTENTIAL POLLUTANTS OF CONCERN
IN POTABLE GROUNDWATER
(Screening to be conducted on untreated groundwater sample prior to issuance of permit)

Pollutant	MUN[(a)]	Others[(b)]	Maximum Contaminant Levels	Minimum Levels (ML)
	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Copper (Cu)	9.4	3.7	1000	0.5
Lead (Pb)	3.2	8.5	50	0.5
Total Chromium	50	--	50	10
1,1 Dichloroethane	5	5	5	1
1,1 Dichloroethylene	0.057	3.2	6	0.5
1,1,1 Trichloroethane	200	200	200	2
1,1,2 Trichloroethane	0.60	42	5	0.5
1,1,2,2 Tetrachloroethane	0.17	1	1	0.5
1,2 Dichloroethane	0.38	99	0.5	0.5
1,2-Trans Dichloroethylene	10	10	10	1
Tetrachloroethylene	0.8	8.85	5	0.5
Trichloroethylene	2.7	5	5	0.5
Carbon Tetrachloride	0.25	0.5	0.5	0.5
Vinyl Chloride	0.5	0.5	0.5	0.5
Total Trihalomethanes	--	--	80	--
Benzene	1	1	1	0.5
Methyl tertiary butyl ether (MTBE)	5	5	5	na

(a) = Applies to water with Municipal and Domestic Supply (MUN)
(indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

ATTACHMENT B

Discharge of wastewater within a watershed/stream reach with constituent concentrations in excess of the following daily maximum limits is prohibited:

WATERSHED/STREAM REACH		TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[(*)] (mg/L)	Nitrogen[(**)] (mg/L)
1.	Miscellaneous Ventura Coastal Streams:			no waterbody specific limits		
2.	Ventura River Watershed:					
	a. Above Camino Cielo Road	700	300	50	1.0	5
	b. Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5
	c. Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5
	d. Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10
	e. Between Main St. and Ventura River Estuary			no waterbody specific limits		
3.	Santa Clara River Watershed:					
	a. Above Lang gaging station	500	100	50	0.5	5
	b. Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5
	c. Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10
	d. Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	5
	e. Between Blue Cut gaging station and A Street, Fillmore	1300	600	100	1.5	5
	f. Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	80	1.5	5
	g. Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	---
	h. Between Highway 101 Bridge and Santa Clara River Estuary			no waterbody specific limits		
	i. Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5
	j. Sespe Creek above gaging station, 500 feet downstream from Little Sespe Creek	800	320	60	1.5	5
	k. Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5
4.	Calleguas Creek Watershed:					
	a. Above Potrero Road	850	250	150	1.0	10
	b. Below Potrero Road			no waterbody specific limits		
5.	Miscellaneous Los Angeles County Coastal Streams:			no waterbody specific limits		
	a. Malibu Creek Watershed:	2000	500	500	2.0	10
	b. Ballona Creek Watershed:			no waterbody specific limits		
6.	Dominguez Channel Watershed:			no waterbody specific limits		
7.	Los Angeles River Watershed:					
	a. Los Angeles River and Tributaries-upstream of Sepulveda Flood Control Basin	950	300	150	---	8

(*) Where naturally occurring boron results in concentrations higher than the stated limit, a site-specific limit may be determined on a case-by-case basis.

(**) Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical limits for all streams.

WATERSHED/STREAM REACH		TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[*] (mg/L)	Nitrogen[**] (mg/L)
7.	Los Angeles River Watershed (continued):					
b.	Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only.	950	300	190	---	8
c.	Other tributaries to Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	---	8
d.	Los Angeles River - between Figueroa Street and L. A. River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway	1500	350	190	---	8
e.	Other tributaries to Los Angeles River – between Figueroa Street and Los Angeles River Estuary. Includes Arroyo Seco downstream of spreading grounds.	1550	350	150	---	8
f.	Rio Hondo - between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180	---	8
g.	Rio Hondo - upstream of Whittier Narrows Flood Control Basin	750	300	150	---	8
h.	Santa Anita Creek above Santa Anita spreading grounds	250	30	10	---	---
i.	Eaton Canyon Creek above Eaton Dam	250	30	10	---	---
j.	Arroyo Seco above spreading grounds	300	40	15	---	---
k.	Big Tujunga Creek above Hansen Dam	350	50	20	---	---
l.	Pacoima Wash above Pacoima spreading grounds	250	30	10	---	---
8.	San Gabriel River Watershed:					
a.	San Gabriel River above Morris Dam	250	30	10	0.6	2
b.	San Gabriel River between Morris Dam and Ramona Blvd.	450	100	100	0.5	8
c.	San Gabriel River and tributaries – between Ramona Blvd. and Valley Blvd.	750	300	150	1.0	8
d.	San Gabriel River – between Valley Blvd. and Firestone Blvd. Includes Whittier Narrows Flood Control Basin and San Jose Creek - downstream of 71 Freeway only.	750	300	180	1.0	8
e.	San Jose Creek and tributaries - upstream of 71 Freeway	750	300	150	1.0	8
f.	San Gabriel River - between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street). Includes Coyote Creek.			no waterbody specific limits		
g.	All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	---	---
9.	Los Angeles Harbor/ Long Beach Harbor Watershed			no waterbody specific limits		
10.	Santa Ana River Watershed					
a.	San Antonio Creek[***]	225	25	---	---	---
b.	Chino Creek***	---	---	---	---	---
11.	Island Watercourses:					
a.	Anacapa Island			no waterbody specific limits		
b.	San Nicolas Island			no waterbody specific limits		
c.	Santa Barbara island			no waterbody specific limits		
d.	Santa Catalina Island			no waterbody specific limits		
e.	San Clemente Island			no waterbody specific limits		

*** These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by the Santa Ana Regional Board. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

STANDARD PROVISIONS, GENERAL MONITORING AND REPORTING REQUIREMENTS

"ATTACHMENT C"

A. General Provisions

1. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, nor protect the discharger from his liabilities under federal, state, or local laws, nor guarantee the discharger a capacity right in the receiving waters.

2. These requirements do not exempt the operator of the waste disposal facility from compliance with any other laws, regulations, or ordinances which may be applicable; they do not legalize this waste disposal facility, and they leave unaffected any further restraints on the disposal of wastes at this site which may be contained in other statutes or required by other agencies.

3. Due to Comply [40 CFR 122.41(a)][CWC 133811]

   a. The discharger must comply with all of the terms, requirements, and conditions of this order. Any violation of this order constitutes a violation of the Clean Water Act, its regulations and the California Water Code, and is grounds for enforcement action, Order termination, Order revocation and reissuance, denial of an application for reissuance; or a combination thereof.

   b. The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. If a toxic effluent standard or prohibition is established for toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition and so notify the discharger.

4. Duty to Mitigate [40 CFR 122.41(d)]

   a. The discharger shall take all reasonable steps to minimize or prevent any discharge that has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance [40 CFR 122.41(e)]

   a. The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control including sludge use and disposal facilities (and related appurtenances) that are installed or used by the discharger to achieve compliance with this Order. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar system that are installed by a discharger only when necessary to achieve compliance with the conditions of this Order.

   b. A copy of these waste discharge specifications shall be maintained at the discharge facility so as to be available at all times to operating personnel.

6. Permit Actions [40 CFR 122.41(f)][CWC 13263(e)][40 CFR 122.44(b)(1)]

   a. This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

   b. The discharge shall not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board as required by the Federal Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Clean Water Act, and amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

   c. Any discharge of wastes at any point(s) other than specifically described in this Order is prohibited, and constitutes a violation of the Order.

   d. If the discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the discharger must apply for and obtain a new Order.

e. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

(1) Violation of any term or condition contained in this Order;
(2) Obtaining this Order by misrepresentation, or failure to disclose all relevant facts;
(3) A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

7. Property Rights [40 CFR 122.41(g)][CWC 13263(g)]

a. This Order does not convey any property rights of any sort, or any exclusive privilege.

8. Duty to Provide Information [40 CFR 122.41(h)]

a. The discharger shall furnish, within a reasonable time, any information the Regional Board, the State Board, or EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The discharger shall also furnish to the Regional Board, upon request, copies of records required to be kept by this Order.

9. Inspection and Entry [40 CFR 122.41(h)]

a. The Regional Board, the State Board, EPA, and other authorized representatives shall be allowed:

(1) Entry upon premises where a regulated facility is located or conducted, or where records are kept under conditions of this Order;

(2) Access to copy any records that are kept under the conditions of this Order;

(3) To inspect any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

(4) To photograph, sample, and monitor for the purpose of assuring compliance with this Order, or as otherwise authorized by the Clean Water Act and the California Water Code.

10. Bypass and Upset [40 CFR 122.41(m)][40 CFR 122.41(h)]

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility whose operation is necessary to maintain compliance with the terms and conditions of this Order.

(2) “Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond, the reasonable control of the discharger. An upset does not include noncompliance to then extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

(3) “Severe property damage” means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of Bypass

(1) Bypass is prohibited. The Regional Board may take enforcement action against the discharger for bypass unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;

(b) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment down time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass that could occur during normal periods of equipment downtime or preventive maintenance; and

(c) The discharger submitted a notice at least ten days in advance of the need for a bypass to the Regional Board.

(2) The discharger may allow a bypass to occur that does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable. The discharger shall submit notice of an unanticipated bypass as required in Provision (B.5.a).

c. Conditions necessary for a demonstration of upset

(1) A discharger that wishes to establish the affirmative defense of an upset in an action brought for non- compliance shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that::

(a) An upset occurred and that the discharger can identify the cause(s) of the upset;

(b) The permitted facility was being properly operated by the time of the upset;

(c) The discharger submitted notice of the upset as required in Provision (B.5.a); and

(d) The discharger complied with any remedial measures required under 40 CFR 122.41(d).

(2) No determination made before an action for noncompliance, such as during administrative review of claims that noncompliance was caused by an upset, is final administrative action subject to judicial review.

d. Burden of proof

(1) In any enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof.

11. Transfers [40 CFR 122.41(L)(3)][CWC 133771)[40 CFR 122.61(a)(b)]

a. This Order is not transferable to any person except after notice to the Regional Board. In the event of any change in name, ownership, or control of these waste disposal facilities, the discharger shall notify this Board of such change and shall notify the succeeding owner or operator of the existence of this Order by letter, copy of which shall be forwarded to the Board. The Regional Board may require modification or revocation and reissuance of the Order to change the name of the discharger and incorporate such other requirements as may be necessary under the Clean Water Act.

12. Pollution, Contamination, or Nuisance [CWC 13050]

    a. Neither the treatment nor the discharge shall create a condition of pollution, contamination, or nuisance.

B. Monitoring and Reporting Requirements

1. Monitoring and Records (40 CFR 122.41(j))[Title 23, CCR, Div 3, Ch 14]

    a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

    b. The discharger shall retain records of all monitoring information, including all calibration and maintenance monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the Report of Waste Discharge and application for this Order, for a period of at least five (5) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Board or EPA at any time and shall be extended during the course of any unresolved litigation regarding this discharge.

    c. Records of monitoring information shall include:

        (1) The date, exact place, and time of sampling or measurements;
        (2) The individual(s) who performed the sampling or measurements;
        (3) The duration of the discharge;
        (4) The volume of discharge;
        (5) The date(s) analyses were performed;
        (6) The individual(s) who performed the analyses;
        (7) The analytical techniques or methods used; and
        (8) The results of such analyses.

    d. All sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this Order.

    e. All chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by an appropriate governmental regulatory agency.

f. The discharger shall calibrate and perform maintenance procedures on all monitoring instruments and to insure accuracy of measurements, or shall insure that both equipment activities will be conducted.

g. The discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. The annual monitoring report required in Provision (B.4.b) shall also summarize the QA activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent (10%) of the samples, or at least one sample per sampling period, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples.

h. When requested by the Board or EPA, the discharger will participate in the NPDES discharge monitoring report QA performance study. The discharger must have a success rate equal to or greater than 80%.

i. Effluent samples shall be taken downstream of any addition to treatment works and prior to mixing with the receiving waters.

j. For parameters where both 30-day average and maximum limits are specified but where the monitoring frequency is less than four times a month, the following procedure shall apply:

(1) Initially, not later than the first week of the second month after the adoption of this permit, a representative sample shall be obtained of each waste discharge at least once per week for at least four consecutive weeks and until compliance with the 30-day average limit has been demonstrated. Once compliance has been demonstrated, sampling and analyses shall revert to the frequency specified.

(2) If future analyses of two successive samples yield results greater than 90% of the maximum limit for a parameter, the sampling frequency for that para-meter shall be increased (within one week of receiving the laboratory result on the second sample) to a minimum of once weekly until at least four consecutive weekly samples have been obtained and compliance with the 30-day average limit has been demonstrated again and the discharger has set forth for the approval of the Executive Officer a program which ensures future compliance with the 30-day average limit.

k. In the event the discharger is unable to comply with any of the conditions of this Order due to:

(1) breakdown of waste treatment equipment;
(2) accidents caused by human error or negligence; or
(3) other causes such as acts of nature,

the discharger shall notify the Executive Officer by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to correct the problem and the dates thereof, and what steps are being taken to prevent the problem from recurring.

l. If there is any storage of hazardous or toxic materials or hydrocarbons at this facility and if the facility is not manned at all times, a 24-hour emergency response telephone number shall be prominently posted where it can easily be read from the outside.

m. The discharger shall notify the Board of:

(1) new introduction into such works of pollutants from a source which could be a new source as defined in section 306 of the Federal Clean Water Act, or amendments thereto, if such source were discharging pollutants to the waters of the United States,

(2) new introductions of pollutants into such works from a source which would be subject to Section 301 of the Federal Clean Water Act, or amendments thereto, if substantial change in the volume or character of pollutants being introduced into such works by a source introducing pollutants into such works at the time the waste discharge requirements were adopted.

Notice shall include a description of the quantity and quality of pollutants and the impact of such change on the quantity and quality of effluent from such publicly owned treatment works. A substantial change in volume is considered an increase of ten percent in the mean dry-weather flow rate. The discharger shall forward a copy of such notice directly to the Regional Administrator.

n. The discharger shall notify the Board not later than 120 days in advance of implementation of any plans to alter production capacity of the product line of the manufacturing, producing or processing facility by more than ten percent. Such notification shall include estimates of proposed production rate, the type of process, and projected effects on effluent quality. Notification shall include submittal of a new report of waste discharge appropriate filing fee.

o. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Regional Board as soon as they know or have reason to believe:

(1) that any activity has occurred or will occur that would result in the discharge of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels:"

(a) One hundred micrograms per liter (100 μg/l);
(b) Two hundred micrograms per liter (200 μg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/l) for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
(c) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
(d) The level established by the Regional Board in accordance with 40 CFR 122.44(f).

(2) that they have begun or expect to begin to use or manufacture intermediate or final product or byproduct of any toxic pollutant that was not reported on their application.

2. Signatory Requirements [40 CFR 122.41(k)][40 CFR 122.221]

a. All applications, reports, or information submitted to the Regional Board shall be signed:

(1) In the case of corporations, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which discharge originates;
(2) In the case of a partnership, by a general partner;
(3) In the case of a sole proprietorship, by the proprietor;
(4) In the case of municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

b. Each monitoring report must affirm in writing that "all analyses were conducted at a laboratory certified for such analyses by the Department of Health Services or approved by the Executive Officer and in accordance with current EPA guideline procedures or as specified in this Monitoring Program".

c. Each report shall contain the following completed declaration:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility, of a fine and imprisonment for knowing violations.

Executed on the ___ day of _________ , 20__, at ______________________.

_____________(Signature)

______________(Title)"

3. Monitoring Reports [40 CFR 122.41(l)(4)]

a. Monitoring results shall be reported at the intervals specified in the permit.

b. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms approved by the Regional Board or the State Board for reporting results of monitoring of pollutants and sludge use or disposal practices.

c. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this permit.

d. The discharger shall file a technical report with this Board not later than 30 days after receipt of this Order, relative to the operation and maintenance program for this waste disposal facility. The information to be contained in that report shall include as a minimum, the following:

(1) The name and address of the person or company responsible for operation and maintenance of the facility.

(2) Type of maintenance (preventive or corrective).

(3) Frequency of maintenance, if preventive.

If an operation and maintenance report has been supplied to the Board previously and there have been no changes, a second report need not be provided.

e. The discharger shall file with the Board a report of waste discharge at least 120 days before making any material change or proposed change in the character, location or volume of the discharge.

f. Monitoring results shall be reported at the intervals specified in the monitoring and Reporting Program.

(1) Monitoring results must be reported on a DMR.

(2) If the discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this Order.

g. The discharger shall file with the Board technical reports on self monitoring work performed according to the detailed specifications contained in any Monitoring and Reporting Programs as directed by the Executive Officer.

h. In reporting the monitoring data, the discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernable. The data shall be summarized to demonstrate compliance with waste discharge requirements and, where applicable, shall include results of receiving water observations.

i. For every item where the requirements are not met, the discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.

j. The discharger shall include in the annual report, an annual summary of the quantities of all chemicals, listed by both trade and chemical names, which are used for cooling and/or boiler water treatment and which are discharged.

k. If no flow occurred during the reporting period, the monitoring report shall so state.

l. For any analyses performed for which no procedure is specified in the EPA guidelines or in the monitoring and Reporting Program, the constituent or parameter analyzed and the method or procedure used must be specified in the monitoring report.

m. In the event wastes are transported to a different disposal site during the report period, the following shall be reported in the monitoring report:

   (1) Types of wastes and quantity of each type;

   (2) Name and address for each hauler of wastes (or method of transport if other than by hauling); and

   (3) Location of the final point(s) of disposal for each type of waste.

   If no wastes are transported offsite during the reporting period, a statement to that effect shall be submitted.

n. The discharger shall submit to the Board, together with the first monitoring report required by this permit, a list of all chemicals and proprietary additives which could affect this waste discharge, including quantities of each. Any subsequent changes in types and/or quantities shall be reported promptly.

o. The discharger shall report all instances of non- compliance not other wise reported at the time monitoring reports are submitted. The reports shall contain all information listed in Provision (B.5.a).

p. Each monitoring report shall state whether or not there was any change in the discharge as described in the Order during the reporting period.

q. Analytical data reported as "less than" for the purpose of reporting compliance with permit limitations shall be the same or lower than the permit limit(s) established for the given parameter.

r. The discharger shall mail a copy of each monitoring report to:

INFORMATION TECHNOLOGY
CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD - LOS ANGELES REGION
320 W. 4TH STREET, SUITE 200
LOS ANGELES, CA 90013

A copy of such monitoring report for those discharges designated as a major discharge shall also be mailed to:

REGIONAL ADMINISTRATOR
ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne Street
San Francisco, CA 94105

s. If the discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the discharger must apply for and obtain a new Order.

4. Compliance Schedules [40 CFR 122.41(l)(5)]

a. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this Order shall be submitted no later than 14 days following, each schedule date.

b. By March 1 of each year, the discharger shall submit an annual report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the discharger shall discuss the compliance record and the corrective actions taken or planned which may be needed to bring the discharge into full compliance with the waste discharge requirements.

c. This Board requires the discharger to file with the Board, within 90 days after the effective date of this Order, a technical report on his preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. The technical report should:

(1) Identify the possible sources of accidental loss, untreated waste bypass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

(2) Evaluate the effectiveness of present facilities and procedures and state when they become operational.

(3) Describe facilities and procedures needed for effective preventive and contingency plans.

(4) Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule contingent interim and final dates when they will be constructed, implemented, or operational.

This Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events.

Such conditions may be incorporated as part of this Order, upon notice to the discharger.

5. Twenty-four Hour Reporting [40 CFR 122.41(l)(6)]

a. The discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided verbally within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information that must be reported within 24 hours under this paragraph:

(1) Any unanticipated bypass that exceeds any effluent limitation in the Order.
(2) Any upset that exceeds any effluent limitation in the Order.
(3) Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours.

The Regional Board may waive the above-required written report on a case-by-case basis.

6. Other Noncompliance [40 CFR 122.41(l)(7)]

   a. The discharger shall report all instances of noncompliance not reported under Provisions (B.3), (B.4), and (B.5) at the time monitoring reports are submitted. The reports shall contain the information listed in Provision (B.5).

7. Other Information [40 CFR 122.41(l)(8)]

   a. When the discharger becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application, or in any report to the Regional Board, the State Board, or USEPA, the discharger shall promptly submit such facts or information.

8. Planned Changes [40 CFR 122.41(l)(1)]

   a. The discharger shall give advance notice to the Regional Board as soon as possible of any planned physical alterations or additions to the facility or of any planned changes in the facility or activity that may result in noncompliance with requirements.

      (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b); or

      (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit nor to notification requirements under 40 CFR Part 122.42(a)(1); or

      (3) The alteration or addition results in a significant change in the discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

9. Anticipated Noncompliance [40 CFR 122.41(l)(2)]

   a. The discharger shall give advance notice to the Regional Board of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Enforcement Provisions [40 CFR 122.41][CWC Sections 13384 and 13387]

1. The California Water Code provides that any person who violates a waste discharge requirement or a provision of the California Water Code is subject to civil penalties of up to $5,000 per day, $10,000 per day, or $25,000 per day of violation, or when the violation involves the discharge of pollutants, is subject to civil penalties of up to $10 per gallon per day or $25 per gallon per day of violation; or some combination thereof, depending on the violation, or upon the combination of violations.

   Violation of any of the provisions of the NPDES program or of any of the provisions of this Order may subject the violator to any of the penalties described herein, or any combination thereof, at the discretion of the prosecuting authority; except that only one kind of penalty may be applied for each kind of violation.

2. The Federal Clean Water Act (CWA) provides that any person who violates a permit condition or any requirement imposed in a pretreatment program implementing sections 301, 302, 306, 307, 308, 318 or 405 of the CWA is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing these sections of the CWA is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates permit conditions implementing these sections of the CWA is subject to a fine of not less than $5,000, or more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

3. It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order.

4. The Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, or other document submitted or required to be maintained under this Order, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this act, shall upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

D. Definitions

1. "Composite sample" means, for flow rate measurements, the arithmetic mean of no fewer than eight individual measurements taken at equal intervals for 24 hours or for the duration of discharge, whichever is shorter.

   "Composite sample" means, for other than flow rate measurement,

   a. A combination of at least eight individual portions obtained at equal time intervals for 24 hours, or the duration of the discharge, whichever is shorter. The volume of each individual portion shall be directly proportional to the discharge flow rate at the time of sampling; or

   b. A combination of at least eight individual portions of equal volume obtained over a 24-hour period. The time interval will vary such that the volume of wastewater discharged between samplings remains constant.

      The compositing period shall equal the specified sampling period, or 24 hours, if no period is specified.

   c. "Daily discharge" means:

      (1) For flow rate measurements, the average flow rate measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling.

      (2) For pollutant measurements, the concentration or mass emission rate measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling.

   d. The "daily discharge rate" shall be obtained from the following calculation for any calendar day:

$$\text{Daily discharge rate} = \frac{8.34}{N} \sum_{i=1}^{N} (Q_i)(C_i)$$

      in which N is the number of samples analyzed in any calendar day, Q_i and C_i are the rate (MGD) and the constituent concentration (mg/l) respectively, which are associated with each of the N grab samples which may be taken in any calendar day. If a composite sample is taken, C_i is the concentration measured in the composite sample and Q_i is the average flow rate occurring during the period over which samples are composited.

   e. "Daily maximum" limit means the maximum acceptable "daily discharge" for pollutant measurements. Unless otherwise specified, the results to be compared to the "daily maximum" limit are based on composite samples."

f. "Duly authorized representative" is one whose:

(1) Authorization is made in writing by a principal executive officer or ranking elected official;

(2) Authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) Written authorization is submitted to the Regional Board and EPA Region 9. If an authorization becomes no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements above must be submitted to the Regional Board and EPA Region 9 prior to or together with any reports, information, or applications to be signed by an authorized representative.

g. "Grab sample" is defined as any individual sample collected in a short period of time not exceeding 15 minutes. "Grab samples" shall be collected during normal peak loading conditions for the parameter of interest, which may or may not be during hydraulic peaks. It is used primarily in determining compliance with "daily maximum" limits and the "instantaneous maximum" limits.

h. "Hazardous substance" means any substance designated under 40 CFR 116 pursuant to Section 311 of the Clean Water Act.

i. "Heavy metals" are for purposes of this Order, arsenic, cadmium, chromium, copper, lead, mercury, silver, nickel, and zinc.

j. "Instantaneous maximum" concentration is defined as the maximum value measured from any single "grab sample."

k. "Median" of an ordered set of values is the value which the values above and below is an equal number of values, or which is the arithmetic mean of the two middle values, if there is no one middle value.

l. "Priority pollutants" are those constituents referred to in 40 CFR 401.15 and listed in the EPA NPDES Application Form 2C, pp. V-3 through V-9.

m. "6-month median" means a moving "median" of daily values for any 180-day period in which daily values represent flow-weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered to equal zero for days on which no discharge occurred.

n. "7-day" and "30-day average" shall be the arithmetic average of the values of daily discharge calculated using the results of analyses of all samples collected during any 7 and 30 consecutive calendar day periods, respectively.

o. "Toxic pollutant" means any pollutant listed as toxic under section 307(a)(1) of the Clean Water Act or under 40 CFR 122, Appendix D.

Appendix I

SWRCB Minimum Levels in ppb (μg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Appendix I (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3’ Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	

Appendix I (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2d – PESTICIDES – PCBs*	GC
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. R4-2004-0109

WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES OF LOW THREAT HYDROSTATIC TEST WATER TO SURFACE WATERS
IN
COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES

(GENERAL NPDES PERMIT NO. CAG674001)

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) finds:

General Permit Background

1. On September 22, 1989, the United States Environmental Protection Agency (USEPA) granted the State of California, through the State Water Resources Control Board (State Board) and the Regional Boards, the authority to issue general National Pollutant Discharge Elimination System (NPDES) permits pursuant to 40 Code of Federal Regulations (40 CFR) parts 122 and 123.

2. 40 CFR section 122.28 provides for issuance of general permits to regulate a category of point sources if the sources:

   a. Involve the same or substantially similar types of operations;
   b. Discharge the same type of waste;
   c. Require the same type of effluent limitations or operating conditions;
   d. Require similar monitoring; and
   e. Are more appropriately regulated under a general permit rather than individual permits.

3. General waste discharge requirements and NPDES permits enable Regional Board staff to expedite the processing of requirements, simplify the application process for dischargers, better utilize limited staff resources, and avoid the expense and time involved in repetitive public noticing, hearings, and permit adoptions.

4. On May 12, 1997, this Regional Board adopted the *General National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements for Discharges of Hydrostatic Test Water to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties* (NPDES No. CAG674001, Order No. 97-047). The existing General Permit covered discharges of waste waters resulting from the hydrostatic testing or structural integrity testing of pipes, tanks, or any storage vessels using domestic water, ground water, or surface water, and similar wastes. Currently, there are approximately forty-one dischargers who are enrolled under this General Permit.

Discharge Description

5. Hydrostatic test water is discharged to surface waters at various locations and project sites throughout this Region. Generally, hydrostatic test water is made up of potable/domestic water supplied by municipalities or potable water purveyors. Discharges of hydrostatic test water can cause, or threaten to cause minor impairment of existing beneficial uses of the receiving water. It may be necessary in certain instances to provide polishing treatment (such as filtration, sedimentation, etc.) to hydrostatic test water before discharge to remove pollutants introduced by the vessel being tested. The rate and volume of hydrostatic test water released at project sites varies from hundreds of gallons of water per day to millions of gallons of water per day, depending on the capacity of the vessel being tested. The discharge duration is usually short.

6. Hydrostatic test water discharge covered under this permit includes, but are not limited to the following.

   a. Structure integrity testing of pipes, tanks, or storage vessels.
   b. Repair and maintenance of pipes, tanks, or reservoirs.

   Waste discharges from these activities will be more efficiently regulated with general permits rather than individual permits. The accompanying Order establishes requirements to regulate discharges of wastewaters generated from hydrostatic test to surface waters of the United States under the jurisdiction of this Regional Board.

Enrollment Criteria

7. To enroll under this General Permit, the discharger must certify that the hydrostatic test will be conducted using potable water. The discharger must submit water supply quality data demonstrating that the potable water complies with the California Department of Health Services (DHS) Maximum Contaminant Levels (MCLs) for drinking water listed in Attachment A. Authorization will not be granted if the potable water supply contains constituents above the MCLs.

Water Reuse Evaluation

8. Pursuant to section 2, Article X, California Constitution, and section 275 of the California Water Code on preventing waste and unreasonable use of waters of the state, this Regional Board encourages, wherever practicable, water conservation and/or re-use of wastewater. To obtain coverage under this Order, the discharger shall first investigate the feasibility of conservation, land disposal and/or reuse of the wastewater.

Storm Water Regulations and Permits

9. This Regional Board adopted *Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles* contained in Order No. 01-182 [NPDES No. CAS614001] and *Waste Discharge Requirements for Municipal Stormwater and Urban Runoff Discharges within Ventura County Flood Control District,*

County of Ventura, and the Cities of Ventura County contained in Order No. 00-108 [NPDES No. CAS004002] on July 15, 1996, and July 27, 2000, respectively. These Orders prohibit non-stormwater discharges to storm drain systems unless they are covered by separate NPDES permits. This prohibition, in general, does not apply to rising groundwater, uncontaminated groundwater infiltration discharges, discharges from potable water distribution system releases[1], foundation and footing drains discharges, and water from crawl space pumps. The municipality may allow discharge of these type of discharges into the storm drain system. However, the municipality or the Regional Board may prohibit these discharges if they are determined to cause, or threaten to cause, degradation of water quality, violation of water quality objectives, cause nuisance and/or impair beneficial uses of receiving waters.

10. The Board finds that potable water used in hydrostatic testing is the same as the drinking water that is supplied to users through the potable water distribution systems. Hydrostatic test discharge is considered to be a de minimis discharge since only potable water that meets the Screening Criteria in Attachment A will be used for hydrostatic testing. Discharge of hydrostatic test water discharge under this permit has no reasonable potential to cause or contribute to nor in-stream excursion for priority toxic pollutants criteria. If hydrostatic testing has the potential to introduce incremental pollutants to the intake water due to flushing of residual pollutants in the vessel being tested, then incremental pollutants will be removed by treatment if necessary or mitigated. The Board finds that additional monitoring and reporting requirements, and the discharge limitations contained in this Order, are necessary to assure compliance with water quality objectives and standards, and that coverage under this Order is, therefore, necessary for hydrostatic testing discharges.

Basis for Fee

11. Title 23 of the California Code of Regulations (CCR), Division 3, Chapter 9, Article 1, section 2200, *Annual Fee Schedule,* requires that all discharges subject to a specific general permit shall pay the same annual fee.

Applicable Plans, Policies, and Regulations

12. On June 13, 1994, this Regional Board adopted a revised basin plan, *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan). The Basin Plan incorporates, by reference, State Water Resources Control Board's Water Quality Control Plans and policies on ocean waters [*Water Quality Control Plan for Ocean Waters in California*, March 22, 1990],

[1] "Potable Water Distribution Systems Releases" means sources of flows from drinking water storage, supply and distribution systems including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing; and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities not involving chemical addition(s). It does not include wastewater discharges from activities that occur at wellheads, such as well construction, well development (i.e., aquifer pumping tests, well purging, etc.), or major well maintenance.

temperature [*Water Quality Control Plan for Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*, Amended September 18, 1975] and antidegradation [*Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Board Resolution No. 68-16, October 28, 1968].

13. The Basin Plan contains water quality objectives for, and lists the beneficial uses of, specific water bodies (receiving waters) in the Los Angeles Region. Typical beneficial uses covered by this Order include the following:

    a. Inland surface waters above an estuary - municipal and domestic supply, industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, aquaculture, warm and cold freshwater habitats, inland saline water and wildlife habitats, water contact and noncontact recreation, fish migration, and fish spawning.

    b. Inland surface waters within and below an estuary - industrial service supply, marine and wetland habitats, estuarine and wildlife habitats, water contact and noncontact recreation, commercial and sport fishing, aquaculture, migration of aquatic organisms, fish migration, fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

    c. Coastal Zones (both nearshore and offshore) - industrial service supply, navigation, water contact and noncontact recreation, commercial and sport fishing, marine habitat, wildlife habitat, fish migration and spawning, shellfish harvesting, and rare, threatened, or endangered species habitat.

14. The State Board adopted a Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975.

15. The State Board adopted a *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* in May 1974 (Policy). The Policy contains narrative and numerical water quality objectives that are designed to prevent water quality degradation and protect beneficial uses in enclosed bays and estuaries. The Policy also lists principles of management that include the State Board's goal to phase out all discharges (excluding cooling waters), particularly industrial process water, to enclosed bays and estuaries as soon as practicable. The waste described above is not considered an industrial process wastewater.

16. Under 40 CFR section 122.44(d), *Water Quality Standards and State Requirements*, "Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, or toxic pollutants), which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." Where numeric effluent limitations for a pollutant or pollutant parameter have not been established in the applicable state water quality control plan, 40 CFR section 122.44(d)(1)(vi) specifies that water quality-based effluent

limitations (WQBELs) may be set based on USEPA criteria, and may be supplemented where necessary by other relevant information to attain and maintain narrative water quality criteria, and to fully protect designated beneficial uses.

17. On May 18, 2000, the U.S. EPA promulgated the numeric criteria for priority pollutants for the State of California, known as the California Toxics Rule (CTR) and as codified as 40 CFR section 131.38. Toxic pollutant limits are prescribed in this Order to implement the CTR. 40 CFR section 122.44(d)(1)(ii) requires each toxic pollutant be analyzed with respect to its reasonable potential when determining whether a discharge (1) causes; (2) has the reasonable potential to cause; or (3) contributes to the exceedance of a receiving water quality objective. This is done by performing a reasonable potential analysis (RPA) for each pollutant. In performing the RPA, the permitting authority uses procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity). The Board finds that hydrostatic test discharge prescribed by this Order does not have reasonable potential to cause or contribute to an in-stream excursion for priority toxic pollutant objectives. If information becomes available that shows that there is a reasonable potential for the discharge to exceed priority pollutants objective, the discharge shall be immediately terminated. The discharge shall not be resumed until authorized by the Executive Officer, coverage under individual waste discharge requirements is issued, or the discharge may be prohibited.

18. Effluent limitation guidelines requiring the application of best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and best available technology economically achievable (BAT), were promulgated by the USEPA for some pollutants in this discharge. Effluent limitations for pollutants not subject to the USEPA effluent limitation guidelines are based on one of the following: best professional judgment (BPJ) of BPT, BCT or BAT; current plant performance; or WQBELs. The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria which are taken from the CTR. These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water. The attached fact sheet for this Order includes specific bases for the effluent limitations.

19. Best professional judgment (BPJ) was used in developing technology-based effluent limits in this tentative order. BPJ is defined as the highest quality technical opinion developed by the permit writer after consideration of all reasonably available and pertinent data or information that forms the basis for the terms and conditions of a NPDES permit. The authority for BPJ is contained in Section 402(a)(1) of the Clean Water Act.

20. The Basin Plan also implements the State Board's adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Water in California". This policy which is also referred to as the "Anti-degradation Policy", protects surface and ground waters from degradation. In particular, this policy protects waterbodies where existing quality is higher than that necessary for the protection of beneficial uses.

This permit complies with State and Federal "Anti-degradation" policies. The conditions and effluent limitations established in this Order for discharges of treated groundwater to surface waters in this Region ensure that the existing beneficial uses and quality of surface waters in this Region will be maintained and protected. Discharges regulated by this Order should not adversely impact water quality if the terms and conditions of this Order are met.

21. Water Quality Objectives and Effluent Limits in this General Permit are based on:

- The plans, policies and water quality objectives and criteria contained in the 1994 Basin Plan, as amended including the Antidegradation Policy;
- California Toxic Rule (40 CFR § 131.38);
- Title 22 CCR section 64431 (Drinking Water Standards);
- Applicable Federal Regulations (including 40 CFR Parts 122 and 131);
- DHS;
- Office of Environmental Health Hazard Assessment (OEHHA); and
- Best Professional Judgement.

22. Because this Order is intended to serve as a general NPDES permit and covers discharges to all surface waters in the Los Angeles Region, the effluent limitations established pursuant to this general order are established to protect the most protective water quality objective for the surface water beneficial uses in the Los Angeles Region.

23. USEPA regulations, policies, and guidance documents upon which BPJ was developed may include in part, the following:

- Technical Support Document for Water Quality Based Toxics Control, March 1991 (EPA-505/2-90-001);
- Whole Effluent Toxicity (WET) Control Policy, July 1994; and
- USEPA NPDES Permit Writer's Manual, December 1996 (EPA-833-B-96-003).

24. The SWRCB adopted *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the *State Implementation Plan* or *SIP*) on March 2, 2000. The SIP was amended by Resolution No. 2000-30, on April 26, 2000, and the Office of Administrative Law approved the SIP on April 28, 2000. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California which are subject to regulation under the State's Porter-Cologne Water Quality Control Act (Division 7 of the Water Code) and the Federal Clean Water Act. This policy also establishes the following: implementation provisions for priority pollutant criteria promulgated by USEPA through the CTR and for priority pollutant objectives established by Regional Water Quality Control Boards in their water quality control plans (Basin Plans) and chronic toxicity control provisions.

25. Hydrostatic testing with potable water is necessary to assure the integrity and leak proof of storage tanks or pipelines used to convey potable water or other fluid to end-users. It enables discharges to satisfy the Office of the State Fire Marshal and the local fire department requirements necessary to ensure steady and safe storage or conveyance of potable water, oil and gas, etc., to end-users and protection of environment. The hydrostatic test water discharges under this permit are mostly intermittent, short duration, high flow discharges. Flushing of residual contents of vessels by hydrostatic test water will be mitigated by best management practices (BMPs) and is not expected to be a significant source of pollutants. Therefore, hydrostatic test water discharges, as qualified under this permit, have been determined to pose no significant threat to water quality.

26. The effluent limitations regulated under this permit are calculated assuming no dilution. For most practical purposes, discharges from hydrostatic test do not flow directly into receiving waters with enough volume to consider dilution credit or to allocate a mixing zone. Most discharges regulated under this general permit are to storm drain systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams. These discharges, therefore, have the potential to recharge ground waters protected as drinking waters.

    An exception to this policy may be applied based on approved mixing zone study and based on demonstration of compliance with water quality objectives in the receiving water as prescribed in the Basin Plan. This exception process is more appropriate for an individual permit, and would not be appropriate for a general permit, that should be protective of most stringent water quality objectives and beneficial uses. If discharger requests that a dilution credit be included in the computation of effluent limit or that a mixing zone credit be allowed, an individual permit will be required. However, if no mixing zone is proposed, this general permit provides coverage for all discharges to receiving water bodies in Coastal Watersheds of Los Angeles and Ventura Counties.

27. Section 301(b)(2) of the Federal Clean Water Act (Clean Water Act) requires that all NPDES permits prescribe the application of BAT in the determination of technology-based effluent limitations.

28. Effluent limitations and toxic effluent standards established pursuant to Sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto, are applicable to the dischargers herein.

29. The requirements contained in this Order were derived using BPJ and are based on the Basin Plan, Federal and State Plans, policies, guidelines, and as they are met, will be in conformance with the goals and objectives of the aforementioned water quality control plans, water quality criteria, and will protect and maintain existing and potential beneficial uses of the receiving waters.

Watershed Management Approach

30. The SWRCB 1998 Water Quality Assessment (WQA) identified the water quality conditions of water bodies in the state. Impaired water bodies are listed on the 1998 California 303(d) List.

31. This Regional Board has implemented a Watershed Management Approach (WMA) to address water quality protection in the region. Watershed management may include diverse issues as defined by stakeholders to identify comprehensive solutions to protect, enhance, and restore water quality and beneficial uses. To achieve this goal, the watershed management approach integrates the Regional Board's many diverse programs, particularly Total Maximum Daily Loads (TMDLs), to better assess cumulative impacts of pollutants from all point and nonpoint sources to more efficiently develop watershed-specific solutions that balance the environmental and economic impacts within a watershed. The TMDLs will establish waste load allocations (WLAs) and load allocations (LAS) for point and nonpoint sources, and will result in achieving water quality standards for the waterbody.

Notification

32. The Regional Board has notified interested agencies, parties, and persons of its intent to issue general waste discharge requirements for discharges of hydrostatic test water to surface waters and has provided them with an opportunity to submit their written views and recommendations.

33. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharges to be regulated under this Order and to the tentative requirements.

34. This Order shall serve as a general NPDES permit pursuant to section 402 of the Clean Water Act, or amendments thereto, and shall take effect at the end of ten days from the date of its adoption provided the Regional Administrator, USEPA, has no objections.

35. The issuance of general waste discharge requirements that serve as an NPDES permit is exempt from the provisions of Chapter 3 (commencing with section 21100, et. seq.), Division 13, Public Resources Code, pursuant to Water Code section 13389.

36. This permit issuance involves the renewal of authorized hydrostatic test water discharges under existing general NPDES permits. The hydrostatic test water discharges under this permit are mostly intermittent, short duration, discharge. Hydrostatic test water discharges, as qualified under this permit, have been determined to pose no significant threat to water quality. The Regional Board actions on issuing this permit for existing and new hydrostatic test water discharges, and on the exceptions is exempt from CEQA in accordance with California Code of Regulations, Title 14, Section 15061 (B)(3) which states that CEQA only applies to projects which have the potential for causing adverse environmental effects.

37. Pursuant to California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board. A petition must be sent to the State Water Resources Control Board, P.O. Box 100, Sacramento, California 95812, within 30 days of adoption of the Order.

IT IS HEREBY ORDERED that dischargers authorized under this Order and General Permit, in order to meet the provisions contained in Division 7 of the California Water Code, and regulations adopted thereunder, and the provisions of the Federal Clean Water Act, and regulations and guidelines adopted thereunder, shall comply with the following:

A. Eligibility

1. This order covers discharges to surface waters of wastewaters from hydrostatic testing of pipes, tanks, and any storage vessels by using domestic (potable) water.

2. To be covered under this Order, a discharger must:

   a. (i) Demonstrate that pollutant concentrations in the discharge shall not cause violation of any applicable water quality objective for the receiving waters, including discharge prohibitions, or

      (ii) Submit potable water analytical data certifying that the potable water will be used for hydrostatic testing and the potable water complies with the drinking water maximum contaminant levels in Attachment A. If municipal water supply is used, a certified analytical data of the water supply quality is acceptable for determination;

   b. Certify that if the process of hydrostatic testing causes pollutants to be introduced in the test water, mitigation measures including BMPs will be implemented to correct the condition;

   c. The discharge shall not cause acute nor chronic toxicity in receiving waters;

   d. The discharge may not need waste treatment systems to meet requirements of this Order; and

   e. The discharger shall be able to comply with the terms or provisions of this General Permit.

3. New discharges and existing discharges regulated under existing general or individual permits or Order No. 97-047, which meet the eligibility criteria, may be regulated under this Order.

4. For the purpose of renewal of existing individual NPDES permits with this General Permit, provided that all the conditions of this General Permit are met, renewal is effective upon issuance of a notification by the Executive Officer and issuance of a new monitoring program.

5. When an individual NPDES permit with more specific requirements is issued to a discharger, the applicability of this Order to that discharger is automatically terminated on the effective date of the individual permit.

B. Authorization

To be authorized to discharge under this Order, the discharger must submit a Report of Waste Discharge (ROWD) and an application for an NPDES permit in accordance with the requirements of Part D of this Order. Upon receipt of the application, the Executive Officer shall determine the applicability of this Order to such a discharge. If the discharge is eligible, the Executive Officer shall notify the discharger that the discharge is authorized under the terms and conditions of this Order and prescribe an appropriate monitoring and reporting program. For new discharges, the discharge shall not commence until receipt of the Executive Officer's written determination of eligibility for coverage under this general permit or until an individual NPDES permit is issued by the Regional Board.

C. Report Of Waste Discharge

1. Deadline for Submission

   a. Renewal of permits for existing dischargers covered under individual permits that meet the eligibility criteria in Part A and have submitted a ROWD will consist of a letter of determination from the Executive Officer of coverage under this Order.

   b. Existing dischargers covered under Order No. 97-047 will be sent a Notice of Intent (NOI) form that must be completed and returned to the Regional Board within 60 days of receipt; otherwise, permit coverage will be revoked. Existing and new dischargers enrolling under this Order are required to certify that potable water will be used for hydrostatic testing and that it meets the drinking water standards by submitting certified analytical data. Dischargers shall submit the certification with a NOI; otherwise, the authorization will be terminated for existing dischargers. If the analytical test results exceed the drinking water screening criteria listed on Attachment A, the discharge will be considered ineligible and enrollment will be denied or existing coverage terminated under this General Permit. However, instead of an NOI, the Executive Officer may require an existing discharger to submit a new ROWD, may revise an existing discharger's monitoring and reporting programs, may require an existing discharger to participate in a regional monitoring program, or any combination of the foregoing.

   c. New dischargers shall file a complete application at least 45 days before commencement of the discharge.

2. Report of Waste Discharge Forms

   a. Dischargers shall use the appropriate USEPA Forms or equivalent forms approved by the Regional Board or the Executive Officer.

   b. The discharger, upon request, shall submit any additional information that the Executive Officer deems necessary to determine whether the discharge meets the criteria for coverage under this Order, or to prescribe an appropriate monitoring and reporting program, or both.

   c. The ROWD shall include, but is not limited to, the following information:

      i. A feasibility study on reuse and/or alternative disposal methods of the treated groundwater;
      ii. The type of chemicals that will be used (if any) during the operation and maintenance of the treatment system;
      iii. Flow diagram of influent, treatment, and discharge system, if applicable; and
      iv. Preventive maintenance procedures and schedule for the treatment system.

   d. The ROWD shall be accompanied by the first annual fee (if appropriate) in accordance with the *Annual Fee Schedule*. The check or money order shall be made payable to the "State Water Resources Control Board".

D. Discharge Prohibitions

1. The discharge of wastes other than those which meet eligibility requirements in Part A of this Order is prohibited unless the discharger obtains coverage under another general permit or an individual permit that regulates the discharge of such wastes.

2. The purposeful or knowing discharge of polychlorinated biphenyls (PCBs) is prohibited.

3. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

E. Effluent Limitations

1. Discharge of an effluent in excess of the following limitations is prohibited:

Constituents	Units	Discharge Limitations	
		Daily Maximum	Monthly Average
Total Suspended Solids	mg/L	150	50
Turbidity	NTU	150	50
BOD_5 20^oC	mg/L	30	20
Oil and Grease	mg/L	15	10
Settleable Solids	ml/L	0.3	0.1
Total Residual Chlorine	mg/L	0.1	---

2. The pH of the discharge shall at all times be within the range of 6.5 and 8.5.

3. The temperature of the discharge shall not exceed 86°F.

4. The discharge of an effluent with mineral and nitrogen constituents in excess of applicable limits given in Attachment B is prohibited. In the letter of determination, the Executive Officer shall indicate the watershed/stream reach limitations in Attachment B applicable to the particular discharge.

5. Pass-through or uncontrollable discharges of PCBs shall not exceed daily average concentrations of 14 ng/L into fresh waters or 30 ng/L into estuarine waters.

6. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test less than 70% survival.

7. The discharge shall meet effluent limitations and toxic and effluent standards established pursuant to sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto.

F. Receiving Water Limitations

1. The discharge shall not cause the following to be present in receiving waters:

   a. Toxic pollutants at concentrations that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health;

   b. Biostimulatory substances at concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses;

c. Chemical substances in amounts that adversely affect any designated beneficial use;

d. Visible floating materials, including solids, liquids, foams, and scum;

e. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the receiving water or on objects in the water;

f. Suspended or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses;

g. Taste or odor-producing substances in concentrations that alter the natural taste, odor, and/or color of fish, shellfish, or other edible aquatic resources; cause nuisance; or adversely affect beneficial uses;

h. Substances that result in increases of $BOD_5 20^\circ C$ that adversely affect beneficial uses;

i. Fecal coliform concentrations which exceed a log mean of 200 per 100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10% of total samples during any 30-day period exceed 400 per 100 ml; or

j. Concentrations of toxic substances that are toxic to, or cause detrimental physiological responses in, human, animal, or aquatic life.

2. The discharge shall not cause the following to occur in the receiving waters:

a. The dissolved oxygen to be depressed below:

WARM[2] designated waters	5 mg/L
COLD[4] designated waters	6 mg/L
COLD and SPWN[4] designated waters	7 mg/L

b. The pH to be depressed below 6.5 or raised above 8.5, and the ambient pH levels to be changed from natural conditions in inland waters more than 0.5 units or in estuaries more than 0.2 units;

c. The temperature at any time or place and within any given 24-hour period to be altered by more than $5^\circ F$ above natural temperature; but at no time be raised above $80^\circ F$ for waters with a beneficial use of WARM (Warm Freshwater Habitat);

[2] Beneficial Uses: WARM - Warm Freshwater Habitat; COLD - Cold Freshwater Habitat; SPWN - Spawning, Reproduction, and/or Early Development.

d. The turbidity to increase to the extent that such an increase causes nuisance or adversely affects beneficial uses; such increase shall not exceed 20% when the natural turbidity is over 50 NTU or 10% when the natural turbidity is 50 NTU or less;

e. Residual chlorine in concentrations that persist and impairs beneficial uses; or

f. Any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses or increase pesticide concentration in bottom sediments or aquatic life.

3. The discharge shall not alter the color, create a visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters.

4. The discharge shall not degrade surface water communities and populations, including vertebrate, invertebrate, and plant species.

5. The discharge shall not damage, discolor, nor cause formation of sludge deposits on flood control structures or facilities nor overload their design capacity.

6. The discharge shall not cause problems associated with breeding of mosquitos, gnats, black flies, midges, or other pests.

G. Provisions

1. The Executive Officer may require any discharger authorized under this Order to apply for and obtain an individual NPDES permit with more specific requirements. The Executive Officer may require any discharger authorized to discharge under this permit to apply for an individual permit only if the discharger has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual permit, the authority to discharge under this General Permit is no longer applicable.

2. The discharger shall comply with all the applicable items of the *Standard Provisions and Reporting for Waste Discharge Requirements* (Standard Provisions), which are part of this General Permit (Attachment C). If there is any conflict between provisions stated herein and the Standard Provisions, those provisions stated herein prevail.

3. The discharger shall develop a Pollution Prevention Plan (PLAN), for implementation if necessary. All PLANs developed by dischargers must be able to: (a) identify and evaluate sources of pollutants associated with hydrostatic testing that may affect the quality of wastewater discharge and (b) develop a site

specific best management practices (BMPs) program to reduce or prevent to the maximum extent practicable pollutants and soil erosion. The objective of the BMP program is to minimize, to the extent possible, adverse environmental impacts and to prevent significant detrimental effects in the receiving water.

4. Prior to application, the discharger shall submit for Executive Officer's approval the list of chemicals and proprietary additives that may affect the discharge, including rates/quantities of application, compositions, characteristics, and material safety data sheets, if any.

5. Oil or oily materials, chemicals, refuse, or other materials that may cause pollution in storm water and/or urban runoff shall not be stored or deposited in areas where they may be picked up by rainfall/urban runoff and discharged to surface waters. Any spill of such materials shall be contained, removed and cleaned immediately.

6. This Order neither exempt the discharger from compliance with any other laws, regulations, or ordinances that may be applicable, nor legalize the waste disposal facility.

7. The discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

8. Pursuant to 40 CFR section 122.61(b), coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

9. Pursuant to 40 CFR sections 122.62 and 122.63, this Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order,

10. Any discharge authorized under this Order may request to be excluded from the coverage of this Order by applying for an individual permit.

H. Monitoring And Reporting Requirements

1. The Executive Officer is hereby authorized to prescribe a Monitoring and Reporting Program for each authorized discharger. This program may include participation of the discharger in a regional monitoring program.

2. The discharger shall comply with Monitoring and Reporting Requirements stated in Part B of the Standard Provisions (Attachment C).

3. The discharger shall retain records of all monitoring information and data used to complete the Report of Waste Discharge and application for coverage under this Order for at least five years from the date of sampling, measurement, report, or application. The retention period shall be extended during any unresolved litigation regarding the discharge or when requested by the Executive Officer.

4. The monitoring report shall specify the USEPA analytical method used, the Method Detection Limit (MDL) and the ML for each pollutant. For the purpose of reporting compliance with numerical limitations, performance goals, and receiving water limitations, analytical data shall be reported with one of the following methods, as the case may be:

   a. An actual numerical value for sample results greater than or equal to the ML; or

   b. "Detected, but Not Quantified (DNQ)" if results are greater than or equal to the laboratory's MDL but less than the ML. The estimated[3] chemical concentration of the sample shall also be reported; or

   c. "Not-Detected (ND)" for sample result less than the laboratory's MDL with the MDL indicated for the analytical method used.

   The ML employed for an effluent analysis shall be lower than the permit limit established for a given parameter, unless the Discharger can demonstrate that a particular ML is not attainable and obtains approval for a higher ML from the Executive Officer. At least once a year, the Discharger shall submit a list of the analytical methods employed for each test and associated laboratory quality assurance and quality control procedures.

5. The discharger shall maintain all sampling, measurement and analytical results, including: the date, exact place, and time of sampling or measurement; individual(s) who did the sampling or measurement; the date(s) analyses were done; analysts' names; and analytical techniques or methods used.

6. All sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR part 136, unless other test procedures have been specified in this Order or by the Executive Officer.

7. All chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the California DHS or other state agency authorized to undertake such certification.

[3] Estimated chemical concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

8. The discharger shall calibrate and maintain all monitoring instruments and equipment to insure accuracy of measurements, or shall insure that both activities will be conducted.

9. For parameters/constituents where both monthly average and daily maximum limits are prescribed, but where monitoring frequency is less than four times a month, the following procedure shall apply:

   If analysis of a sample yields a result greater than the monthly average limit for a parameter/constituent, the sampling frequency for that parameter/constituent shall increase to weekly within one week of receiving the laboratory result until at least three consecutive weekly samples are obtained and compliance with the monthly average has been demonstrated, and the discharger has submitted for Executive Officer approval a program that will ensure future compliance with the monthly average limit.

10. The discharger shall file with the Regional Board (Attention: Technical Support Unit) technical reports on self-monitoring work conducted according to the Monitoring and Reporting Program specified by the Executive Officer and submit other reports as requested by the Regional Board.

11. In reporting the monitoring data, the discharger shall arrange the data in tabular form so that the date, constituents, and concentrations are readily discernible. The data shall be summarized to demonstrate compliance with waste discharge requirements.

12. For every item where the requirements are not met, the discharger shall submit a statement of the actions undertaken or proposed that will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.

13. The discharger shall file a report of any material change or proposed change in the character, location or volume of the discharge.

14. The discharger shall notify this Regional Board within 24 hours by telephone of any adverse condition resulting from the discharge, such notification shall be affirmed in writing within five working days.

I. Compliance And Enforcement

1. The discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act and the Water Code and is subject to enforcement action and/or permit termination.

2. The Clean Water Act and the Water Code provide for civil and criminal penalties for violations of waste discharge requirements.

J. Expiration Date And Continuation Of This Order

This Order expires on July 1, 2009; however, for those dischargers authorized to discharge under this Order, it shall continue in full force and effect until a new order is adopted.

K. Reauthorization

Upon reissuance of a new general permit order, dischargers authorized under this Order shall file a Notice of Intent or a new Report of Waste Discharge within 60 days of notification by the Executive Officer.

L. Rescission

Except for enforcement purposes and except for purposes of transferring enrollment to this Order pursuant to Provision C.1.b., Order No. 97-047, adopted by this Regional Board on May 12, 1997, is hereby rescinded.

I, Jonanthan Bishop, Interim Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on July 1, 2004.

Jonathan Bishop
Interim Executive Officer

ATTACHMENT A

SCREENING LEVELS FOR POTENTIAL POLLUTANTS OF CONCERN
IN POTABLE WATER USED FOR HYDROSTATIC TESTING
(Screening to be conducted on a source water sample prior to issuance of permit)

Pollutant	Maximum Contaminant Levels (µg/L)	Minimum Levels (ML) (µg/L)
1,1,1-Trichloroethane	200	2
1,1,2,2-Tetrachloroethane	1	0.5
1,1,2-Trichloroethane	5	0.5
1,1-Dichloroethane	5	1
1,1-Dichloroethylene	6	0.5
1,2-Dichloroethane	0.5	0.5
1,4-Dichlorobenzene	5	0.5
Benzene	1	0.5
Carbon tetrachloride	0.5	0.5
Ethylbenzene	700	2
Ethylene dibromide	0.05	na
Methyl tertiary butyl ether (MTBE)	5	na
Tetrachloroethylene	5	0.5
Toluene	150	2
Total Trihalomethanes	80	--
trans 1,2-Dichloroethylene	10	1
Trichloroethylene	5	0.5
Vinyl chloride	0.5	0.5
Xylenes	1750	na
Arsenic	50	10
Cadmium	5	0.5
Chromium (total)	50	10
Copper	1000	0.5
Lead	50	0.5
Mercury	2	0.2
Selenium	10	2
Silver	50	0.25

ATTACHMENT B

Discharge of wastewater within a watershed/stream reach with constituent concentrations in excess of the following daily maximum limits is prohibited:

WATERSHED/STREAM REACH			TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[(*)] (mg/L)	Nitrogen[(**)] (mg/L)
1.	Miscellaneous Ventura Coastal Streams:				no waterbody specific limits		
2.	Ventura River Watershed:						
	a.	Above Camino Cielo Road	700	300	50	1.0	5
	b.	Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5
	c.	Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5
	d.	Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10
	e.	Between Main St. and Ventura River Estuary			no waterbody specific limits		
3.	Santa Clara River Watershed:						
	a.	Above Lang gaging station	500	100	50	0.5	5
	b.	Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5
	c.	Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10
	d.	Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	5
	e.	Between Blue Cut gaging station and A Street, Fillmore	1300	600	100	1.5	5
	f.	Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	80	1.5	5
	g.	Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	---
	h.	Between Highway 101 Bridge and Santa Clara River Estuary			no waterbody specific limits		
	i.	Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5
	j.	Sespe Creek above gaging station, 500 feet downstream from Little Sespe Creek	800	320	60	1.5	5
	k.	Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5
4.	Calleguas Creek Watershed:						
	a.	Above Potrero Road	850	250	150	1.0	10
	b.	Below Potrero Road			no waterbody specific limits		
5.	Miscellaneous Los Angeles County Coastal Streams:				no waterbody specific limits		
	a.	Malibu Creek Watershed:	2000	500	500	2.0	10
	b.	Ballona Creek Watershed:			no waterbody specific limits		
6.	Dominguez Channel Watershed:				no waterbody specific limits		
7.	Los Angeles River Watershed:						
	a.	Los Angeles River and Tributaries-upstream of Sepulveda Flood Control Basin	950	300	150	---	8

(*) Where naturally occurring boron results in concentrations higher than the stated limit, a site-specific limit may be determined on a case-by-case basis.

(**) Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical limits for all streams.

WATERSHED/STREAM REACH		TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron(*) (mg/L)	Nitrogen(**) (mg/L)
7.	Los Angeles River Watershed (continued):					
b.	Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only.	950	300	190	---	8
c.	Other tributaries to Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	---	8
d.	Los Angeles River - between Figueroa Street and L. A. River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway	1500	350	190	---	8
e.	Other tributaries to Los Angeles River – between Figueroa Street and Los Angeles River Estuary. Includes Arroyo Seco downstream of spreading grounds.	1550	350	150	---	8
f.	Rio Hondo - between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180	---	8
g.	Rio Hondo - upstream of Whittier Narrows Flood Control Basin	750	300	150	---	8
h.	Santa Anita Creek above Santa Anita spreading grounds	250	30	10	---	---
i.	Eaton Canyon Creek above Eaton Dam	250	30	10	---	---
j.	Arroyo Seco above spreading grounds	300	40	15	---	---
k.	Big Tujunga Creek above Hansen Dam	350	50	20	---	---
l.	Pacoima Wash above Pacoima spreading grounds	250	30	10	---	---
8.	San Gabriel River Watershed:					
a.	San Gabriel River above Morris Dam	250	30	10	0.6	2
b.	San Gabriel River between Morris Dam and Ramona Blvd.	450	100	100	0.5	8
c.	San Gabriel River and tributaries – between Ramona Blvd. and Valley Blvd.	750	300	150	1.0	8
d.	San Gabriel River – between Valley Blvd. and Firestone Blvd. Includes Whittier Narrows Flood Control Basin and San Jose Creek - downstream of 71 Freeway only.	750	300	180	1.0	8
e.	San Jose Creek and tributaries - upstream of 71 Freeway	750	300	150	1.0	8
f.	San Gabriel River - between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street). Includes Coyote Creek.			no waterbody specific limits		
g.	All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	---	---
9.	Los Angeles Harbor/ Long Beach Harbor Watershed			no waterbody specific limits		
10.	Santa Ana River Watershed					
a.	San Antonio Creek***	225	25	---	---	---
b.	Chino Creek***	---	---	---	---	---
11.	Island Watercourses:					
a.	Anacapa Island			no waterbody specific limits		
b.	San Nicolas Island			no waterbody specific limits		
c.	Santa Barbara island			no waterbody specific limits		
d.	Santa Catalina Island			no waterbody specific limits		
e.	San Clemente Island			no waterbody specific limits		

*** These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by the Santa Ana Regional Board. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

STANDARD PROVISIONS, GENERAL MONITORING AND REPORTING REQUIREMENTS

"ATTACHMENT C"

A. General Provisions

1. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, nor protect the discharger from his liabilities under federal, state, or local laws, nor guarantee the discharger a capacity right in the receiving waters.

2. These requirements do not exempt the operator of the waste disposal facility from compliance with any other laws, regulations, or ordinances which may be applicable; they do not legalize this waste disposal facility, and they leave unaffected any further restraints on the disposal of wastes at this site which may be contained in other statutes or required by other agencies.

3. Due to Comply [40 CFR 122.41(a)][CWC 133811]

   a. The discharger must comply with all of the terms, requirements, and conditions of this order. Any violation of this order constitutes a violation of the Clean Water Act, its regulations and the California Water Code, and is grounds for enforcement action, Order termination, Order revocation and reissuance, denial of an application for reissuance; or a combination thereof.

   b. The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. If a toxic effluent standard or prohibition is established for toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition and so notify the discharger.

4. Duty to Mitigate [40 CFR 122.41(d)]

    a. The discharger shall take all reasonable steps to minimize or prevent any discharge that has a reasonable likelihood of adversely affecting human health or the environment.

5. Proper Operation and Maintenance [40 CFR 122.41(e)]

    a. The discharger shall at all times properly operate and maintain all facilities and systems of treatment and control including sludge use and disposal facilities (and related appurtenances) that are installed or used by the discharger to achieve compliance with this Order. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar system that are installed by a discharger only when necessary to achieve compliance with the conditions of this Order.

    b. A copy of these waste discharge specifications shall be maintained at the discharge facility so as to be available at all times to operating personnel.

6. Permit Actions [40 CFR 122.41(f)][CWC 13263(e)][40 CFR 122.44(b)(1)]

    a. This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

    b. The discharge shall not cause a violation of any applicable water quality standards for receiving waters adopted by the Regional Board or the State Water Resources Control Board as required by the Federal Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Clean Water Act, and amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

    c. Any discharge of wastes at any point(s) other than specifically described in this Order is prohibited, and constitutes a violation of the Order.

    d. If the discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the discharger must apply for and obtain a new Order.

e. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

(1) Violation of any term or condition contained in this Order;
(2) Obtaining this Order by misrepresentation, or failure to disclose all relevant facts;
(3) A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

7. Property Rights [40 CFR 122.41(g)][CWC 13263(g)]

a. This Order does not convey any property rights of any sort, or any exclusive privilege.

8. Duty to Provide Information [40 CFR 122.41(h)]

a. The discharger shall furnish, within a reasonable time, any information the Regional Board, the State Board, or EPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The discharger shall also furnish to the Regional Board, upon request, copies of records required to be kept by this Order.

9. Inspection and Entry [40 CFR 122.41(h)]

a. The Regional Board, the State Board, EPA, and other authorized representatives shall be allowed:

(1) Entry upon premises where a regulated facility is located or conducted, or where records are kept under conditions of this Order;

(2) Access to copy any records that are kept under the conditions of this Order;

(3) To inspect any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

(4) To photograph, sample, and monitor for the purpose of assuring compliance with this Order, or as otherwise authorized by the Clean Water Act and the California Water Code.

10. Bypass and Upset [40 CFR 122.41(m)][40 CFR 122.41(h)]

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility whose operation is necessary to maintain compliance with the terms and conditions of this Order.

(2) “Upset” means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond, the reasonable control of the discharger. An upset does not include noncompliance to then extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

(3) “Severe property damage” means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Prohibition of Bypass

(1) Bypass is prohibited. The Regional Board may take enforcement action against the discharger for bypass unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;

(b) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment down time. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass that could occur during normal periods of equipment downtime or preventive maintenance; and

(c) The discharger submitted a notice at least ten days in advance of the need for a bypass to the Regional Board.

(2) The discharger may allow a bypass to occur that does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable. The discharger shall submit notice of an unanticipated bypass as required in Provision (B.5.a).

c. Conditions necessary for a demonstration of upset

(1) A discharger that wishes to establish the affirmative defense of an upset in an action brought for non- compliance shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that::

(a) An upset occurred and that the discharger can identify the cause(s) of the upset;

(b) The permitted facility was being properly operated by the time of the upset;

(c) The discharger submitted notice of the upset as required in Provision (B.5.a); and

(d) The discharger complied with any remedial measures required under 40 CFR 122.41(d).

(2) No determination made before an action for noncompliance, such as during administrative review of claims that noncompliance was caused by an upset, is final administrative action subject to judicial review.

d. Burden of proof

(1) In any enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof.

11. Transfers [40 CFR 122.41(L)(3)][CWC 133771)[40 CFR 122.61(a)(b)]

a. This Order is not transferable to any person except after notice to the Regional Board. In the event of any change in name, ownership, or control of these waste disposal facilities, the discharger shall notify this Board of such change and shall notify the succeeding owner or operator of the existence of this Order by letter, copy of which shall be forwarded to the Board. The Regional Board may require modification or revocation and reissuance of the Order to change the name of the discharger and incorporate such other requirements as may be necessary under the Clean Water Act.

12. Pollution, Contamination, or Nuisance [CWC 13050]

    a. Neither the treatment nor the discharge shall create a condition of pollution, contamination, or nuisance.

B. Monitoring and Reporting Requirements

1. Monitoring and Records (40 CFR 122.41(j))[Title 23, CCR, Div 3, Ch 14]

    a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

    b. The discharger shall retain records of all monitoring information, including all calibration and maintenance monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the Report of Waste Discharge and application for this Order, for a period of at least five (5) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Board or EPA at any time and shall be extended during the course of any unresolved litigation regarding this discharge.

    c. Records of monitoring information shall include:

        (1) The date, exact place, and time of sampling or measurements;
        (2) The individual(s) who performed the sampling or measurements;
        (3) The duration of the discharge;
        (4) The volume of discharge;
        (5) The date(s) analyses were performed;
        (6) The individual(s) who performed the analyses;
        (7) The analytical techniques or methods used; and
        (8) The results of such analyses.

    d. All sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this Order.

    e. All chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by an appropriate governmental regulatory agency.

f. The discharger shall calibrate and perform maintenance procedures on all monitoring instruments and to insure accuracy of measurements, or shall insure that both equipment activities will be conducted.

g. The discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. The annual monitoring report required in Provision (B.4.b) shall also summarize the QA activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent (10%) of the samples, or at least one sample per sampling period, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples.

h. When requested by the Board or EPA, the discharger will participate in the NPDES discharge monitoring report QA performance study. The discharger must have a success rate equal to or greater than 80%.

i. Effluent samples shall be taken downstream of any addition to treatment works and prior to mixing with the receiving waters.

j. For parameters where both 30-day average and maximum limits are specified but where the monitoring frequency is less than four times a month, the following procedure shall apply:

   (1) Initially, not later than the first week of the second month after the adoption of this permit, a representative sample shall be obtained of each waste discharge at least once per week for at least four consecutive weeks and until compliance with the 30-day average limit has been demonstrated. Once compliance has been demonstrated, sampling and analyses shall revert to the frequency specified.

   (2) If future analyses of two successive samples yield results greater than 90% of the maximum limit for a parameter, the sampling frequency for that para-meter shall be increased (within one week of receiving the laboratory result on the second sample) to a minimum of once weekly until at least four consecutive weekly samples have been obtained and compliance with the 30-day average limit has been demonstrated again and the discharger has set forth for the approval of the Executive Officer a program which ensures future compliance with the 30-day average limit.

k. In the event the discharger is unable to comply with any of the conditions of this Order due to:

(1) breakdown of waste treatment equipment;
(2) accidents caused by human error or negligence; or
(3) other causes such as acts of nature,

the discharger shall notify the Executive Officer by telephone as soon as he or his agents have knowledge of the incident and confirm this notification in writing within two weeks of the telephone notification. The written notification shall include pertinent information explaining reasons for the noncompliance and shall indicate what steps were taken to correct the problem and the dates thereof, and what steps are being taken to prevent the problem from recurring.

l. If there is any storage of hazardous or toxic materials or hydrocarbons at this facility and if the facility is not manned at all times, a 24-hour emergency response telephone number shall be prominently posted where it can easily be read from the outside.

m. The discharger shall notify the Board of:

(1) new introduction into such works of pollutants from a source which could be a new source as defined in section 306 of the Federal Clean Water Act, or amendments thereto, if such source were discharging pollutants to the waters of the United States,

(2) new introductions of pollutants into such works from a source which would be subject to Section 301 of the Federal Clean Water Act, or amendments thereto, if substantial change in the volume or character of pollutants being introduced into such works by a source introducing pollutants into such works at the time the waste discharge requirements were adopted.

Notice shall include a description of the quantity and quality of pollutants and the impact of such change on the quantity and quality of effluent from such publicly owned treatment works. A substantial change in volume is considered an increase of ten percent in the mean dry-weather flow rate. The discharger shall forward a copy of such notice directly to the Regional Administrator.

n. The discharger shall notify the Board not later than 120 days in advance of implementation of any plans to alter production capacity of the product line of the manufacturing, producing or processing facility by more than ten percent. Such notification shall include estimates of proposed production rate, the type of process, and projected effects on effluent quality. Notification shall include submittal of a new report of waste discharge appropriate filing fee.

o. All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Regional Board as soon as they know or have reason to believe:

(1) that any activity has occurred or will occur that would result in the discharge of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels:"

(a) One hundred micrograms per liter (100 μg/l);
(b) Two hundred micrograms per liter (200 μg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 μg/l) for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
(c) Five (5) times the maximum concentration value reported for that pollutant in the permit application; or
(d) The level established by the Regional Board in accordance with 40 CFR 122.44(f).

(2) that they have begun or expect to begin to use or manufacture intermediate or final product or byproduct of any toxic pollutant that was not reported on their application.

2. Signatory Requirements [40 CFR 122.41(k)][40 CFR 122.221]

a. All applications, reports, or information submitted to the Regional Board shall be signed:

(1) In the case of corporations, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which discharge originates;
(2) In the case of a partnership, by a general partner;
(3) In the case of a sole proprietorship, by the proprietor;
(4) In the case of municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

b. Each monitoring report must affirm in writing that "all analyses were conducted at a laboratory certified for such analyses by the Department of Health Services or approved by the Executive Officer and in accordance with current EPA guideline procedures or as specified in this Monitoring Program".

c. Each report shall contain the following completed declaration:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility, of a fine and imprisonment for knowing violations.

Executed on the ___ day of _________ , 20__, at _____________________.

____________(Signature)

_____________(Title)"

3. Monitoring Reports [40 CFR 122.41(l)(4)]

a. Monitoring results shall be reported at the intervals specified in the permit.

b. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms approved by the Regional Board or the State Board for reporting results of monitoring of pollutants and sludge use or disposal practices.

c. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this permit.

d. The discharger shall file a technical report with this Board not later than 30 days after receipt of this Order, relative to the operation and maintenance program for this waste disposal facility. The information to be contained in that report shall include as a minimum, the following:

(1) The name and address of the person or company responsible for operation and maintenance of the facility.

(2) Type of maintenance (preventive or corrective).

(3) Frequency of maintenance, if preventive.

If an operation and maintenance report has been supplied to the Board previously and there have been no changes, a second report need not be provided.

e. The discharger shall file with the Board a report of waste discharge at least 120 days before making any material change or proposed change in the character, location or volume of the discharge.

f. Monitoring results shall be reported at the intervals specified in the monitoring and Reporting Program.

(1) Monitoring results must be reported on a DMR.

(2) If the discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this Order.

g. The discharger shall file with the Board technical reports on self monitoring work performed according to the detailed specifications contained in any Monitoring and Reporting Programs as directed by the Executive Officer.

h. In reporting the monitoring data, the discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernable. The data shall be summarized to demonstrate compliance with waste discharge requirements and, where applicable, shall include results of receiving water observations.

i. For every item where the requirements are not met, the discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.

j. The discharger shall include in the annual report, an annual summary of the quantities of all chemicals, listed by both trade and chemical names, which are used for cooling and/or boiler water treatment and which are discharged.

k. If no flow occurred during the reporting period, the monitoring report shall so state.

l. For any analyses performed for which no procedure is specified in the EPA guidelines or in the monitoring and Reporting Program, the constituent or parameter analyzed and the method or procedure used must be specified in the monitoring report.

m. In the event wastes are transported to a different disposal site during the report period, the following shall be reported in the monitoring report:

(1) Types of wastes and quantity of each type;

(2) Name and address for each hauler of wastes (or method of transport if other than by hauling); and

(3) Location of the final point(s) of disposal for each type of waste.

If no wastes are transported offsite during the reporting period, a statement to that effect shall be submitted.

n. The discharger shall submit to the Board, together with the first monitoring report required by this permit, a list of all chemicals and proprietary additives which could affect this waste discharge, including quantities of each. Any subsequent changes in types and/or quantities shall be reported promptly.

o. The discharger shall report all instances of non- compliance not other wise reported at the time monitoring reports are submitted. The reports shall contain all information listed in Provision (B.5.a).

p. Each monitoring report shall state whether or not there was any change in the discharge as described in the Order during the reporting period.

q. Analytical data reported as "less than" for the purpose of reporting compliance with permit limitations shall be the same or lower than the permit limit(s) established for the given parameter.

r. The discharger shall mail a copy of each monitoring report to:

INFORMATION TECHNOLOGY
CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD - LOS ANGELES REGION
320 W. 4TH STREET, SUITE 200
LOS ANGELES, CA 90013

A copy of such monitoring report for those discharges designated as a major discharge shall also be mailed to:

REGIONAL ADMINISTRATOR
ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne Street
San Francisco, CA 94105

s. If the discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the discharger must apply for and obtain a new Order.

4. Compliance Schedules [40 CFR 122.41(l)(5)]

a. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this Order shall be submitted no later than 14 days following, each schedule date.

b. By March 1 of each year, the discharger shall submit an annual report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the discharger shall discuss the compliance record and the corrective actions taken or planned which may be needed to bring the discharge into full compliance with the waste discharge requirements.

c. This Board requires the discharger to file with the Board, within 90 days after the effective date of this Order, a technical report on his preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. The technical report should:

(1) Identify the possible sources of accidental loss, untreated waste bypass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

(2) Evaluate the effectiveness of present facilities and procedures and state when they become operational.

(3) Describe facilities and procedures needed for effective preventive and contingency plans.

(4) Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule contingent interim and final dates when they will be constructed, implemented, or operational.

This Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events.

Such conditions may be incorporated as part of this Order, upon notice to the discharger.

5. Twenty-four Hour Reporting [40 CFR 122.41(l)(6)]

a. The discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided verbally within 24 hours from the time the discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times and, if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

b. The following shall be included as information that must be reported within 24 hours under this paragraph:

(1) Any unanticipated bypass that exceeds any effluent limitation in the Order.
(2) Any upset that exceeds any effluent limitation in the Order.
(3) Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours.

The Regional Board may waive the above-required written report on a case-by-case basis.

6. Other Noncompliance [40 CFR 122.41(l)(7)]

   a. The discharger shall report all instances of noncompliance not reported under Provisions (B.3), (B.4), and (B.5) at the time monitoring reports are submitted. The reports shall contain the information listed in Provision (B.5).

7. Other Information [40 CFR 122.41(l)(8)]

   a. When the discharger becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application, or in any report to the Regional Board, the State Board, or USEPA, the discharger shall promptly submit such facts or information.

8. Planned Changes [40 CFR 122.41(l)(1)]

   a. The discharger shall give advance notice to the Regional Board as soon as possible of any planned physical alterations or additions to the facility or of any planned changes in the facility or activity that may result in noncompliance with requirements.

      (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR Part 122.29(b); or

      (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit nor to notification requirements under 40 CFR Part 122.42(a)(1); or

      (3) The alteration or addition results in a significant change in the discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

9. Anticipated Noncompliance [40 CFR 122.41(l)(2)]

   a. The discharger shall give advance notice to the Regional Board of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Enforcement Provisions [40 CFR 122.41][CWC Sections 13384 and 13387]

1. The California Water Code provides that any person who violates a waste discharge requirement or a provision of the California Water Code is subject to civil penalties of up to $5,000 per day, $10,000 per day, or $25,000 per day of violation, or when the violation involves the discharge of pollutants, is subject to civil penalties of up to $10 per gallon per day or $25 per gallon per day of violation; or some combination thereof, depending on the violation, or upon the combination of violations.

   Violation of any of the provisions of the NPDES program or of any of the provisions of this Order may subject the violator to any of the penalties described herein, or any combination thereof, at the discretion of the prosecuting authority; except that only one kind of penalty may be applied for each kind of violation.

2. The Federal Clean Water Act (CWA) provides that any person who violates a permit condition or any requirement imposed in a pretreatment program implementing sections 301, 302, 306, 307, 308, 318 or 405 of the CWA is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing these sections of the CWA is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. Any person who knowingly violates permit conditions implementing these sections of the CWA is subject to a fine of not less than $5,000, or more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

3. It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order.

4. The Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, or other document submitted or required to be maintained under this Order, or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this act, shall upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

D. Definitions

1. "Composite sample" means, for flow rate measurements, the arithmetic mean of no fewer than eight individual measurements taken at equal intervals for 24 hours or for the duration of discharge, whichever is shorter.

   "Composite sample" means, for other than flow rate measurement,

   a. A combination of at least eight individual portions obtained at equal time intervals for 24 hours, or the duration of the discharge, whichever is shorter. The volume of each individual portion shall be directly proportional to the discharge flow rate at the time of sampling; or

   b. A combination of at least eight individual portions of equal volume obtained over a 24-hour period. The time interval will vary such that the volume of wastewater discharged between samplings remains constant.

      The compositing period shall equal the specified sampling period, or 24 hours, if no period is specified.

   c. "Daily discharge" means:

      (1) For flow rate measurements, the average flow rate measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling.

      (2) For pollutant measurements, the concentration or mass emission rate measured during a calendar day or during any 24-hour period reasonably representative of the calendar day for purposes of sampling.

   d. The "daily discharge rate" shall be obtained from the following calculation for any calendar day:

$$\text{Daily discharge rate} = \frac{8.34}{N} \sum_{i=1}^{N} (Q_i)(C_i)$$

      in which N is the number of samples analyzed in any calendar day, Q_i and C_i are the rate (MGD) and the constituent concentration (mg/l) respectively, which are associated with each of the N grab samples which may be taken in any calendar day. If a composite sample is taken, C_i is the concentration measured in the composite sample and Q_i is the average flow rate occurring during the period over which samples are composited.

e. "Daily maximum" limit means the maximum acceptable "daily discharge" for pollutant measurements. Unless otherwise specified, the results to be compared to the "daily maximum" limit are based on composite samples."

f. "Duly authorized representative" is one whose:

(1) Authorization is made in writing by a principal executive officer or ranking elected official;

(2) Authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.); and

(3) Written authorization is submitted to the Regional Board and EPA Region 9. If an authorization becomes no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements above must be submitted to the Regional Board and EPA Region 9 prior to or together with any reports, information, or applications to be signed by an authorized representative.

g. "Grab sample" is defined as any individual sample collected in a short period of time not exceeding 15 minutes. "Grab samples" shall be collected during normal peak loading conditions for the parameter of interest, which may or may not be during hydraulic peaks. It is used primarily in determining compliance with "daily maximum" limits and the "instantaneous maximum" limits.

h. "Hazardous substance" means any substance designated under 40 CFR 116 pursuant to Section 311 of the Clean Water Act.

i. "Heavy metals" are for purposes of this Order, arsenic, cadmium, chromium, copper, lead, mercury, silver, nickel, and zinc.

j. "Instantaneous maximum" concentration is defined as the maximum value measured from any single "grab sample."

k. "Median" of an ordered set of values is the value which the values above and below is an equal number of values, or which is the arithmetic mean of the two middle values, if there is no one middle value.

l. "Priority pollutants" are those constituents referred to in 40 CFR 401.15 and listed in the EPA NPDES Application Form 2C, pp. V-3 through V-9.

m. "6-month median" means a moving "median" of daily values for any 180-day period in which daily values represent flow-weighted average concentrations within a 24-hour period. For intermittent discharges, the daily value shall be considered to equal zero for days on which no discharge occurred.

n. "7-day" and "30-day average" shall be the arithmetic average of the values of daily discharge calculated using the results of analyses of all samples collected during any 7 and 30 consecutive calendar day periods, respectively.

o. "Toxic pollutant" means any pollutant listed as toxic under section 307(a)(1) of the Clean Water Act or under 40 CFR 122, Appendix D.

Appendix I: SWRCB Minimum Levels in ppb (μg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3' Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Table 2d – PESTICIDES – PCBs*	GC
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

California Regional Water Quality Control Board
Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Secretary for Environmental Protection

320 W. 4th Street, Suite 200, Los Angeles, California 90013
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Arnold Schwarzenegger
Governor

ORDER NO. R4-2007-0021

WASTE DISCHARGE REQUIREMENTS
FOR
TREATED GROUNDWATER AND OTHER WASTEWATERS FROM INVESTIGATION AND/OR CLEANUP OF PETROLEUM FUEL-CONTAMINATED SITES TO SURFACE WATERS
IN
COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES

(GENERAL NPDES PERMIT NO. CAG834001)

This Order was adopted by the Regional Water Board on:	April 5, 2007
This Order shall become effective on:	June 5, 2007
This Order shall expire on:	April 5, 2012
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Board have classified this discharge as a minor discharge.	

IT IS HEREBY ORDERED, that Order No. R4-2002-0125 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (CWC) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA), and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Jonathan Bishop, Executive Officer, do hereby certify the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 5, 2007.

Jonathan S. Bishop, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

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LIST OF ATTACHMENTS

I. FACILITY/DISCHARGE INFORMATION

This Order (hereafter, General Permit) is intended to authorize similar discharges from groundwater treatment facilities (Facilities) at sites that have been impacted by release of petroleum related organic compounds. Discharges from Facilities to waters of the United States that do not cause, have the reasonable potential to cause, or contribute to an in-stream excursion above any applicable State or federal Water quality objectives/criteria or cause acute or chronic toxicity in the receiving water are authorized discharge in accordance with the conditions set forth in this Order.

II. NOTIFICATION REQUIREMENTS

A. Eligibility Criteria

1. This Order covers discharges to surface waters of treated groundwater and other wastewaters from the investigation, dewatering, or cleanup of petroleum contamination arising from current and former leaking underground storage tank site or similar petroleum contamination.

2. To be covered under this Order, a discharger must demonstrate that:

    a. Pollutant concentrations in the discharge shall not cause violation of any applicable water quality objective for the receiving waters, including discharge prohibitions.

    b. The discharge shall not exceed the water quality criteria for pollutants in Attachment B and Part V of this Order, and there shall be no reasonable potential to cause or contribute to an excursion above the criteria.

    c. A representative sample of the contaminated groundwater to be treated and discharged does not exceed the water quality screening criteria for any constituent listed on Attachment A, other than those for which limitations are established in Part V.

    d. The discharge shall not cause acute nor chronic toxicity in receiving waters;

    e. The discharge shall pass through a treatment system designed and operated to reduce the concentration of contaminants to meet the requirements of this Order.

    f. The discharger shall be able to comply with the terms or provisions of this Order.

3. For the purpose of renewal of existing individual NPDES permits with this general permit, provided that all the conditions of this general permit are met, renewal is effective upon issuance of a notification by the Executive Officer and issuance of a new monitoring and reporting program.

4. When an individual NPDES permit with more specific requirements is issued to a discharger, the applicability of this Order to that discharger is automatically terminated on the effective date of the individual permit.

B. Ineligibility

The discharge of groundwater contaminated with petroleum mixed with other toxic pollutants with no effluent limitations in this permit are not eligible for enrollment under this General Permit.

C. Authorization

To be authorized to discharge under this Order, the discharger must submit a Notice of Intent (NOI) in accordance with the requirements of Part D of this Order. Upon receipt of the application, the Executive Officer shall determine the applicability of this Order to such a discharge. If the discharge is eligible, the Executive Officer shall notify the discharger that the discharge is authorized under the terms and conditions of this Order and prescribe an appropriate monitoring and reporting program. For new discharges, the discharge shall not commence until receipt of the Executive Officer's written determination of eligibility for coverage under this general permit or until an individual NPDES permit is issued by the Regional Board.

D. Notice of Intent

1. Deadline for Submission

   a. Renewal of permits of existing dischargers covered under individual permits that meet the eligibility criteria and have submitted a NOI will consist of a letter of determination from the Executive Officer of coverage under this Order.

   b. Existing dischargers covered under Order No. R4-2002-0125 will be sent a NOI form that must be completed and returned to the Regional Board within 45 days of receipt; otherwise permit coverage may be revoked. Existing dischargers enrolling under this Order are required to collect a representative groundwater sample and analyze it for all the constituents listed on Attachment A. Dischargers shall conduct this analysis and submit the result with a NOI, otherwise the existing authorization may be terminated. If the analytical sample result of any constituent other than those listed in Item IV.A. of this Order exceeds the water quality screening criteria listed on Attachment A, the discharge will be considered ineligible for enrollment under this permit. However, the discharge will be enrolled under other appropriate general permit, and then, the existing coverage under this general permit will be terminated.

   c. New dischargers shall file a complete application at least 45 days before commencement of the discharge.

2. Forms for Report of Waste Discharge

   a. Dischargers shall use the NOI Form or appropriate USEPA Forms.

   b. The discharger, upon request, shall submit any additional information that the Executive Officer deems necessary to determine whether the discharge meets the criteria for coverage under this Order, to prescribe an appropriate monitoring and reporting program, or both.

c. The discharger must obtain and analyze (using appropriate methods) a representative sample of the groundwater to be treated and discharged under this Order. The analytical method used shall be capable of achieving a detection limit at or below the minimum level, otherwise, a written explanation shall be provided. The analytical result shall be submitted with the NPDES application. The data shall be tabulated and shall include the results for every constituent listed on Attachment A.

d. The following should be included with the NOI Form:

   i. The feasibility study on reuse and/or alternative disposal methods of the groundwater;

   ii. Description of the treatment system;

   iii. The type of chemicals that will be used (if any) during the operation and maintenance of the treatment system;

   iv. Flow diagram of the influent to the discharge point; and

   v. Preventive maintenance procedures and schedule for the treatment system.

e. Title 23 of the California Code of Regulations (CCR), Division 3, Chapter 9, Article (1)(A), section 2200, ***Annual Fee Schedule,*** requires that all discharges subject to a specific general permit shall pay the same annual fee.

   Discharges covered under this General NPDES Permit have a Threat to Water Quality rating of Category 1.A. the discharges require treatment systems to meet priority toxic pollutant limits that could impair the designated beneficial uses of the receiving water if limits are violated.

   1. Notice of Termination

      Dischargers shall submit a Notice of Termination or Transfer (NOTT) when coverage under this General Permit is no longer needed. An NOTT contains the Waste Discharge Identification Number (WDID), the name and address of the owner of the facility, and is signed and dated by the owner certifying that the Dischargers associated with Permit No. CAG834001 have been eliminated or that there has been a change in ownership. Upon submission, the Discharger is no longer authorized to discharge wastewater associated with this General Permit.

   2. Change of Ownership

      Coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

III. FINDINGS

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter Regional Water Board), finds:

A. Background

1. On July 11, 2002, the Regional Board adopted Order No. R4-2002-0125 General NPDES Permit No. CAG834001-Waste Discharge Requirements for Discharge of Treated Petroleum Fuel Contaminated Groundwater to surface waters. This General Permit expires on July 11, 2007. Approximately 41 dischargers are enrolled under this General Permit. This Order now renews the requirements of this General Permit.

2. On September 22, 1989, the United States Environmental Protection Agency (USEPA) granted the State of California, through the State Water Resources Control Board (State Board) and the Regional Boards, the authority to issue general National Pollutant Discharge Elimination System (NPDES) permits pursuant to 40 Code of Federal Regulations (40 CFR) parts 122 and 123.

3. 40 CFR section 122.28 provides for issuance of general permits to regulate a category of point sources if the sources:

   a. Involve the same or substantially similar types of operations;
   b. Discharge the same type of waste;
   c. Require the same type of effluent limitations or operating conditions;
   d. Require similar monitoring; and
   e. Are more appropriately regulated under a general permit rather than individual permits.

4. General waste discharge requirements and NPDES permits enable Regional Board staff to expedite the processing of requirements, simplify the application process for dischargers, better utilize limited staff resources, and avoid the expense and time involved in repetitive public noticing, hearings, and permit adoptions.

B. Facility and Discharge Description

1. Petroleum fuel contamination of soil and groundwater at various sites throughout the region causes or threatens to cause adverse impacts to existing and potential beneficial uses of the region's groundwater resources. Leaking underground storage tanks and surface spills from gasoline service station and similar sites pollutes the groundwater. Investigation and cleanup of these sites generate the following wastewaters:

a. Treated groundwater from cleanup and/or construction dewatering activity at a petroleum-impacted site;
b. Groundwater pumped as an aid in the containment and extraction of petroleum fuel-contaminated groundwater and/or free product;
c. Groundwater extracted during short- and long-term pumping test/aquifer testing;
d. Groundwater generated from developing and purging wells prior to sampling;
e. Sampling equipment's decontamination water; and,
f. Subterranean seepage dewatering.
g. Storm water collected in fuel storage secondary containment tanks and fuel spill washwater contains similar contaminants as those from the investigation/cleanup of petroleum contaminated groundwater may also be regulated under this Order.

2. The waste streams identified in the foregoing paragraph and permitted under this order could contain petroleum hydrocarbons at levels that may be considered toxic. Usually, the treatments applied for the removal of constituents regulated by this order are activated carbon adsorption and air stripping. These treatment techniques are considered best available technology for controlling and removing hydrocarbon contamination from water.

3. This permit does not cover discharges from a treatment system that draws contaminated groundwater that contains volatile organic compounds that do not have effluent limitations in this Order, metals (other than lead), and other toxic pollutants.

4. To enroll under this general permit, a discharger must certify that there is no reasonable potential for pollutants other than those regulated by this permit to be in the discharge. Existing and new dischargers enrolling under this permit are required to collect a representative groundwater sample and analyze it for all the constituents listed on Attachment A. Existing dischargers shall conduct this analysis and submit the result with a Notice of Intent Form, otherwise the existing authorization will be terminated. If the analytical sample result of any constituent other than those listed in Part F and other constituents limited in this permit exceed the water quality screening criteria listed on Attachment A, the discharge will be considered ineligible for enrollment.

5. Pursuant to section 2, Article X, California Constitution, and section 275 of the California Water Code on preventing waste and unreasonable use of waters of the state, this Regional Board encourages, wherever practical, water conservation and/or re-use of wastewater. To obtain coverage under this Order, the discharger shall first investigate the feasibility of conservation, land disposal and/or reuse of the wastewater.

C. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency

(USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements

The Regional Water Board developed the requirements of this Order based on information submitted as part of the applications for several like facilities, through monitoring and reporting programs, and through special studies and the following information.

1. The effluent limitations from groundwater cleanup projects are calculated assuming no dilution. For most practical purposes, discharges from groundwater cleanup do not flow directly into receiving water with significant flow volume to consider dilution credit or to allocate a mixing zone. Most discharges of treated groundwater regulated under this general permit are to storm drain systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams. These discharges therefore have the potential to recharge groundwaters protected as drinking waters.

   An exception to this policy may be applied based on approved mixing zone study and based on demonstration of compliance with water quality objectives in the receiving water as prescribed in the Basin Plan. This exception process is more appropriate for an individual permit, and would not be appropriate for a general permit, that should be protective of most stringent water quality objectives and beneficial uses. If discharger requests that a dilution credit be included in the computation of effluent limit or that a mixing zone be allowed, an individual permit will be required. However, if no mixing zone is proposed, this general permit provides coverage for all discharges to receiving water bodies in Coastal Watersheds of Los Angeles and Ventura Counties.

2. Order No. R4-2002-0125 contains, in part, an effluent limitation for methyl tertiary butyl ether (MTBE) of 35 µg/L. On October 8, 1997, the state of California then Governor Pete Wilson signed Assembly Bill 592. Assembly Bill 592 requires the State of California, Department of Health Services (DHS) to adopt primary and secondary drinking water standards for MTBE. In January 1999, the DHS adopted 5 µg/L as the secondary standard for MTBE based on taste and odor threshold. This order includes a revised effluent limitation for MTBE of 5 µg/L.

3. Tertiary Butyl Alcohol (TBA) is a gasoline constituent, an impurity in commercial-grade MTBE, and/or a breakdown product of MTBE. In 1999, California's Office of Environmental Health Hazard Assessment (OEHHA) conducted an interim assessment based on preliminary calculations of the carcinogenicity of TBA, concluding that exposures to TBA via oral route represent a one in a million excess cancer risk of 12 µg/L. Based on this assessment, OEHHA has set an Action Level of TBA to 12 µg/L. This order includes effluent limitation for TBA of 12 µg/L.

Attachments F the Fact Sheet, which contain background information and rationale for Order requirements, are hereby incorporated into this Order and constitute part of the Findings for this Order.

4. Because this Order is intended to serve as a general NPDES permit and covers discharges to all surface waters in the Los Angeles Region, the effluent limitations establish pursuant to this general order are established to protect the most protective water quality objective for the surface water beneficial uses in the Los Angeles Region.

E. California Environmental Quality Act (CEQA)

This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with Section 13389 of the CWC.

F. Technology-Based Effluent Limitations

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations[5], require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3 of CWA.

Either aeration processes or adsorption processes (or combination of the two) are the treatment processes typically used to remove the organic compounds in the groundwater. Other treatment technology enhancements such as bioaugmentation of granular activated carbon (BioGAC), air stripping with biofilm, bioreactors, advanced oxidation processes, and resin can be employed to remove petroleum compounds and gasoline additives from impacted groundwater. When designed properly and operated, most aeration and/or GAC systems can lower the concentration of petroleum pollutants and volatile organic compounds (VOCs) to below the detection limits. Limits established in the tentative order for the petroleum pollutants and VOCs can be met consistently if GAC/air stripper (or enhancements thereto) treatment systems are properly operated and maintained.

G. Water Quality-Based Effluent Limitations

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting

[5] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi). The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria which are taken from the California Toxics Rule (CTR). These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water. The attached fact sheet for this Order includes specific bases for the effluent limitations.

H. Water Quality Control Plans.

The Regional Water Board adopted a Water Quality Control Plan for the Los Angeles Region (hereinafter Basin Plan) on June 13, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

1. Basin Plan. The Basin Plan contains water quality objectives for, and lists the beneficial uses of, specific water bodies (receiving waters) in the Los Angeles Region. Typical beneficial uses covered by this Order include the following:

    a. Inland surface waters above an estuary - municipal and domestic supply, industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, aquaculture, warm and cold freshwater habitats, inland saline water and wildlife habitats, water contact and noncontact recreation, fish migration, and fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

    b. Inland surface waters within and below an estuary - industrial service supply, marine and wetland habitats, estuarine and wildlife habitats, water contact and noncontact recreation, commercial and sport fishing, aquaculture, migration of aquatic organisms, fish migration, fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

    c. Coastal Zones (both nearshore and offshore) - industrial service supply, navigation, water contact and noncontact recreation, commercial and sport fishing, marine habitat, wildlife habitat, fish migration and spawning, shellfish harvesting, and rare, threatened, or endangered species habitat.

Requirements of this Order implement the Basin Plan.

Total Maximum Daily Loads: Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Los Angeles Region has been developing TMDLs for nutrients. This Order implements approved and relevant TMDLs. Attachment B prescribes the limits for the pollutants that are waterbody specific. Detailed discussion on TMDLs is provided in the Attachment F.

2. The State Board adopted a ***Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California*** (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975.

3. The State Board adopted a ***Water Quality Control Policy for the Enclosed Bays and Estuaries of California*** in May 1974 (Policy). The Policy contains narrative and numerical water quality objectives that are designed to prevent water quality degradation and protect beneficial uses in enclosed bays and estuaries.

The Policy also lists principles of management that include the State Board's goal to phase out all discharges (excluding cooling waters), particularly industrial process water, to enclosed bays and estuaries as soon as practicable. The waste described above is not considered an industrial process wastewater.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. State Implementation Policy

On March 2, 2000, the State Water Board adopted the ***Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*** (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. Compliance Schedules and Interim Requirements (Not Applicable)

L. Alaska Rule.

On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards become effective for CWA purposes (40 CFR §131.21, 65 FR 24641, April 27, 2000). Under USEPA's new regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants that are no more stringent than required by CWA. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards.

N. Antidegradation Policy

Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in detail in the Fact Sheet (Attachment F), the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements

Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR §122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

P. Endangered Species Act.

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. Monitoring and Reporting

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (hereinafter MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

R. Standard and Special Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

S. Provisions and Requirements Implementing State Law (Not Applicable)

T. Notification of Interested Parties.

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet (Attachment F) of this Order.

U. Consideration of Public Comment.

The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet (Attachment F) of this Order.

IV. DISCHARGE PROHIBITIONS

A. The discharge of wastes other than those which meet eligibility requirements of this Order is prohibited unless the discharger obtains coverage under another general permit or an individual permit that regulates the discharge of such wastes.

B. Bypass or overflow of untreated or partially treated contaminated groundwater to waters of the State either at the treatment system or from any of the collection or transport systems or pump stations tributary to the treatment system is prohibited.

C. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable criterion promulgated by USEPA pursuant to section 303 of the CWA, or water quality objective adopted by the State or Regional Board.

D. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

E. The purposeful or knowing discharge of ploychlorinated biphenols (PCBs) is prohibited.

V. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations:

1. Discharge of an effluent from the outfall location listed in the enrollment Fact-Sheet in excess of the following limitations is prohibited:

Constituents	Units	Discharge Limitations	
		Monthly Average	Daily Maximum
Total Suspended Solids	mg/L	50	150
Turbidity	NTU	50	150
$BOD_5 20^oC$	mg/L	20	30
Settleable Solids	ml/L	0.1	0.3
Sulfides	mg/L	---	1.0
Total Petroleum Hydrocarbons	µg/L	---	100
Benzene	µg/L	---	1.0
Toluene	µg/L	---	150
Ethylbenzene	µg/L	---	700
Xylenes	µg/L	---	1750
Ethylene Dibromide	µg/L	---	0.05[1]
Lead	µg/L	2.6[2]	5.2[2]
Methyl Tertiary Butyl Ether(MTBE)	µg/L	---	5
Naphthalene	µg/L	---	21
Di-isopropyl Ether (DIPE)	µg/L	---	0.8[2]
Tertiary Butyl Alcohol (TBA)	µg/L	---	12

[1] If the reported detection level is greater than the effluent limit, then a non-detect using ML detection is deemed to be in compliance.
[2] Total recoverable metals (based on a hardness of 100 mg/L).

2. The pH of the discharge shall at all times be within the range of 6.5 and 8.5.

3. The temperature of the discharge shall not exceed 86°F.

4. The discharge of an effluent with mineral and nitrogen constituents in excess of applicable limits given in Attachment B is prohibited. In the letter of determination, the Executive Officer shall indicate the watershed/stream reach limitations in Attachment B applicable to the particular discharge.

5. Pass-through or uncontrollable discharges of PCBs shall not exceed daily average concentrations of 14 ng/L into fresh waters or 30 ng/L into estuarine waters.

6. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test less than 70% survival.

7. The discharge shall meet effluent limitations and toxic and effluent standards established pursuant to sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto.

B. Land Discharge Specifications

Not Applicable.

C. Reclamation Specifications

Not Applicable.

VI. RECEVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following to be present in receiving waters:

a. Toxic pollutants at concentrations that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.

b. Biostimulatory substances at concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.

c. Chemical substances in amounts that adversely affect any designated beneficial use.

d. Visible floating materials, including solids, liquids, foams, and scum.

e. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the receiving water or on objects in the water.

f. Suspended or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses.

g. Taste or odor-producing substances in concentrations that alter the natural taste, odor, and/or color of fish, shellfish, or other edible aquatic resources; cause nuisance; or adversely affect beneficial uses.

h. Substances that result in increases of $BOD_5$20°C that adversely affect beneficial uses.

i. Fecal coliform concentration which exceed a log mean of 200 per 100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10% of total samples during any 30-day period exceed 400 per 100 ml.

j. Concentrations of toxic substances that are toxic to, or cause detrimental physiological responses in, human, animal, or aquatic life.

2. The discharge shall not cause the following to occur in the receiving waters:

a. The dissolved oxygen to be depressed below:

WARM[1] designated waters	5 mg/L
COLD[1] designated waters	6 mg/L
COLD and SPWN[1] Designated waters	7 mg/L

[1] Beneficial Uses: WARM - Warm Freshwater Habitat; COLD - Cold Freshwater Habitat; SPWN - Spawning, Reproduction, and/or Early Development.

b. The pH to be depressed below 6.5 or raised above 8.5, and the ambient pH levels to be changed from natural conditions in inland waters more than 0.5 units or in estuaries more than 0.2 units.

c. The temperature at any time or place and within any given 24-hour period to be altered by more than 5°F above natural temperature; but at no time be raised above 80°F for waters with a beneficial use of WARM (Warm Freshwater Habitat).

d. The turbidity to increase to the extent that such an increase causes nuisance or adversely affects beneficial uses; such increase shall not exceed 20% when the natural turbidity is over 50 NTU or 10% when the natural turbidity is 50 NTU or less.

e. Residual chlorine in concentrations that persist and impairs beneficial uses.

f. Any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses or increase pesticide concentration in bottom sediments or aquatic life.

3. The discharge shall not alter the color, create a visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters.

4. The discharge shall not degrade surface water communities and population including vertebrate, invertebrate, and plant species.

5. The discharge shall not damage, discolor, nor cause formation of sludge deposits on flood control structures or facilities nor overload their design capacity.

6. The discharge shall not cause problems associated with breeding of mosquitoes, gnats, black flies, midges, or other pests.

B. Groundwater Limitations

Not Applicable.

VII. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

   a. The Executive Officer may require any discharger authorized under this Order to apply for and obtain an individual NPDES permit with more specific requirements. The Executive Officer may require any discharger authorized to discharge under this permit to apply for an individual permit only if the discharger has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual permit, the authority to discharge under this general permit is no longer applicable.

   b. The discharger shall comply with all the applicable items of the ***Standard Provisions and Reporting for Waste Discharge Requirements*** (Standard Provisions), which are part of this general permit (Attachment D). If there is any conflict between provisions stated herein and the Standard Provisions, those provisions stated herein prevail.

c. Prior to application, the discharger shall submit for Executive Officer's approval the list of chemicals and proprietary additives that may affect the discharge, including rates/quantities of application, compositions, characteristics, and material safety data sheets, if any.

d. Oil or oily materials, chemicals, refuse, or other materials that may cause pollution in storm water and/or urban runoff shall not be stored or deposited in areas where they may be picked up by rainfall/urban runoff and discharged to surface waters. Any spill of such materials shall be contained, removed and cleaned immediately.

e. This Order neither exempts the discharger from compliance with any other laws, regulations, or ordinances that may be applicable, nor legalizes the waste disposal facility.

f. The discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

h. Any discharge authorized under this Order may request to be excluded from the coverage of this Order by applying for an individual permit.

i. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from treatment facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the MRP accompanying the transmittal for enrollment under this General NPDES permit, and future revisions thereto. If there is any conflict between provisions stated in the MRP and the Regional Water Board Standard Provisions, those provisions stated in the MRP shall prevail.

C. Special Provisions

1. Reopener Provision

a. This Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order.

b. Pursuant to 40 CFR sections 122.62 and 122.63, this Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order. In addition, if receiving water quality is threatened due to discharges covered under this permit, this permit will be reopened to incorporate more stringent effluent limitations for the constituents creating the threat. TMDLs have not been developed for all the parameters and receiving waters on the 303(d) list. When TMDLs are developed this permit may be reopened to incorporate appropriate limits. In addition, if TMDL identifies that a particular discharge covered under this permit is a load that needs to be reduced; this permit will be reopened to incorporate appropriate TMDL based limit and/or to remove any applicable exemptions.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

Not Applicable

3. Best Management Practices and Pollution Prevention

Pollution Minimization Program

The Discharger shall develop and conduct a Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or

ii. A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP section X.B.4.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

i. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;

ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;

iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and

v. An annual status report that shall be sent to the Regional Water Board including:

1. All PMP monitoring results for the previous year.

2. A list of potential sources of the reportable priority pollutant(s).

3. A summary of all actions undertaken pursuant to the control strategy.

4. A description of actions to be taken in the following year.

4. Construction, Operation and Maintenance Specifications

All owners or operators authorized discharge under the General Permit shall maintain and update, as necessary, a Groundwater Treatment System Operation and Maintenance (O&M) Manual to assure efficient and effective treatment of contaminated groundwater. The O&M Manual shall address, but not limited to, the following.

The O&M manual shall specify both normal operating and critical maximum or minimum values for treatment process variables including influent concentrations, flow rates, water levels, temperatures, time intervals, and chemical feed rates.

The O&M manual shall specify an inspection and maintenance schedule for active and reserve system and shall provide a log sheet format to document inspection observations and record completion of maintenance tasks.

The O&M manual shall include a Contingency and Notification Plan. The plan shall include procedures for reporting personnel to assure compliance with this General Permit, as well as authorization letters from the Executive Officer.

The O&M manual shall specify safeguards to prevent noncompliance with limitations and requirements of the General Permit resulting from equipment failure, power loss, vandalism, or ten-year return frequency rainfall.

5. Engineering Design Report

For all new dischargers and existing dischargers with significant changes made since prior submittals to the Regional Water Board, the NOI shall be accompanied by an Engineering Design Report that certifies the adequacy of each major component of the proposed treatment facility. The certification shall include an analysis, based on accepted engineering practice, which demonstrate that the treatment process and the physical design of the treatment components will ensure compliance with the prohibitions, effluent limitations, and other conditions of the General Permit. The report shall also certify that:

Adequate maintenance and testing schedule are included in the Groundwater Treatment System Treatment O&M Manual.

Sampling points are located where representative monitoring samples of process and discharge streams can be obtained. The design engineer shall affix her/his signature and engineering license number to this Engineering Design Reports.

6. Granular Activated Carbon Quality Assurance / Quality Control

The Discharger shall implement a Quality Assurance / Quality Control (QA/QC) Program to assure that newly replenished granular activated carbon (GAC) in the treatment system is providing high quality effluent with respect to pH and inorganic constituents. Activities conducted as part of the GAC QA/QC program shall be documented in routine Discharge Monitoring Reports submitted for the facility.

7. Special Provisions for Municipal Facilities (POTWs Only)

Not Applicable

8. Other Special Provisions

a. Expiration and Continuation of this Order and Prior Order

This Order expires on April 5, 2012; however, for those dischargers authorized to discharge under this Order, it shall continue in full force and effect until a new order is adopted. Notwithstanding Provision K (Expiration and Continuation of this Order) of Order No. R4-2002-0125, discharges regulated under Order No. R4-2002-0125 on or before July 11, 2007, that has submitted and a completed NOI may continue under Order No. R4-2002-0125 until enrolled under this General Permit.

b. Reauthorization

Upon reissuance of a new general permit order, dischargers authorized under this Order shall file a Notice of Intent or a new Report of Waste Discharge within 45 days of notification by the Executive Officer.

c. Rescission

Except for enforcement purposes, Order No. R4-2002-0125, adopted by this Regional Board on July 11, 2003, is rescinded effective June 5, 2007.

9. Compliance Schedules

Not Applicable

VIII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section V of this Order will be determined as specified below:

A. General.

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Multiple Sample Data.

When determining compliance with an AMEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

C. Average Monthly Effluent Limitation (AMEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar month exceeds the AMEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

D. Average Weekly Effluent Limitation (AWEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar week exceeds the AWEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

E. Maximum Daily Effluent Limitation (MDEL).

If a daily discharge <(or when applicable, the median determined by subsection B above for multiple sample data of a daily discharge)> exceeds the MDEL for a given parameter, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

F. Instantaneous Minimum Effluent Limitation.

If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

G. Instantaneous Maximum Effluent Limitation.

If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

DEFINITIONS, ACRONYMS & ABBREVIATIONS

DEFINITIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (***n***) is odd, then the median = $X_{(n+1)/2}$. If ***n*** is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the ***n***/2 and ***n***/2+1).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;

μ is the arithmetic mean of the observed values; and

n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ACRONYMS & ABBREVIATIONS

AMEL	Average Monthly Effluent Limitation
B	Background Concentration
BAT	Best Available Technology Economically Achievable
Basin Plan	***Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties***
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practices
BMPPP	Best Management Practices Plan
BPJ	Best Professional Judgment
BOD	Biochemical Oxygen Demand
BPT	Best practicable treatment control technology
C	Water Quality Objective
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTR	California Toxics Rule
CV	Coefficient of Variation
CWA	Clean Water Act
CWC	California Water Code
DMR	Discharge Monitoring Report
DNQ	Detected But Not Quantified
ECA	Effluent Concentration Allowance
ELAP	California Department of Health Services Environmental Laboratory Accreditation Program
ELG	Effluent Limitations, Guidelines and Standards
gpd	gallons per day
IC	Inhibition Coefficient
IC_{15}	Concentration at which the organism is 15% inhibited
IC_{25}	Concentration at which the organism is 25% inhibited
IC_{40}	Concentration at which the organism is 40% inhibited
IC_{50}	Concentration at which the organism is 50% inhibited
LA	Load Allocations
LOEC	Lowest Observed Effect Concentration
LTA	Long-Term Average
MDEL	Maximum Daily Effluent Limitation
MDL	Method Detection Limit
MEC	Maximum Effluent Concentration
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
ML	Minimum Level
MRP	Monitoring and Reporting Program
ND	Not Detected
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTR	National Toxics Rule
OAL	Office of Administrative Law

POTW	Publicly-Owned Treatment Works
PMP	Pollutant Minimization Plan
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
RPA	Reasonable Potential Analysis
RWQCB	Regional Water Quality Control Board
SCP	Spill Contingency Plan
SIP	State Implementation Policy (***Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California***)
SMR	Self Monitoring Reports
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Test Acceptability Criteria
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document
TSS	Total Suspended Solid
TU	Toxicity Unit
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirements
WET	Whole Effluent Toxicity
WLA	Waste Load Allocations
WQBEL	Water Quality-Based Effluent Limitation
µg/L	Micrograms per Liter

ATTACHMENT A
SCREENING LEVEL FOR GENERAL NPDES PERMIT

Pollutant	MUN[a] (µg/L)	Others[b] (µg/L)	Minimum Levels (ML) (µg/L)
VOLATILE ORGANICS			
1,1 Dichloroethane	5	5	1
1,1 Dichloroethylene	0.057	3.2	0.5
1,1,1 Trichloroethane	200	200	2
1,1,2 Trichloroethane	0.60	42	0.5
1,1,2,2 Tetrachloroethane	0.17	1	0.5
1,2 Dichlorobenzene	600	600	0.5
1,2 Dichloroethane	0.38	99	0.5
1,2 Dichloropropane	0.52	39	0.5
1,2-Trans Dichloroethylene	10	10	1
1,3 Dichlorobenzene	400	2600	2
1,3 Dichloropropylene	0.5	0.5	0.5
1,4 Dichlorobenzene	5	0.5	0.5
2-Chloroethyl vinyl ether	--	--	1
Acetone	700	700	na
Acrolein	100	100	5
Acrylonitrile	0.059	0.66	2.0
Benzene	1.0	1	0.5
Bromoform	4.3	360	0.5
Carbon Tetrachloride	0.25	0.5	0.5
Chlorobenzene	30	21000	2
Chlorodibromo-methane	0.401	34	0.5
Chloroethane	100	100	2
Chloroform	100	100	2
Dichlorobromo-methane	0.56	46	0.5
Ethylbenzene	700	700	2
Ethylene Dibromide	0.05	0.05	na
Methyl Bromide	10	4000	2.0
Methyl Chloride	3	3	0.5
Methyl ethyl ketone	700	700	na
Methyl tertiary butyl ether (MTBE)	5	5	na
Methylene Chloride	4.7	1600	0.5
Tetrachloroethylene	0.8	8.85	0.5
Toluene	150	150	2
Trichloroethylene	2.7	5	0.5
Vinyl Chloride	0.5	0.5	0.5
Xylenes	1750	1750	na

Pollutant	MUN[a] (µg/L)	Others[b] (µg/L)	Minimum Levels (ML) (µg/L)
METALS[1]			
Antimony (Sb)	14	4300	5
Arsenic (As)	50	36	10
Beryllium (Be)	4	--	0.5
Cadmium (Cd)	2.4	9.4	0.5
Chromium III (Cr^{3+})	50	--	10
Chromium VI (Cr^{6+})	11	50	5
Copper (Cu)	9.4	3.7	0.5
Cyanide (CN)	5.2	--	5
Lead (Pb)	3.2	8.5	0.5
Mercury (Hg)	0.050	0.051	0.2
Nickel (Ni)	52	8.3	1
Selenium (Se)	5.0	71	2
Silver (Ag)	4	2.2	0.25
Thallium (Ti)	1.7	6.3	1
Zinc (Zn)	122	86	20
PESTICIDES AND PCBs			
4,4'-DDD	0.00083	0.00084	0.05
4,4'-DDE	0.00059	0.00059	0.05
4,4'-DDT	0.00059	0.00059	0.01
Alpha-Endosulfan	0.056	0.0087	0.02
Alpha-BHC	0.0039	0.013	0.01
Aldrin	0.00013	0.00014	0.005
Beta-Endosulfan	0.056	0.0087	0.01
beta-BHC	0.014	0.046	0.005
Chlordane	0.00057	0.00059	0.1
delta-BHC	--	--	0.005
Dieldrin	0.00014	0.00014	0.01
Endosulfan Sulfate	110	240	0.05
Endrin	0.036	0.0023	0.01
Endrin Aldehyde	0.76	0.81	0.01
Heptachlor	0.00021	0.00021	0.01
Heptachlor Epoxide	0.0001	0.00011	0.01
gamma-BHC	0.019	0.063	0.02
PCB 1016	0.00017	0.00017	0.5
PCB 1221	0.00017	0.00017	0.5
PCB 1232	0.00017	0.00017	0.5
PCB 1242	0.00017	0.00017	0.5
PCB 1248	0.00017	0.00017	0.5
PCB 1254	0.00017	0.00017	0.5
PCB 1260	0.00017	0.00017	0.5
Toxaphene	0.00073	0.00075	0.5

(a) = Applies to water with Municipal and Domestic Supply (MUN) (indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

(1) = Metals concentrations are expressed as total recoverable.

ATTACHMENT A
SCREENING LEVEL FOR GENERAL NPDES PERMIT

Pollutant	MUN[a]	Others[b]	Minimum Levels (ML)	Pollutant	MUN[a]	Others[b]	Minimum Levels (ML)
	(µg/L)	(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)
SEMI – VOLATILE ORGANICS				**SEMI – VOLATILE ORGANICS (continued)**			
1,2 Diphenylhydrazine	0.040	0.54	1	Dibenzo(a,h)-anthracene	0.0044	0.049	0.1
1,2,4 Trichlorobenzene	70	--	5	Diethyl phthalate	23000	120000	10
2 Chlorophenol	120	400	5	Dimethyl phthalate	313000	2900000	10
2,4 Dichlorophenol	93	790	5	di-n-Butyl phthalate	2700	12000	10
2,4 Dimethylphenol	540	2300	2	di-n-Octyl phthalate	--	--	10
2,4 Dinitrophenol	70	14000	5	Fluoranthene	300	370	10
2,4 Dinitrotoluene	0.11	9.1	5	Fluorene	1300	14000	10
2,4,6 Trichlorophenol	2.1	6.5	10	Hexachlorobenzene	0.00075	0.00077	1
2,6 Dinitrotoluene	--	--	5	Hexachlorobutadiene	0.44	50	1
2-Nitrophenol	--	--	10	Hexachloro-cyclopentadiene	50	17000	5
2-Chloronaphthalene	1700	4300	10	Hexachloroethane	1.9	8.9	1
3,3' Dichlorobenzidine	0.04	0.077	5	Indeno(1,2,3,cd)-pyrene	0.0044	0.049	0.05
3-Methyl-4-Chlorophenol	--	--	1	Isophorone	8.4	600	1
2-Methyl-4,6-Dinitrophenol	13	765	5	N-Nitrosodimethyl amine (NDMA)	0.00069	8.1	5
4-Nitrophenol	--	--	5	N-Nitroso-di-n-propyl amine	0.005	1.4	5
4-Bromophenyl phenyl ether	--	--	5	N-Nitrosodiphenyl amine	5.0	16	1
4-Chlorophenyl phenyl ether	--	--	5	Naphthalene	21	--	10
Acenaphthene	1200	2700	1	Nitrobenzene	17	1900	10
Acenaphthylene	--	--	10	Pentachlorophenol	0.28	7.9	1
Anthracene	9600	110000	5	Phenanthrene	--	--	5
Benzidine	0.00012	0.00054	5	Phenol	21000	4600000	50
Benzo (a) Anthracene	0.0044	0.049	5	Pyrene	960	11000	10
Benzo (a) Pyrene	0.0044	0.049	2	**MISCELLANEOUS**			
Benzo (b) Fluoranthene	0.0044	0.049	10	Asbestos (in fibers/L k,s.)	7000000	7000000	
Benzo (g,h,i) Perylene	--	--	5	Di-isopropyl ether (DIPE)	0.8	0.8	2
Benzo (k) Fluoranthene	0.0044	0.049	2	1,4-Dioxane	3	3	
Bis (2-Chloroethoxyl) methane	--	--	5	Ethanol	1000	1000	1000
Bis(2-Chloroethyl) ether	0.031	1.4	1	Ethyl tertiary butyl ether (ETBE)	2	2	2
Bis(2-Chloroisopropyl) ether	1400	170000	10	Methanol	1000	1000	1000
Bis(2-Ethylhexyl) phthalate	1.8	5.9	5	Methyl tertiary butyl ether (MTBE)	5	5	
Butyl benzyl phthalate	3000	5200	10	Perchlorate	4	4	
Chrysene	0.0044	0.049	5	2,3,7,8-TCDD (Dioxin)	1.3E-08	1.3E-08	1.0E-05
				Tertiary amyl methyl ether (TAME)	2	2	2
				Tertiary butyl alcohol (TBA)	12	12	10
				Total petroleum hydrocarbons	100	100	

(a) = Applies to water with Municipal and Domestic Supply (MUN) (indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

ATTACHMENT B

Discharge of wastewater within a watershed/stream reach with constituent concentrations in excess of the following daily maximum limits is prohibited:

WATERSHED/STREAM REACH			TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[(*)] (mg/L)	Nitrogen[(**)] (mg/L)
1.	Miscellaneous Ventura Coastal Streams:				no waterbody specific limits		
2.	Ventura River Watershed:						
	a.	Above Camino Cielo Road	700	300	50	1.0	5
	b.	Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5
	c.	Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5
	d.	Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10
	e.	Between Main St. and Ventura River Estuary			no waterbody specific limits		
3.	Santa Clara River Watershed:						
	a.	Above Lang gaging station	500	100	50	0.5	5
	b.	Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5
	c.	Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10
	d.	Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	6.8
	e.	Between Blue Cut gaging station and A Street, Fillmore	1300	600	1000	1.5	5
	f.	Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	80	1.5	8.1
	g.	Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	---
	h.	Between Highway 101 Bridge and Santa Clara River Estuary			no waterbody specific limits		
	i.	Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5
	j.	Sespe Creek above gaging station, 500 feet downstream from Little Sespe Creek	800	320	60	1.5	5
	k.	Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5
4.	Calleguas Creek Watershed:						
	a.	Above Potrero Road	850	250	150	1.0	10
	b.	Below Potrero Road		no waterbody specific limits			
5.	Miscellaneous Los Angeles County Coastal Streams:				no waterbody specific limits		
	a.	Malibu Creek Watershed:	2000	500	500	2.0	10
	b.	Ballona Creek Watershed:			no waterbody specific limits		
6.	Dominguez Channel Watershed:				no waterbody specific limits		
7.	Los Angeles River Watershed:						
	a.	Los Angeles River and Tributaries-upstream of Sepulveda Flood Control Basin	950	300	150	---	8

(*) Where naturally occurring boron results in concentrations higher than the stated limit, a site-specific limit may be determined on a case-by-case basis.

(**) Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical limits for all streams.

7.	Los Angeles River Watershed (continued):						
	b.	Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only.	950	300	190	---	8
	c.	Other tributaries to Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	---	8
	d.	Los Angeles River - between Figueroa Street and L. A. River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway	1500	350	190	---	8
	e.	Other tributaries to Los Angeles River – between Figueroa Street and Los Angeles River Estuary. Includes Arroyo Seco downstream of spreading grounds.	1550	350	150	---	8
	f.	Rio Hondo - between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180	---	8
	g.	Rio Hondo - upstream of Whittier Narrows Flood Control Basin	750	300	150	---	8
	h.	Santa Anita Creek above Santa Anita spreading grounds	250	30	10	---	8
	i.	Eaton Canyon Creek above Eaton Dam	250	30	10	---	8
	j.	Arroyo Seco above spreading grounds	300	40	15	---	8
	k.	Big Tujunga Creek above Hansen Dam	350	50	20	---	8
	l.	Pacoima Wash above Pacoima spreading grounds	250	30	10	---	8
8.	San Gabriel River Watershed:						
	a.	San Gabriel River above Morris Dam	250	30	10	0.6	2
	b.	San Gabriel River between Morris Dam and Ramona Blvd.	450	100	100	0.5	8
	c.	San Gabriel River and tributaries – between Ramona Blvd. and Valley Blvd.	750	300	150	1.0	8
	d.	San Gabriel River – between Valley Blvd. and Firestone Blvd. Includes Whittier Narrows Flood Control Basin and San Jose Creek - downstream of 71 Freeway only.	750	300	180	1.0	8
	e.	San Jose Creek and tributaries - upstream of 71 Freeway	750	300	150	1.0	8
	f.	San Gabriel River - between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street). Includes Coyote Creek.			no waterbody specific limits		
	g.	All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	---	---
9.	Los Angeles Harbor/ Long Beach Harbor Watershed				no waterbody specific limits		
10.	Santa Ana River Watershed						
	a.	San Antonio Creek***	225	25	---	---	---
	b.	Chino Creek***	---	---	---	---	---
11.	Island Watercourses:						
	a.	Anacapa Island			no waterbody specific limits		
	b.	San Nicolas Island			no waterbody specific limits		
	c.	Santa Barbara island			no waterbody specific limits		
	d.	Santa Catalina Island			no waterbody specific limits		
	e.	San Clemente Island			no waterbody specific limits		

*** These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by the Santa Ana Regional Board. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the CWA and the CWC and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [***40 CFR §122.41(a)***].

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [***40 CFR §122.41(a)(1)***].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have bee necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [***40 CFR §122.41(c)***].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [***40 CFR §122.41(d)***].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [***40 CFR §122.41(e)***].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [***40 CFR §122.41(g)***].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [***40 CFR §122.5(c)***].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), USEPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [***40 CFR §122.41(i)***] [***CWC 13383(c)***]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [***40 CFR §122.41(i)(1)***];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [40 CFR §122.41(i)(2)];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [40 CFR §122.41(i)(3)];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [40 CFR §122.41(i)(4)].

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility [***40 CFR §122.41(m)(1)(i)***].

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [***40 CFR §122.41(m)(1)(ii)***].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [***40 CFR §122.41(m)(2)***].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [***40 CFR §122.41(m)(4)(i)***]:

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [***40 CFR §122.41(m)(4)(A)***];

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [40 CFR §122.41(m)(4)(B)]; and

   c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [40 CFR §122.41***(m)(4)(C)***].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [***40 CFR §122.41(m)(4)(ii)***].

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [***40 CFR §122.41(m)(3)(i)***].

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard

Provisions - Reporting V.E below [***40 CFR §122.41(m)(3)(ii)***].

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [***40 CFR §122.41(n)(1)***].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [***40 CFR §122.41(n)(2)***].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [***40 CFR §122.41(n)(3)***]:

    a. An upset occurred and that the Discharger can identify the cause(s) of the upset [***40 CFR §122.41(n)(3)(i)***];

    b. The permitted facility was, at the time, being properly operated [***40 CFR §122.41(n)(3)(i)***];

    c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [***40 CFR §122.41(n)(3)(iii)***]; and

    d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [***40 CFR §122.41(n)(3)(iv)***].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [***40 CFR §122.41(n)(4)***].

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [***40 CFR §122.41(f)***].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [***40 CFR §122.41(b)***].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [***40 CFR §122.41(l)(3)***] [***40 CFR §122.61***].

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [***40 CFR §122.41(j)(1)***].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [***40 CFR §122.41(j)(4)***] [***40 CFR §122.44(i)(1)(iv)***].

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [***40 CFR §122.41(j)(2)***].

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements [***40 CFR §122.41(j)(3)(i)***];

2. The individual(s) who performed the sampling or measurements [***40 CFR §122.41(j)(3)(ii)***];

3. The date(s) analyses were performed [***40 CFR §122.41(j)(3)(iii)***];

4. The individual(s) who performed the analyses [***40 CFR §122.41(j)(3)(iv)***];

5. The analytical techniques or methods used [***40 CFR §122.41(j)(3)(v)***]; and

6. The results of such analyses [***40 CFR §122.41(j)(3)(vi)***].

C. Claims of confidentiality for the following information will be denied [*40 CFR §122.7(b)*]:

1. The name and address of any permit applicant or Discharger [***40 CFR §122.7(b)(1)***]; and

2. Permit applications and attachments, permits and effluent data [***40 CFR §122.7(b)(2)***].

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, SWRCB, or USEPA within a reasonable time, any information which the Regional Water Board, SWRCB, or USEPA may request to determine whether

cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, SWRCB, or USEPA copies of records required to be kept by this Order [***40 CFR §122.41(h)***] [***CWC 13267***].

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, SWRCB, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [***40 CFR §122.41(k)***].

2. All permit applications shall be signed as follows:

   a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [***40 CFR §122.22(a)(1)***];

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [***40 CFR §122.22(a)(2)***]; or

   c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [***40 CFR §122.22(a)(3)***].

3. All reports required by this Order and other information requested by the Regional Water Board, SWRCB, or USEPA shall be signed by a person described in paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in paragraph (2.) of this provision [***40 CFR §122.22(b)(1)***];

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [***40 CFR §122.22(b)(2)***]; and

   c. The written authorization is submitted to the Regional Water Board, SWRCB, or USEPA [***40 CFR §122.22(b)(3)***].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, SWRCB or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR §122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [***40 CFR §122.22(d)***].

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [***40 CFR §122.41(l)(4)***].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or SWRCB for reporting results of monitoring of sludge use or disposal practices [***40 CFR §122.41(l)(4)(i)***].

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [***40 CFR §122.41(l)(4)(ii)***].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [***40 CFR §122.41(l)(4)(iii)***].

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [***40 CFR §122.41(l)(5)***].

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [***40 CFR §122.41(l)(6)(i)***].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [***40 CFR §122.41(l)(6)(ii)***]:

a. Any unanticipated bypass that exceeds any effluent limitation in this Order [***40 CFR §122.41(l)(6)(ii)(A)***].

b. Any upset that exceeds any effluent limitation in this Order [***40 CFR §122.41(l)(6)(ii)(B)***].

c. Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours [***40 CFR §122.41(l)(6)(ii)(C)***].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [***40 CFR §122.41(l)(6)(iii)***].

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [***40 CFR §122.41(l)(1)***]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR §122.29(b) [***40 CFR §122.41(l)(1)(i)***]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [***40 CFR §122.41(l)(1)(ii)***].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [***40 CFR §122.41(l)(1)(iii)***].

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or SWRCB of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [***40 CFR §122.41(l)(2)].***

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting E.3, E.4, and E.5 at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [***40 CFR §122.41(l)(7)***].

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, SWRCB, or USEPA, the Discharger shall promptly submit such facts or information [***40 CFR §122.41(l)(8)***].

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water

Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions [***40 CFR §122.41(a)(2)***] [***CWC 13385 and 13387***].

B. Any person may be assessed an administrative penalty by the Regional Water Board for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000 [***40 CFR §122.41(a)(3)***].

C. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both [***40 CFR §122.41(j)(5)***].

D. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both [***40 CFR §122.41(k)(2)***].

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [***40 CFR §122.42(a)***]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [***40 CFR §122.42(a)(1)***]:

a. 100 micrograms per liter (µg/L) [***40 CFR §122.42(a)(1)(i)***];

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [***40 CFR §122.42(a)(1)(ii)***];

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [***40 CFR §122.42(a)(1)(iii)***]; or

d. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [***40 CFR §122.42(a)(1)(iv)***].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [***40 CFR §122.42(a)(2)***]:

a. 500 micrograms per liter (µg/L) [***40 CFR §122.42(a)(2)(i)***];

b. 1 milligram per liter (mg/L) for antimony [***40 CFR §122.42(a)(2)(ii)***];

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [***40 CFR §122.42(a)(2)(iii)***]; or

a. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [*40 CFR §122.42(a)(2)(iv)*].

Publicly-Owned Treatment Works (POTWs) (Not Applicable)

ATTACHMENT G

SWRCB Minimum Levels in ppb (µg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

ATTACHMNET G (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3' Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	

ATTACHMNET G (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

ATTACHMNET G (continued)

Table 2d – PESTICIDES – PCBs*	GC
4,4’-DDD	0.05
4,4’-DDE	0.05
4,4’-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

California Regional Water Quality Control Board
Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

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ORDER NO. R4-2007-0022
GENERAL NPDES PERMIT NO. CAG914001

WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES OF TREATED GROUNDWATER FROM INVESTIGATION AND/OR CLEANUP OF VOLATILE ORGANIC COMPOUNDS CONTAMINATED-SITES TO SURFACE WATERS IN COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES

This Order was adopted by the Regional Water Board on:	**April 5, 2007**
This Order shall become effective on:	**June 5, 2007**
This Order shall expire on:	**April 5, 2012**
The U.S. Environmental Protection Agency and the Regional Water Quality Control Board have classified discharges covered under this General NPDES Permit as a minor discharge.	

IT IS HEREBY ORDERED, that Order No. R4-2002-0107 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the federal Clean Water Act, and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Jonathan Bishop, Executive Officer, do hereby certify the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 5, 2007

Jonathan Bishop, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

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LIST OF ATTACHMENTS

I. DISCHARGE INFORMATION

The presence of volatile organic compounds (VOCs) in the groundwater at various sites throughout the region causes, or threatens to cause, adverse impacts to existing and potential beneficial uses of the underlying groundwater. Remediation of these sites includes similar groundwater treatment and monitoring requirements. Waste discharges from these sites will be more efficiently regulated with a general permit rather than individual permits. Waste waters discharged from the investigation and/or cleanup of the groundwater involving VOCs contamination include, but are not limited to, the following:

1. Treated groundwater from the cleanup and/or construction dewatering activities at a site impacted by VOCs only, or by VOCs commingled with petroleum fuel hydrocarbons at an underground storage tank (UST) site. Such UST site may have storm water collected in fuel storage secondary containment tanks and fuel spill washwater that contains similar contaminants as those from the investigation/cleanup of VOCs contaminated groundwater.
2. Groundwater pumped as an aid in the containment and extraction of VOCs-contaminated groundwater.
3. Groundwater extracted during short-term and long-term pumping test/aquifer testing.
4. Groundwater generated from well development and purging of wells prior to sampling.
5. Sampling equipment decontamination water.
6. Subterranean seepage dewatering.

Either aeration processes or adsorption processes (or combination of the two) are the treatment processes typically used to remove the volatile organic compounds from groundwater. When designed properly and operated efficiently, most aeration and/or granular activated carbon systems can lower the concentration of VOCs and petroleum pollutants to below the detection limits. Limits established in the Order for VOCs and the petroleum pollutants can be met consistently if these treatment systems (or enhancements thereto) are properly operated and maintained.

II. NOTIFICATION REQUIREMENTS

A. General Permit Application

To be authorized to discharge under this Order, the Discharger must apply for enrollment under the General National Pollutant Discharge Elimination System (NPDES) permit by submitting to the Regional Water Board a Notice of Intent (NOI) form and fee payable to: State Water Resources Control Board.

a. Notice of Intent

1. Both Existing and New Dischargers eligible to seek coverage under the General NPDES permit shall submit to the Executive Officer a complete NOI, including all information required by the NOI. The NOI is incorporated as Attachment C to this Order.
2. The Discharger must obtain and analyze (using appropriate sampling and laboratory methods) a representative sample(s) of the groundwater to be treated and discharged under this Order. The analytical method(s) used shall be capable of achieving a

detection limit at or below the minimum level[1], otherwise, a written explanation shall be provided. The analytical result shall be submitted with the NPDES application. The data shall be tabulated and shall include the results for every constituent listed on Attachment E.

3. The NOI for a new discharger shall be accompanied by an enrollment fee in accordance with the Section 2200 *Annual Fee Schedules* of California Code of Regulations Title 23, Division 3, Chapter 9. The check or money order shall be made payable to the "State Water Resources Control Board".

4. Upon request, the Discharger shall submit any additional information that the Executive Officer deems necessary to determine whether the discharge meets the criteria for coverage under this Order, or to prescribe an appropriate monitoring and reporting program, or both.

b. Deadline for Submission

1. Renewal of permits for existing Dischargers covered under individual permits that meet the eligibility criteria requirement and have submitted a Report of Waste Discharge (ROWD) or an NOI will consist of a letter of determination from the Executive Officer of coverage under this Order.

2. Existing Dischargers that were authorized to discharge under Order R4-2002-0107 will be sent an NOI form that must be completed and returned to the Regional Water Board within 60 days of receipt; otherwise, permit coverage may be revoked. Existing Dischargers enrolling under this Order are required to collect representative groundwater sample(s) and analyze the samples for all the constituents listed on Attachment E. Dischargers shall conduct this analysis and submit the result with the NOI; otherwise, the existing authorization may be terminated. If the analytical test results of any constituent other than VOCs or other constituents limited in Section II. B. of this Order exceeds the water quality screening criteria listed on Attachment E, the discharge will be considered ineligible for enrollment. The discharger will be enrolled under other appropriate General NPDES Permit or an individual permit. Thereafter, the existing enrollment will be terminated.

3. New Dischargers shall file a complete NOI at least 45 days before commencement of the discharge.

c. Failure to Submit a NOI

Existing Dischargers who fail to submit a complete NOI by the deadline established herein will be deemed as out of compliance with the General NPDES Permit and subject to all penalties allowable pursuant to applicable provisions of the Clean Water Act and the California Water Code including Section 13261 thereof.

d. Authorization of Coverage

Upon receipt of the application, the Executive Officer shall determine the applicability of this Order to such a discharge. If the discharge is eligible, the Executive Officer shall notify the Discharger that the discharge is authorized under the terms and conditions of this Order and prescribe an appropriate monitoring and reporting program. For new discharges, the

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[1] The minimum levels are those published by the State Water Quality Control Board in the Policy for the Implementation of Toxic Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, March 2, 2000. See attached Appendix A.

discharge shall not commence until receipt of the Executive Officer's written determination of eligibility for coverage under this General NPDES Permit. The Executive Officer may require a Discharger to comply with the conditions of this General NPDES Permit even if the Discharger has not submitted an NOI to be covered by the General NPDES Permit.

e. Notice of Start-Up

New Dischargers shall notify the Regional Water Board staff of the time and date for commencement of the discharge(s) authorized under the General NPDES Permit at least 7 days prior to initiating a discharge.

B. Eligibility Requirements

a. Eligibility

1. This order covers discharges to surface waters of treated groundwater and other wastewaters from the investigation, cleanup, or construction dewatering of VOCs-only or VOCs commingled with petroleum fuel hydrocarbons contaminated groundwater.
2. To be covered under this Order, a Discharger must demonstrate that:
   a. Pollutant concentrations in the discharge shall not cause violation of any applicable water quality objective for the receiving waters, including discharge prohibitions;
   b. The discharge shall not exceed the water quality criteria for toxic pollutants (Section V. A. and Attachment B. of this Order), and there shall be no reasonable potential to cause or contribute to an excursion above the criteria.
   c. A representative sample of the contaminated groundwater to be treated and discharged does not exceed the water quality screening criteria for any constituent listed on Attachment E, other than those for which limitations are established in Section II.
   d. The discharge shall not cause acute nor chronic toxicity in receiving waters;
   e. The discharge shall pass through a treatment system designed and operated to reduce the concentration of contaminants to meet the effluent limitations of this Order; and
   f. The Discharger shall be able to comply with the terms or provisions of this General NPDES Permit.

b. Ineligibility

Discharges of treated groundwater impacted by heavy metals (excluding lead, chromium III and chromium VI) or other toxic pollutants not limited in this permit are not eligible for discharge under this General NPDES Permit.

C. Exclusion of Coverage

a. Termination of Discharges

Dischargers shall submit a Notice of Termination (NOT) when coverage under this General NPDES Permit is no longer needed. An NOT is a letter or form that lists the Waste Discharge Identification Number (WDID), the name and address of the owner of the facility, and is signed and dated by the owner certifying that the Discharge associated with the General NPDES Permit has been eliminated. Upon submission, the Discharger is no longer authorized to discharge wastewater associated with this General NPDES Permit.

b. Changes from Authorization Under General Permit to Individual Permit

Dischargers already covered under the NPDES program, whether by general or individual permit, may elect to continue coverage under the existing permit or may submit a complete NOI for coverage under this General NPDES Permit. Dischargers who submit a complete application under this General NPDES Permit are not required to submit an individual permit application. The Regional Water Board may request additional information and determine that a Discharger is not eligible for coverage under this General NPDES Permit and would be better regulated under an individual or other general NPDES permit or, for discharges to land, under waste discharge requirements (WDRs). If Regional Water Board issues an NPDES permit or WDRs, the applicability of this General NPDES Permit to the specified discharge is immediately terminated on the effective date of the NPDES permit or WDRs.

c. Transferring Ownership

Coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

D. Basis for Fee

Title 23 of the California Code of Regulations (CCR), Division 3, Chapter 9, Article 1, section 2200, *Annual Fee Schedule,* requires that all discharges subject to a specific general permit shall pay the same annual fee.

Discharges covered under this General NPDES Permit have a Threat to Water Quality rating of 1.A. Discharge requires treatment systems to meet toxic priority pollutant limits that could impair the designated beneficial uses of the receiving water if limits are violated.

E. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

III. FINDINGS

A. Legal Authorities.

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA), and chapter 5.5, division 7 of the California Water Code (CWC, commencing with section 13370). It shall serve as an NPDES permit for point source discharges of wastewaters generated from the investigation or cleanup of volatile organic compounds (VOCs) in the groundwater to surface waters under the jurisdiction of the California Water Quality Control Board-Los Angeles Regional (Regional Water Board). This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the CWC (commencing with section 13260).

B. Background

The State Water Resources Control Board (State Water Board) has been authorized by the USEPA, pursuant to Section 402 of the CWA, to administer the NPDES program in California since 1973. The procedures for the State Water Board and the Regional Water Board to issue NPDES permits pursuant to NPDES regulations at section 122 &123, title 40 of the Code of Federal Regulations[2], were established through the NPDES Memorandum of Agreement between the USEPA and the State Water Board on September 22, 1989.

Section 122.28 provides for issuance of General NPDES permits to regulate a category of point sources if the sources a) involve the same or substantially similar types of operations; b) discharge the same type of waste; c) require the same type of effluent limitations or operating conditions; d) require similar monitoring; and e) are more appropriately regulated under a general permit rather than individual permits. General NPDES permits enable Regional Water Board staff to expedite the processing of requirements, simplify the application process for Dischargers, better utilize limited staff resources, and avoid the expense and time involved in repetitive public noticing, hearings, and permit adoptions.

On May 12, 1997, this Regional Water Board adopted the General NPDES Permit and WDRs for Discharges of Volatile Organic Compound Contaminated Groundwater to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (NPDES No. CAG914001, Order No. 97-044). The General NPDES Permit covered discharges of groundwater to surface waters resulting from the cleanup of VOCs contaminated-groundwater and similar discharges. On May 23, 2002, the Regional Water Board adopted Order No. R4-2002-0107 and rescinded Order No. 97-044. Approximately 26 dischargers are currently enrolled under the General NPDES Permit.

C. Pollutants of Concern

The VOCs covered by the Order include:

Table 1. Pollutants of Concern

acetone	acrolein	acrylonitrile
benzene	bromoform	carbon tetrachloride
chlorobenzene	chlorodibromomethane	chloroethane
chloroform	dichlorobromomethane	1,1-dichloroethane
1,2-dichloroethane	1,1-dichloroethylene	1,2-dichloropropane
1,3-dichloropropylene	di-isopropyl ether	1,4-dioxane
ethylbenzene	ethylene dibromide	lead
methyl bromide	methyl chloride	methylene chloride
methyl ethyl ketone	methyl tertiary butyl ether	naphthalene
n-nitrosodimethyl amine	perchlorate	tertiary butyl alcohol
1,1,2,2-tetrachloroethane	tetrachloroethylene	toluene
total petroleum hydrocarbons	1,2-trans-dichloroethylene	1,1,1-trichloroethane

[2] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

1,1,2-trichloroethane	trichloroethylene	vinyl chloride
xylenes	residual chlorine	chromium III
chromium VI		
Only those constituents that show reasonable potential will be limited in the discharge as specified in the Fact Sheet of the enrollment letter.		

D. Incorporation of Attachments

The Regional Water Board developed the requirements in this Order based on information submitted as part of the permitting application, through monitoring and reporting reports, and other available information. The background information and rationale for the Order requirements are contained in Attachment F, Fact Sheet and constitutes part of the Findings for this Order, which is hereby incorporated into this Order. Attachments A through E are also hereby incorporated into this Order.

E. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. Technology-Based Effluent Limitations

Section 301(b) of the CWA and implementing USEPA permit regulations at Section 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Section125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

The effluent limitations from groundwater cleanup projects regulated under this permit are calculated assuming no dilution. For most practical purposes, discharges from groundwater cleanups do not flow directly into receiving waters with enough volume to consider dilution credit or to allocate a mixing zone. Most discharges of treated groundwater regulated under this general permit are to storm drain systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams. These discharges, therefore, have the potential to recharge ground waters protected as drinking waters.

Because this Order is intended to serve as a general NPDES permit and covers discharges to all surface waters in the Los Angeles Region, the effluent limitations established pursuant to this general order are established to protect the most protective water quality objective for the surface water beneficial uses in the Los Angeles Region.

G. Water Quality-Based Effluent Limitations

Section 301(b) of the CWA and Section122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. NPDES regulations in Section122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in Section122.44(d)(1)(vi).

H. Water Quality Control Plans

The Regional Water Board adopted a revised basin plan, *Water Quality Control Plan, Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) on June 13, 1994 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan on Page 2-4 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

I. Receiving Water Beneficial Uses

The Basin Plan contains water quality objectives for, and lists the beneficial uses of, specific water bodies (receiving waters) in the Los Angeles Region. Typical beneficial uses covered by this Order include the following:

1. Inland surface waters above an estuary - municipal and domestic supply, industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, aquaculture, warm and cold freshwater habitats, inland saline water and wildlife habitats, water contact and noncontact recreation, fish migration, and fish spawning.
2. Inland surface waters within and below an estuary - industrial service supply, marine and wetland habitats, estuarine and wildlife habitats, water contact and noncontact recreation, commercial and sport fishing, aquaculture, migration of aquatic organisms, fish migration, fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.
3. Coastal Zones (both nearshore and offshore) - industrial service supply, navigation, water contact and noncontact recreation, commercial and sport fishing, marine habitat, wildlife habitat, fish migration and spawning, shellfish harvesting, and rare, threatened, or endangered species habitat.

Requirements of this Order implement the Basin Plan. The Regional Water Board has developed a number of Total Maximum Daily Load (TMDL) for impaired waterbodies in the Los Angeles Region to reduce pollutants which are identified in CWA section 303(d) list. These pollutants are classified into the categories of bacteria, chloride, coliforms, metals, toxics, and trash. All of the TMDL requirements are considered and those applicable to this Order are implemented in the discharge limitations. A detailed analysis of the availability and applicability of the Regional Water Board's TMDL requirements are included in the Fact Sheet of this Order.

J. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

K. State Implementation Policy

On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

L. Compliance Schedules and Interim Requirements. (Not Applicable)

M. Alaska Rule.

On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes. (40 C.F.R. § 131.21; 65 Fed. Reg. 24641 (April 27, 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000 may be used for CWA purposes, whether or not approved by USEPA.

N. Stringency of Requirements for Individual Pollutants.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR-SIP, which was approved by USEPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

O. Antidegradation Policy

NPDES regulations in Section131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of Section131.12 and State Water Board Resolution No. 68-16.

P. Anti-Backsliding Requirements.

Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at Section122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

Q. Monitoring and Reporting.

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. A Monitoring and Reporting Program (MRP) is tailored according to discharger's individual situation and is provided together with the coverage authorization letter signed by the Executive Officer of the Regional Water Board.

R. Standard and Special Provisions.

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

S. Notification of Interested Parties.

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

T. Consideration of Public Comment.

The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet of this Order.

IV. DISCHARGE PROHIBITIONS

1. Discharges of any waste at a location different from that described in this Order are prohibited.
2. Discharges of any waste, other than those which meet eligibility requirements in Section II. B. of this Order are prohibited, unless the Discharger is regulated by another NPDES permit or discharged to a permitted facility.
3. Discharges of extracted and/or treated groundwater in excess of the flow rates as authorized by the Executive Office of the Regional Water Board are prohibited.
4. Discharges that contain any substances in concentrations toxic to human, animal, plant, or aquatic life are prohibited.
5. Discharges causing a violation of any applicable water quality standards for receiving waters as required by the CWA and regulations adopted thereunder are prohibited.
6. Pollution, contamination, or nuisance as defined by Section 13050 of the CWC, which are created by the treatment or the discharge of pollutants authorized under this Order, are prohibited.
7. Discharges of any radiological, chemical, or biological warfare agent or high level radiological waste are prohibited.
8. Bypass or overflow of untreated or partially treated contaminated groundwater to waters of the State either at the treatment system or from any of the collection or transport systems or pump stations tributary to the treatment system is prohibited.

V. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations

1. Discharge of an effluent from the outfall location listed in the Fact Sheet of the enrollment letter in excess of the following limitations is prohibited: (The Regional Water Board Executive Officer shall list applicable effluent limitations in the Fact Sheet of the enrollment letter for toxic constituents in Table below.)

Table 2. Effluent Limitations

Parameters	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Total Suspended Solids	mg/L	50	150
Turbidity	NTU	50	150
BODs 20°C	mg/L	20	30
Oil and Grease	mg/L	10	15
Settleable Solids	ml/L	0.1	0.3
Sulfides	mg/L		1.0
Phenols	mg/L		1.0
Residual Chlorine	mg/L		0.1
Acetone	µg/L		700

Parameters	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
Acrolein	µg/L		100
Acrylonitrile	µg/L		0.059
Benzene	µg/L		1.0
Bromoform	µg/L		4.3
Carbon tetrachloride	µg/L		0.25*
Chlorobenzene	µg/L		30
Chlorodibromomethane	µg/L		0.401*
Chloroethane	µg/L		100
Chloroform	µg/L		100
Dichlorobromomethane	µg/L		0.56
1, 1-Dichloroethane	µg/L		5
1 ,2-Dichloroethane	µg/L		0.38*
1, 1-Dichloroethylene	µg/L		0.057*
1 ,2-Dichloropropane	µg/L		0.52
1 ,3-Dichloropropylene	µg/L		0.5
Di-isopropyl ether (DIPE)	µg/L		0.8
1,4-Dioxane	µg/L		3
Ethylbenzene	µg/L		700
Ethylene dibromide	µg/L		0.05*
Lead, Total Recoverable	µg/L	2.6	5.2
Chromium III, Total Recoverable	µg/L	50	50
Chromium VI, Total Recoverable	µg/L	8	16
Methyl bromide	µg/L		10
Methyl chloride	µg/L		3
Methylene chloride	µg/L		4.7
Methyl ethyl ketone (MEK)	µg/L		700
Methyl tertiary butyl ether (MTBE)	µg/L		5
Naphthalene	µg/L		21
N-Nitrosodimethyl amine (NDMA)	µg/L		0.00069*
Perchlorate	µg/L		4
Tertiary butyl alcohol (TBA)	µg/L		12
1,1,2,2- Tetrachloroethane	µg/L		0.17*
Tetrachloroethylene	µg/L		0.8
Toluene	µg/L		150
Total petroleum hydrocarbons*	µg/L		100

Parameters	Units	Effluent Limitations	
		Average Monthly	Maximum Daily
1,2- Trans-trichloroethylene	µg/L		10
1,1,1- Trichloroethane	µg/L		200
1,1,2- Trichloroethane	µg/L		0.60
Trichloroethylene	µg/L		2.7
Vinyl chloride	µg/L		0.5
Xylenes	µg/L		1750

NOTE: *. If reported detection level is greater than effluent limit, then a non-detect result using 0.5 µg/L detection level is deemed to be in compliance.
**. Toxicity of this chemical increases with decreasing hardness concentration. The figure in the table is determined based on effluent $CaCO_3$ concentration of 100 mg/L.

2. The pH of the discharge shall at all times be within the range of 6.5 and 8.5.
3. The temperature of the discharge shall not exceed 100ºF.
4. The discharge of an effluent with mineral and nitrogen constituents in excess of applicable limits given in Attachment B is prohibited. In the letter of determination, the Executive Officer shall indicate the watershed/stream reach limitations in Attachment B applicable to the particular discharge.
5. Pass-through or uncontrollable discharges of PCBs shall not exceed daily average concentrations of 14 ng/L into fresh waters or 30 ng/L into estuarine waters.
6. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test less than 70% survival.
7. The discharge shall meet effluent limitations and toxic and effluent standards established pursuant to sections 301, 302, 304, 306, and 307 of the CWA, and amendments thereto.

B. Land Discharge Specifications (Not Applicable)

C. Reclamation Specifications (Not Applicable)

VI. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order.

1. The discharge shall not cause the following to be present in receiving waters:
   a. Toxic pollutants at concentrations that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.

b. Biostimulatory substances at concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.

c. Chemical substances in amounts that adversely affect any designated beneficial use.

d. Visible floating materials, including solids, liquids, foams, and scum.

e. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the receiving water or on objects in the water.

f. Suspended or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses.

g. Taste or odor-producing substances in concentrations that alter the natural taste, odor, and/or color of fish, shellfish, or other edible aquatic resources; cause nuisance; or adversely affect beneficial uses.

h. Substances that result in increases of $BOD_5 20^{\circ}C$ that adversely affect beneficial uses.

i. Fecal coliform concentrations which exceed a log mean of 200 per 100 ml (based on a minimum of not less than four samples for any 30-day period), nor shall more than 10% of total samples during any 30-day period exceed 400 per 100 ml.

j. Concentrations of toxic substances that are toxic to, or cause detrimental physiological responses in, human, animal, or aquatic life.

2. The discharge shall not cause the following to occur in the receiving waters:

a. The dissolved oxygen to be depressed below:

WARM[3] designated waters	5 mg/L
COLD[3] designated waters	6 mg/L
COLD and SPWN[3] designated waters	7 mg/L

b. The pH to be depressed below 6.5 or raised above 8.5, and the ambient pH levels to be changed from natural conditions in inland waters more than 0.5 units or in estuaries more than 0.2 units.

c. The temperature at any time or place and within any given 24-hour period to be altered by more than $5^{\circ}F$ above natural temperature; but at no time be raised above $80^{\circ}F$ for waters with a beneficial use of WARM (Warm Freshwater Habitat).

d. The turbidity to increase to the extent that such an increase causes nuisance or adversely affects beneficial uses; such increase shall not exceed 20% when the natural turbidity is over 50 NTU or 10% when the natural turbidity is 50 NTU or less.

e. Residual chlorine in concentrations that persist and impairs beneficial uses.

f. Any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses or increase pesticide concentration in bottom sediments or aquatic life.

3. The discharge shall not alter the color, create a visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters.

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[3] Beneficial Uses: WARM - Warm Freshwater Habitat; COLD - Cold Freshwater Habitat; SPWN - Spawning, Reproduction, and/or Early Development.

4. The discharge shall not degrade surface water communities and populations, including vertebrate, invertebrate, and plant species.

5. The discharge shall not damage, discolor, nor cause formation of sludge deposits on flood control structures or facilities nor overload their design capacity.

6. The discharge shall not cause problems associated with breeding of mosquitos, gnats, black flies, midges, or other pests.

7. Create nuisance, or adversely effect beneficial uses of the receiving water.

8. Violation of any applicable water quality standards for receiving waters adopted by the Regional Water Board or State Water Board. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, the Regional Water Board will revise or modify this Order in accordance with such standards.

B. Groundwater Limitations (Not Applicable)

VII. PROVISIONS

Standard Provisions, which apply to all NPDES permits in accordance with Section 122.41 & 122.42, are included in this Order. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under Section122.42. The Regional Water Board has also provided in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.
2. The Discharger shall comply with the following provisions:
   a. The Executive Officer may require any discharger authorized under this Order to apply for and obtain an individual NPDES permit with more specific requirements. The Executive Officer may require any discharger authorized to discharge under this permit to apply for an individual permit only if the discharger has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual permit, the authority to discharge under this General Permit is no longer applicable.
   b. Prior to application, the discharger shall submit for Executive Officer's approval the list of chemicals and proprietary additives that may affect the discharge, including rates/quantities of application, compositions, characteristics, and material safety data sheets, if any.
   c. Oil or oily materials, chemicals, refuse, or other materials that may cause pollution in storm water and/or urban runoff shall not be stored or deposited in areas where they may be picked up by rainfall/urban runoff and discharged to surface waters. Any spill of such materials shall be contained, removed and cleaned immediately.

d. This Order neither exempt the discharger from compliance with any other laws, regulations, or ordinances that may be applicable, nor legalize the waste disposal facility.

e. The discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

f. Pursuant to 40 CFR section 122.61(b), coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

g. Any discharge authorized under this Order may request to be excluded from the coverage of this Order by applying for an individual permit.

h. Pursuant to Section 122.28 (b) (2), the Executive Officer may require a Discharger to comply with the conditions of this General NPDES Permit, and that Discharger is therefore obligated to meet all discharge limitations and monitoring and reporting requirements of the General NPDES Permit, even if the Discharger has not submitted an NOI to be covered by the General NPDES Permit. The Executive Officer may require an existing Discharger to submit a new NOI, may revise an existing Discharger's monitoring and reporting programs, may require an existing Discharger to participate in a regional monitoring program, or any combination of the foregoing.

i. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

j. For the purpose of renewal of existing individual NPDES permits with this General NPDES Permit, provided that all the conditions of this General NPDES Permit are met, renewal is effective upon issuance of a notification by the Executive Officer and issuance of a new monitoring program.

k. When an individual NPDES permit with more specific requirements is issued to a Discharger, the applicability of this Order to that Discharger is automatically terminated on the effective date of the individual permit.

l. **Expiration Date and Continuation of this Order** This Order expires on April 5, 2012; however, for those dischargers authorized to discharge under this Order, it shall continue in full force and effect until a new order is adopted. Notwithstanding Provision k of Order R4-2002-0107, discharges that are regulated under the Order on or before April 5, 2007 and have submitted a completed NOI form may continue under the expiring Order until enrollment under this current Order.

m. **Reauthorization** Upon re-issuance of a new general permit order, dischargers authorized under this Order shall file a Notice of Intent within 60 days of notification by the Executive Officer.

n. **Rescission** Except for enforcement purposes, Orders No. R4-2002-0107, adopted by this Regional Board on May 23, 2002, is hereby rescinded, although dischargers presently enrolled under the Order may continue coverage in conformance with Part II. A. b. of this Order until enrolled under this Order.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the MRP accompanying the transmittal letter for enrollment under this General NPDES Permit. If there is any conflict between provisions in the MRP and the Standard Provisions, those provisions in the MRP shall prevail.

C. Special Provisions

1. Reopener Provisions

Pursuant to 40 CFR sections 122.62 and 122.63, this Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order. In addition, if receiving water quality is threatened due to discharges covered under this permit, this permit will be reopened to incorporate more stringent effluent limitations for the constituents creating the threat. TMDLs have not been developed for all the parameters and receiving waters on the 303(d) list. When TMDLs are developed this permit may be reopened to incorporate appropriate limits. In addition, if TMDL identifies that a particular discharge covered under this permit is a load that needs to be reduced; this permit will be reopened to incorporate appropriate TMDL based limit and/or to remove any applicable exemptions.

2. Special Studies, Technical Reports and Additional Monitoring Requirements (Not Applicable)

3. Best Management Practices of Pollution Prevention (Not Applicable)

4. Construction, Operation and Maintenance Specifications (Not Applicable)

5. Special Provisions for Municipal Facilities (POTWs) (Not Applicable)

6. Compliance Schedules (Not Applicable)

7. Other Special Provisions (Not Applicable)

VIII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order will be determined as specified below:

A. General.

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Appendix A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Multiple Sample Data.

When determining compliance with an AMEL or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

C. Average Monthly Effluent Limitation (AMEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar month exceeds the AMEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

D. Average Weekly Effluent Limitation (AWEL).

If the average <(or when applicable, the median determined by subsection B above for multiple sample data)> of daily discharges over a calendar week exceeds the AWEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

E. Maximum Daily Effluent Limitation (MDEL).

If a daily discharge exceeds the MDEL for a given parameter, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

F. Instantaneous Minimum Effluent Limitation.

If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

G. Instantaneous Maximum Effluent Limitation.

If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

Appendix A

SWRCB Minimum Levels in ppb (μg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Appendix A (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3' Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	

Appendix A (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

Appendix A (continued)

Table 2d – PESTICIDES – PCBs*	GC
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

ATTACHMENT A – DEFINITIONS, ACRONYMS & ABBREVIATIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative pollutants are those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (*CV*) is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters include~~d~~, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\Sigma[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

- x is the observed value;
- μ is the arithmetic mean of the observed values; and
- n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ACRONYMS & ABBREVIATIONS

AMEL	Average Monthly Effluent Limitation
B	Background Concentration
BAT	Best Available Technology Economically Achievable
Basin Plan	Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practices
BMPP	Best Management Practices Plan
BPJ	Best Professional Judgment
BOD	Biochemical Oxygen Demand
BPT	Best practicable treatment control technology
C	Water Quality Objective
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTR	California Toxics Rule
CV	Coefficient of Variation
CWA	Clean Water Act
CWC	California Water Code
DMR	Discharge Monitoring Report
DNQ	Detected But Not Quantified
ECA	Effluent Concentration Allowance
ELAP	California Department of Health Services Environmental Laboratory Accreditation Program
ELG	Effluent Limitations, Guidelines and Standards
gpd	gallons per day
IC	Inhibition Coefficient
IC_{15}	Concentration at which the organism is 15% inhibited
IC_{25}	Concentration at which the organism is 25% inhibited
IC_{40}	Concentration at which the organism is 40% inhibited
IC_{50}	Concentration at which the organism is 50% inhibited
LA	Load Allocations
LOEC	Lowest Observed Effect Concentration
LTA	Long-Term Average
MDEL	Maximum Daily Effluent Limitation
MDL	Method Detection Limit
MEC	Maximum Effluent Concentration
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
ML	Minimum Level
MRP	Monitoring and Reporting Program
ND	Not Detected
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTR	National Toxics Rule
OAL	Office of Administrative Law
POTW	Publicly-Owned Treatment Works
PMP	Pollutant Minimization Plan
QA	Quality Assurance

QA/QC	Quality Assurance/Quality Control
RPA	Reasonable Potential Analysis
RWQCB	Regional Water Quality Control Board
SCP	Spill Contingency Plan
SIP	State Implementation Policy (Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California)
SMR	Self Monitoring Reports
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Test Acceptability Criteria
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document
TSS	Total Suspended Solid
TU	Toxicity Unit
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirements
WET	Whole Effluent Toxicity
WLA	Waste Load Allocations
WQBEL	Water Quality-Based Effluent Limitation
µg/L	Micrograms per Liter

ATTACHMENT B

Discharge of wastewater within a watershed/stream reach with constituent concentrations in excess of the following daily maximum limits is prohibited:

WATERSHED/STREAM REACH		TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[*] (mg/L)	Nitrogen[**] (mg/L)
1.	Miscellaneous Ventura Coastal Streams:			no waterbody specific limits		
2.	Ventura River Watershed:					
	a. Above Camino Cielo Road	700	300	50	1.0	5
	b. Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5
	c. Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5
	d. Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10
	e. Between Main St. and Ventura River Estuary			no waterbody specific limits		
3.	Santa Clara River Watershed:					
	a. Above Lang gaging station	500	100	50	0.5	5
	b. Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5
	c. Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10
	d. Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	6.8
	e. Between Blue Cut gaging station and A Street, Fillmore	1300	600	100	1.5	5
	f. Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	80	1.5	8.1
	g. Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	---
	h. Between Highway 101 Bridge and Santa Clara River Estuary			no waterbody specific limits		
	i. Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5
	j. Sespe Creek above gaging station, 500 feet downstream from Little Sespe Creek	800	320	60	1.5	5
	k. Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5
4.	Calleguas Creek Watershed:					
	a. Above Potrero Road	850	250	150	1.0	10
	b. Below Potrero Road			no waterbody specific limits		
5.	Miscellaneous Los Angeles County Coastal Streams:			no waterbody specific limits		
	a. Malibu Creek Watershed:	2000	500	500	2.0	10
	b. Ballona Creek Watershed:			no waterbody specific limits		
6.	Dominguez Channel Watershed:			no waterbody specific limits		
7.	Los Angeles River Watershed:					
	a. Los Angeles River and Tributaries-upstream of Sepulveda Flood Control Basin	950	300	150	---	8

(*) Where naturally occurring boron results in concentrations higher than the stated limit, a site-specific limit may be determined on a case-by-case basis.

(**) Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical limits for all streams.

7.	Los Angeles River Watershed (continued):						
	b.	Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only.	950	300	190	---	8
	c.	Other tributaries to Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	---	8
	d.	Los Angeles River - between Figueroa Street and L. A. River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway	1500	350	190	---	8
	e.	Other tributaries to Los Angeles River – between Figueroa Street and Los Angeles River Estuary. Includes Arroyo Seco downstream of spreading grounds.	1550	350	150	---	8
	f.	Rio Hondo - between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180	---	8
	g.	Rio Hondo - upstream of Whittier Narrows Flood Control Basin	750	300	150	---	8
	h.	Santa Anita Creek above Santa Anita spreading grounds	250	30	10	---	8
	i.	Eaton Canyon Creek above Eaton Dam	250	30	10	---	8
	j.	Arroyo Seco above spreading grounds	300	40	15	---	8
	k.	Big Tujunga Creek above Hansen Dam	350	50	20	---	8
	l.	Pacoima Wash above Pacoima spreading grounds	250	30	10	---	8
8.	San Gabriel River Watershed:						
	a.	San Gabriel River above Morris Dam	250	30	10	0.6	2
	b.	San Gabriel River between Morris Dam and Ramona Blvd.	450	100	100	0.5	8
	c.	San Gabriel River and tributaries – between Ramona Blvd. and Valley Blvd.	750	300	150	1.0	8
	d.	San Gabriel River – between Valley Blvd. and Firestone Blvd. Includes Whittier Narrows Flood Control Basin and San Jose Creek - downstream of 71 Freeway only.	750	300	180	1.0	8
	e.	San Jose Creek and tributaries - upstream of 71 Freeway	750	300	150	1.0	8
	f.	San Gabriel River - between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street). Includes Coyote Creek.			no waterbody specific limits		
	g.	All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	---	---
9.	Los Angeles Harbor/ Long Beach Harbor Watershed				no waterbody specific limits		
10.	Santa Ana River Watershed						
	a.	San Antonio Creek***	225	25	---	---	---
	b.	Chino Creek***	---	---	---	---	---
11.	Island Watercourses:						
	a.	Anacapa Island			no waterbody specific limits		
	b.	San Nicolas Island			no waterbody specific limits		
	c.	Santa Barbara island			no waterbody specific limits		
	d.	Santa Catalina Island			no waterbody specific limits		
	e.	San Clemente Island			no waterbody specific limits		

*** These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by the Santa Ana Regional Board. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the CWA and the CWC and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [*40 CFR § 122.41(a)*].

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [*40 CFR § 122.41(a)(1)*].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [*40 CFR § 122.41(c)*].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [*40 CFR § 122.41(d)*].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [*40 CFR § 122.41(e)*].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [*40 CFR § 122.41(g)*].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [*40 CFR § 122.5(c)*].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (Regional Water Board), State Water Resources Control Board (State Water Board), USEPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [*40 CFR § 122.41(i)*] [*CWC 13383(c)*]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [*40 CFR § 122.41(i)(1)*];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [*40 CFR § 122.41(i)(2)*];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [*40 CFR § 122.41(i)(3)*];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [*40 CFR § 122.41(i)(4)*].

G. **Bypass**

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility [*40 CFR § 122.41(m)(1)(i)*].

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [*40 CFR § 122.41(m)(1)(ii)*].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [*40 CFR § 122.41(m)(2)*].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [*40 CFR § 122.41(m)(4)(i)*]:

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [*40 CFR § 122.41(m)(4)(A)*];

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [*40 CFR § 122.41(m)(4)(B)*]; and

   c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [*40 CFR § 122.41(m)(4)(C)*].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [*40 CFR § 122.41(m)(4)(ii)*].

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [*40 CFR § 122.41(m)(3)(i)*].

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below [*40 CFR § 122.41(m)(3)(ii)*].

H. **Upset**

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [*40 CFR § 122.41(n)(1)*].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [*40 CFR § 122.41(n)(2)*].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [*40 CFR § 122.41(n)(3)*]:

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset [*40 CFR § 122.41(n)(3)(i)*];

   b. The permitted facility was, at the time, being properly operated [*40 CFR § 122.41(n)(3)(i)*];

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [*40 CFR § 122.41(n)(3)(iii)*]; and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [*40 CFR § 122.41(n)(3)(iv)*].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [*40 CFR § 122.41(n)(4)*].

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [*40 CFR § 122.41(f)*].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [*40 CFR § 122.41(b)*].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [*40 CFR § 122.41(l)(3)*] [*40 CFR § 122.61*].

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [*40 CFR § 122.41(j)(1)*].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [*40 CFR § 122.41(j)(4)*] [*40 CFR § 122.44(i)(1)(iv)*].

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [*40 CFR § 122.41(j)(2)*].

B. **Records of monitoring information shall include:**

1. The date, exact place, and time of sampling or measurements [*40 CFR § 122.41(j)(3)(i)*];
2. The individual(s) who performed the sampling or measurements [*40 CFR § 122.41(j)(3)(ii)*];
3. The date(s) analyses were performed [*40 CFR § 122.41(j)(3)(iii)*];

4. The individual(s) who performed the analyses [*40 CFR § 122.41(j)(3)(iv)*];

5. The analytical techniques or methods used [*40 CFR § 122.41(j)(3)(v)*]; and

6. The results of such analyses [*40 CFR § 122.41(j)(3)(vi)*].

C. **Claims of confidentiality for the following information will be denied [*40 CFR § 122.7(b)*]:**

1. The name and address of any permit applicant or Discharger [*40 CFR § 122.7(b)(1)*]; and

2. Permit applications and attachments, permits and effluent data [*40 CFR § 122.7(b)(2)*].

V. STANDARD PROVISIONS – REPORTING

A. **Duty to Provide Information**

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order [*40 CFR § 122.41(h)*] [*CWC 13267*].

B. **Signatory and Certification Requirements**

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [*40 CFR § 122.41(k)*].

2. All permit applications shall be signed as follows:

   a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [*40 CFR § 122.22(a)(1)*];

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [*40 CFR § 122.22(a)(2)*]; or

c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [*40 CFR § 122.22(a)(3)*].

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in paragraph (2.) of this provision [*40 CFR § 122.22(b)(1)*];

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [*40 CFR § 122.22(b)(2)*]; and

   c. The written authorization is submitted to the Regional Water Board, State Water Board, or USEPA [*40 CFR § 122.22(b)(3)*].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the Facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, State Water Board or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR § 122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [*40 CFR § 122.22(d)*].

C. **Monitoring Reports**

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [*40 CFR § 122.41(l)(4)*].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices [*40 CFR § 122.41(l)(4)(i)*]. The Regional

Water Board and the State Water Board are developing a database compliance monitoring management system that may require the Discharger to submit the monitoring and annual summary reports electronically when it becomes fully operational.

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [*40 CFR § 122.41(l)(4)(ii)*].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [*40 CFR § 122.41(l)(4)(iii)*].

D. **Compliance Schedules**

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [*40 CFR § 122.41(l)(5)*].

E. **Twenty-Four Hour Reporting**

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [*40 CFR § 122.41(l)(6)(i)*].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [*40 CFR § 122.41(l)(6)(ii)*]:

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order [*40 CFR § 122.41(l)(6)(ii)(A)*].

   b. Any upset that exceeds any effluent limitation in this Order [*40 CFR § 122.41(l)(6)(ii)(B)*].

   c. Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours [*40 CFR § 122.41(l)(6)(ii)(C)*].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [*40 CFR § 122.41(l)(6)(iii)*].

F. **Planned Changes**

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [*40 CFR § 122.41(l)(1)*]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR § 122.29(b) [*40 CFR § 122.41(l)(1)(i)*]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [*40 CFR § 122.41(l)(1)(ii)*].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [*40 CFR § 122.41(l)(1)(iii)*].

G. **Anticipated Noncompliance**

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [*40 CFR § 122.41(l)(2)].*

H. **Other Noncompliance**

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting E.3, E.4, and E.5 at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [*40 CFR § 122.41(l)(7)*].

I. **Other Information**

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information [*40 CFR § 122.41(l)(8)*].

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to

$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions [*40 CFR § 122.41(a)(2)*] [*CWC 13385 and 13387*].

B. Any person may be assessed an administrative penalty by the Regional Water Board for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000 [*40 CFR § 122.41(a)(3)*].

C. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both [*40 CFR § 122.41(j)(5)*].

D. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both [*40 CFR § 122.41(k)(2)*].

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [*40 CFR § 122.42(a)*]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR § 122.42(a)(1)*]:

   a. 100 micrograms per liter (μg/L) [*40 CFR § 122.42(a)(1)(i)*];

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [*40 CFR § 122.42(a)(1)(ii)*];

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR § 122.42(a)(1)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR § 122.44(f) [*40 CFR § 122.42(a)(1)(iv)*].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR § 122.42(a)(2)*]:

a. 500 micrograms per liter (µg/L) [*40 CFR § 122.42(a)(2)(i)*];

b. 1 milligram per liter (mg/L) for antimony [*40 CFR § 122.42(a)(2)(ii)*];

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR § 122.42(a)(2)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR § 122.44(f) [*40 CFR § 122.42(a)(2)(iv)*].

B. **Publicly-Owned Treatment Works (POTWs)**

All POTWs shall provide adequate notice to the Regional Water Board of the following [*40 CFR § 122.42(b)*]:

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants [*40 CFR § 122.42(b)(1)*]; and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order [*40 CFR § 122.42(b)(2)*].

Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW [*40 CFR § 122.42(b)(3)*].

California Regional Water Quality Control Board
Los Angeles Region

Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Secretary for Environmental Protection

320 W. 4th Street, Suite 200, Los Angeles, California 90013
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Arnold Schwarzenegger
Governor

ORDER NO. R4-2008-0032

WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES OF GROUNDWATER FROM CONSTRUCTION AND PROJECT DEWATERING
TO SURFACE WATERS
IN
COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES

(GENERAL NPDES PERMIT NO. CAG994004)

This Order was adopted by the Regional Water Quality Control Board on:	**June 5, 2008**
This Order shall become effective on:	**July 5, 2008**
This Order shall expire on:	**June 5, 2013**
The Discharger shall file a Report of Waste Discharge (Notice of Intent) in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**60 days from the date of notification of adoption of this Order**
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Board have classified this discharge as a minor discharge.	

IT IS HEREBY ORDERED, that Order No. R4-2003-0111 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (CWC) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA), and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Tracy J. Egoscue, Executive Officer, do hereby certify the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on June 5, 2008.

Tracy J. Egoscue, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

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I. FACILITY/DISCHARGE INFORMATION

1. This Order (hereafter, General Permit) is intended to authorize discharges of treated or untreated groundwater generated from permanent, temporary dewatering operations or other applicable wastewater discharges not specifically covered in other general NPDES permit. Discharges from facilities to waters of the United States that do not cause, have the reasonable potential to cause, or contribute to an in-stream excursion above any applicable state or federal Water quality objectives/criteria or cause acute or chronic toxicity in the receiving water are authorized discharge in accordance with the conditions set forth in this Order.

II. NOTIFICATION REQUIREMENTS

A. Eligibility Criteria

1. This order covers discharges to surface waters of treated or untreated groundwater from dewatering operations and other wastewaters.

2. To be covered under this Order, a discharger must:

   a. Demonstrate that pollutant concentrations in the discharge shall not cause violation of any applicable water quality objective for the receiving waters, including discharge prohibitions;

   b. Demonstrate that discharge shall not exceed the water quality criteria for toxic pollutants (Attachment B and Part V of this Order), and there shall be no reasonable potential to cause or contribute to an excursion above the criteria.

   c. Perform reasonable potential analysis using a representative sample of groundwater or wastewater to be discharged. The sample shall be analyzed and the data compared to the water quality screening criteria for the constituents listed on Attachment A to determine the most appropriate permit. If the analytical test results exceeds the water quality screening criteria listed on Attachment A, then a reasonable potential for discharge of toxics shall be considered to exist.

      i. If the analytical test results of the discharge show that only petroleum products or only volatile organic compounds (VOCs) exceed the water quality screening criteria listed on Attachment A, then the discharger may not be enrolled under this Order, but will be enrolled under Regional Board Order Nos. R4-2007-0021 or R4-2007-0022, as appropriate.

      ii. If the analytical test results of the discharge show that petroleum products, VOCs and other toxics exceed the water quality screening criteria listed on Attachment A, then the discharger will be enrolled under this permit and treatment of the groundwater will be required for discharge.

      iii. If the analytical test results of the discharge show that toxics are below the screening levels in Attachment A, then the discharger will be enrolled under this permit and treatment of the groundwater for toxics will not be required for discharge.

   d. The discharge shall not cause acute nor chronic toxicity in receiving waters;

e. If necessary, the discharge shall pass through a treatment system designed and operated to reduce the concentration of contaminants to meet the effluent limitations of this Order; and

f. The discharger shall be able to comply with the terms or provisions of this General Permit.

3. New discharges and existing discharges regulated under existing general or individual permits, which meet the eligibility criteria, may be regulated under this Order.

4. For the purpose of renewal of existing individual NPDES permits with this General Permit, provided that all the conditions of this General Permit are met, renewal is effective upon issuance of a notification by the Executive Officer and issuance of a new monitoring program.

5. When an individual NPDES permit with more specific requirements is issued to a discharger, the applicability of this Order to that discharger is automatically terminated on the effective date of the individual permit.

B. Ineligibility

The discharge of wastewater contaminated with toxic pollutants with no effluent limitations in this permit are not eligible for enrollment under this General Permit.

C. Authorization

To be authorized to discharge under this Order, the discharger must submit a Notice of Intent (NOI) in accordance with the requirements of Part D of this Order. Upon receipt of the application, the Executive Officer shall determine the applicability of this Order to such a discharge. If the discharge is eligible, the Executive Officer shall notify the discharger that the discharge is authorized under the terms and conditions of this Order and prescribe an appropriate monitoring and reporting program. For new discharges, the discharge shall not commence until receipt of the Executive Officer's written determination of eligibility for coverage under this general permit or until an individual NPDES permit is issued by the Regional Board.

D. Notice of Intent

1. Deadline for Submission

a. Renewal of permits of existing dischargers covered under individual permits that meet the eligibility criteria and have submitted a NOI will consist of a letter of determination from the Executive Officer of coverage under this Order.

b. Existing dischargers covered under Order No. R4-2003-0111 will be sent a NOI form that must be completed and returned to the Regional Board within 60 days of receipt; otherwise permit coverage may be revoked. Existing dischargers enrolling under this Order are required to collect a representative groundwater/wastewater sample and analyze it for all the constituents listed on Attachment A. Dischargers shall conduct this analysis and submit the result with a NOI, otherwise the existing authorization may be terminated. If the analytical sample result of any constituent other than those listed in Item V. of this Order exceeds the water quality screening criteria listed on Attachment A, the discharge will be considered ineligible for enrollment under this permit. However, the discharge will be enrolled under other appropriate general permit, and then, the existing coverage under this general permit will be terminated. Existing discharges that has been enrolled under the existing permit within the last one year can re-submit the analytical data used for their initial enrollment with their NOI.

c. New dischargers shall file a complete application at least 45 days before commencement of the discharge.

2. Forms for Report of Waste Discharge

a. Dischargers shall use the NOI Form or appropriate USEPA Forms.

b. The discharger, upon request, shall submit any additional information that the Executive Officer deems necessary to determine whether the discharge meets the criteria for coverage under this Order, to prescribe an appropriate monitoring and reporting program, or both.

c. The discharger must obtain and analyze (using appropriate methods) a representative sample of the groundwater to be treated and discharged under this Order. The analytical method used shall be capable of achieving a detection limit at or below the minimum level, otherwise, a written explanation shall be provided. The analytical result shall be submitted with the NPDES application. The data shall be tabulated and shall include the results for every constituent listed on Attachment A.

d. The following should be included with the NOI Form:

i. The feasibility study on reuse and/or alternative disposal methods of the wastedwater;

ii. Description of the treatment system;

iii. The type of chemicals that will be used (if any) during the operation and maintenance of the treatment system;

iv. Flow diagram of the influent to the discharge point; and

v. Preventive maintenance procedures and schedule for the treatment system.

vi. **Creekside construction dewatering operations.** Creekside construction dewatering operations for the purposes of this permit are defined as the dewatering of groundwater (1) where the dewatering is necessary during construction operations and (2) where the groundwater has a direct hydrologic connection with, and similar mineral chemistry for TDS, chloride and sulfate to, the surface waterbody to which it will be discharged. For creekside construction dewatering operations, the following additional information shall be submitted with the ROWD.

i. Best Management Practices (BMPs) for preventing degradation of water quality or impairment of receiving water beneficial uses,

ii. Demonstration of direct hydrologic connection and similar water chemistry between the groundwater and the surface water body must be substantiated with hydrogeological and analytical data, and certified by registered hydrogeologist. Water isotope tracing and other geophysical techniques may be used to demonstrate hydrologic connectivity. In addition, when feasible evidence of the physical connection between the groundwater and the surface water body could be demonstrated by stream depletion or drawdown by test well dewatering operation,

iii. The treatment system to be used for removing toxic compounds from the wastewater (if applicable),

iv. A demonstration that the discharger has considered sewering, re-use, or other discharge options and that it is infeasible to discharge to the sanitary sewer system, to re-use the dewatered groundwater/wastewater, or to otherwise lawfully discharge the dewatered groundwater/wastewater.

e. Title 23 of the California Code of Regulations (CCR), Division 3, Chapter 9, Article (1)(A), section 2200, ***Annual Fee Schedule,*** requires that all discharges subject to a specific general permit shall pay the same annual fee.

1. Notice of Termination

Dischargers shall submit a Notice of Termination or Transfer (NOTT) when coverage under this General Permit is no longer needed. An NOTT contains the Waste Discharge Identification Number (WDID), the name and address of the owner of the facility, and is signed and dated by the owner certifying that the Dischargers associated with Permit No. CAG994004 have been eliminated or that there has been a change in ownership. Upon submission, the Discharger is no longer authorized to discharge wastewater associated with this General Permit.

2. Change of Ownership

Coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

III. FINDINGS

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter Regional Water Board), finds:

A. Background

1. On August 7, 2003, the Regional Board adopted Order No. R4-2003-0111 General NPDES Permit No. CAG994004-Waste Discharge Requirements for Discharges from construction and project dewatering to surface waters. This General Permit expires on August 7, 2008. Approximately 281 dischargers are enrolled under this General Permit. This Order now renews the requirements of this General Permit.

2. On September 22, 1989, the United States Environmental Protection Agency (USEPA) granted the State of California, through the State Water Resources Control Board (State Board) and the Regional Boards, the authority to issue general National Pollutant Discharge Elimination System (NPDES) permits pursuant to 40 Code of Federal Regulations (40 CFR) parts 122 and 123.

3. 40 CFR section 122.28 provides for issuance of general permits to regulate a category of point sources if the sources:

   a. Involve the same or substantially similar types of operations;
   b. Discharge the same type of waste;
   c. Require the same type of effluent limitations or operating conditions;
   d. Require similar monitoring; and
   e. Are more appropriately regulated under a general permit rather than individual permits.

4. General waste discharge requirements and NPDES permits enable Regional Board staff to expedite the processing of requirements, simplify the application process for dischargers, better utilize limited staff resources, and avoid the expense and time involved in repetitive public noticing, hearings, and permit adoptions.

B. Facility and Discharge Description

1. Discharges covered under this permit include treated or untreated groundwater generated from permanent or temporary dewatering operations or other appropriate wastewater discharge not specifically covered in other general NPDES permit. In addition, this permit covers discharge from cleanup of contaminated sites where other project specific General Permits may not be appropriate, such as groundwater impacted by metals and/or other toxic compounds. This permit also covers discharges from dewatering operations in the vicinity of creeks where surface waters and groundwaters are hydrologically connected and have similar water chemistry. Creekside discharges which qualify under this permit will not be required to comply with the waterbody specific limitations for total dissolved solids (TDS), sulfate or chloride. The purpose of this approach to regulating creekside

discharges is to avoid requiring a discharger to treat a surface waterbody to lower than naturally occurring, background, mineral content. In such circumstance, cycling the extracted creekside water back into the waterbody would not cause any decrease in the quality of the waterbody or degradation.

2. Wastewater discharge from permanent or temporary dewatering activities include, but are not limited to the following:

   a. Treated or untreated wastewater from permanent or temporary construction dewatering operations
   b. Groundwater pumped as a aid in the containment and/or cleanup of contaminant plume
   c. Groundwater extracted during short-term and long-term pumping/aquifer tests
   d. Groundwater generated from well drilling, construction or development and purging of wells
   e. Equipment decontamination water
   f. Subterranean seepage dewatering
   g. Incidental collected stormwater from basements

3. Other wastewater discharges covered by this permit include process and non-process wastewater that meet the eligibility criteria and could not be covered under other specific general NPDES permit.

4. To enroll under this general permit, a discharger must certify that there is no reasonable potential for pollutants other than those regulated by this permit to be in the discharge. Existing and new dischargers enrolling under this permit are required to collect a representative groundwater or wastewater sample and analyze it for all the constituents listed on Attachment A. Existing dischargers shall conduct this analysis and submit the result with a Notice of Intent Form, otherwise the existing authorization will be terminated.

5. Pursuant to section 2, Article X, California Constitution, and section 275 of the California Water Code on preventing waste and unreasonable use of waters of the state, this Regional Board encourages, wherever practical, water conservation and/or re-use of wastewater. To obtain coverage under this Order, the discharger shall first investigate the feasibility of conservation, land disposal and/or reuse of the wastewater.

6. This Regional Board adopted ***Waste Discharge Requirements for Municipal Storm Water and Urban Runoff Discharges within the County of Los Angeles*** contained in Order No. 01-182 [NPDES No. CAS614001] and ***Waste Discharge Requirements for Municipal Stormwater and Urban Runoff Discharges within Ventura County Flood Control District, County of Ventura, and the Cities of Ventura County*** contained in Order No. 00-108 [NPDES No. CAS004002] on July 15, 1996, and July 27, 2000, respectively. These Orders prohibit non-stormwater discharges to storm drain systems unless they are covered by separate NPDES permits. This prohibition, in general, does not apply to rising groundwater, uncontaminated groundwater infiltration discharges, discharges from potable water distribution

system releases[1], foundation and footing drains discharges, and water from crawl space pumps. The municipality may allow discharge of these types of discharges into the storm drain system. However, the municipality or the Regional Board may prohibit these discharges if they are determined to cause, or threaten to cause, degradation of water quality, violation of water quality objectives, cause nuisance and/or impair beneficial uses of receiving waters.

C. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements

The Regional Water Board developed the requirements of this Order based on information submitted as part of the applications for several like facilities, through monitoring and reporting programs, and through special studies and the following information.

1. The effluent limitations for discharges covered under this permit are calculated assuming no dilution. For most practical purposes, discharges from facilities covered under this permit do not flow directly into receiving water with significant flow volume to consider dilution credit or to allocate a mixing zone. Most discharges flows to storm drain systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams. These discharges therefore have the potential to recharge groundwaters protected as drinking waters.

   An exception to this policy may be applied based on approved mixing zone study and based on demonstration of compliance with water quality objectives in the receiving water as prescribed in the Basin Plan. This exception process is more appropriate for an individual permit, and would not be appropriate for a general permit, that should be protective of most stringent water quality objectives and beneficial uses. If discharger requests that a dilution credit be included in the computation of effluent limit or that a mixing zone be allowed, an individual permit will be required. However, if no mixing zone is proposed, this general permit provides coverage for all discharges to receiving water bodies in Coastal Watersheds of Los Angeles and Ventura Counties.

[1] "Potable Water Distribution Systems Releases" means sources of flows from drinking water storage, supply and distribution systems including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing; and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities not involving chemical addition(s). It does not include wastewater discharges from activities that occur at wellheads, such as well construction, well development (i.e., aquifer pumping tests, well purging, etc.), or major well maintenance.

2. This order regulates the discharge of groundwater that may or may not be impacted by toxic compounds and/or conventional pollutants.

   Various biological, chemical, physical, thermal treatment systems could be employed to remove these toxic or conventional pollutants in groundwater to applicable permit limits. For example, air stripping, carbon absorption, chemical oxidation treatment systems could be used to remove volatile organic compounds in groundwater. Reverse osmosis, ion exchange, or pH adjustment could be used as treatment technologies to remove conventional pollutants and metals. Biological systems could be used to degrade or remove semi-volatile organic compounds. This permit does not provide specific treatment technologies for the universe of toxic compounds that could be found in groundwater. When treatment is required prior to discharge, dischargers will be required to submit schematics of treatment flow diagrams with descriptions of the treatment system including statements on the effectiveness of the system to achieve the applicable permit limits during the permit process.

3. This permit includes effluent limitations for metals in discharges from dewatering or other operations to both freshwater and saltwater. For purposes of this permit, saltwater is defined as waterbodies with saline, estuarine or marine beneficial use designations. Additional clarification for applying saltwater objectives is contained in the CTR. All other inland surface waters are considered freshwater. The toxicity of certain metals in freshwater including cadmium, chromium III, copper, lead, nickel, silver, and zinc is dependent on water hardness. The CTR expresses the objectives for these metals through equations where the hardness of the receiving water is a variable. To simplify the permitting process, it is necessary that fixed hardness values be used in these equations. This order requires the discharger to propose appropriate receiving water hardness or effluent hardness based on analytical results of receiving water or effluent samples. Upon approval of the Executive Officer, this hardness value will be used to determine the appropriate metal limitation from the appropriate table of limits (E. 2. b. i.) in the Order.

4. <u>Total Maximum Daily Load (TMDLs)</u> for metals, nutrients and other toxic pollutants have been developed for various watersheds in Los Angeles and Ventura County Watersheds. Where ever applicable, Section V.B. of this Order prescribes appropriate TMDL for these pollutants. Generally where wet weather and dry weather TMDLs are specified this permit applies only dry weather TMDL to streamline the permitting process. However, where wet weather TMDL is specified and no dry weather TMDL is specified, then wet weather TMDL is specified in this permit. Receiving water with specified TMDL include Los Angeles River and tributaries (copper, cadmium, lead, zinc and silver), Ballona Creek and tributaries (copper, lead, zinc, and silver), San Gabriel River and tributaries (copper, lead, zinc, and silver), Calleguas Creek and tributaries and Mugu Lagoon (copper, nickel, lead, zinc, silver and pesticides). TMDL limitations will not be prescribed for discharges that show no reasonable potential for these constituents to be in the effluent above the applicable screening criteria. If Discharge can not meet these effluent limitations immediately, Discharger can apply for individual permit and seek a Time Schedule Order with interim limits for the pollutants of concern.

6. Because this Order is intended to serve as a general NPDES permit and covers discharges to all surface waters in the Los Angeles Region, the effluent limitations establish pursuant to this general order are established to protect the most protective water quality objective for the surface water beneficial uses in the Los Angeles Region.

E. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. Technology-Based Effluent Limitations

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations[2], require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3 of CWA.

G. Water Quality-Based Effluent Limitations

Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi). The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria which are taken from the California Toxics Rule (CTR). These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water. The attached fact sheet for this Order includes specific bases for the effluent limitations.

H. Water Quality Control Plans.

The Regional Water Board adopted a Water Quality Control Plan for the Los Angeles Region (hereinafter Basin Plan) on June 13, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies

[2] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

1. Basin Plan. The Basin Plan contains water quality objectives for, and lists the beneficial uses of, specific water bodies (receiving waters) in the Los Angeles Region. Typical beneficial uses covered by this Order include the following:

   a. Inland surface waters above an estuary - municipal and domestic supply, industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, aquaculture, warm and cold freshwater habitats, inland saline water and wildlife habitats, water contact and noncontact recreation, fish migration, and fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

   b. Inland surface waters within and below an estuary - industrial service supply, marine and wetland habitats, estuarine and wildlife habitats, water contact and noncontact recreation, commercial and sport fishing, aquaculture, migration of aquatic organisms, fish migration, fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

   c. Coastal Zones (both nearshore and offshore) - industrial service supply, navigation, water contact and noncontact recreation, commercial and sport fishing, marine habitat, wildlife habitat, fish migration and spawning, shellfish harvesting, and rare, threatened, or endangered species habitat.

Requirements of this Order implement the Basin Plan.

<u>Total Maximum Daily Loads</u>: Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Los Angeles Region has been developing TMDLs for metals, nutrients and other toxic compounds. This Order implements approved and relevant TMDLs. Attachment B prescribes the limits for the pollutants that are waterbody specific. Detailed discussion on TMDLs is provided in the Attachment F.

2. The State Board adopted a ***Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California*** (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975.

3. The State Board adopted a ***Water Quality Control Policy for the Enclosed Bays and Estuaries of California*** in May 1974 (Policy). The Policy contains narrative and numerical water quality objectives that are designed to prevent water quality degradation and protect beneficial uses in enclosed bays and estuaries.

The Policy also lists principles of management that include the State Board's goal to phase out all discharges (excluding cooling waters), particularly industrial process water, to enclosed bays and estuaries as soon as practicable. The waste described above is not considered an industrial process wastewater.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. State Implementation Policy

On March 2, 2000, the State Water Board adopted the ***Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*** (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. Compliance Schedules and Interim Requirements (Not Applicable)

L. Alaska Rule.

On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards become effective for CWA purposes (40 CFR §131.21, 65 FR 24641, April 27, 2000). Under USEPA's new regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants that are no more stringent than required by CWA. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards.

N. Antidegradation Policy

Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in detail in the Fact Sheet (Attachment F), the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements

Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR §122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

P. Endangered Species Act.

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. Monitoring and Reporting

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (hereinafter MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

R. Standard and Special Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

S. Provisions and Requirements Implementing State Law (Not Applicable)

T. Notification of Interested Parties.

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet (Attachment F) of this Order.

U. Consideration of Public Comment.

The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet (Attachment F) of this Order.

IV. DISCHARGE PROHIBITIONS

A. The discharge of wastes other than those which meet eligibility requirements of this Order is prohibited unless the discharger obtains coverage under another general permit or an individual permit that regulates the discharge of such wastes.

B. Bypass or overflow of untreated or partially treated contaminated groundwater to waters of the State either at the treatment system or from any of the collection or transport systems or pump stations tributary to the treatment system is prohibited.

C. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable criterion promulgated by USEPA pursuant to section 303 of the CWA, or water quality objective adopted by the State or Regional Board.

D. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

E. The purposeful or knowing discharge of ploychlorinated biphenols (PCBs) is prohibited.

V. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

1. Discharge of an effluent from the outfall location(s) listed in the enrollment authorization factsheet in excess of the following limitations is prohibited. (In the authorization letter, when a discharger is enrolled under this permit, the Executive Officer shall list in the factsheet each constituent(s) from the appropriate limitations table(s) below that is applicable to the specific discharge).

a. **Limits applicable to discharges to freshwater or saltwater bodies**

i. Table 1-General Constituents

Constituents	Units	Discharge Limitations	
		Daily Maximum	Monthly Average
Total Suspended Solids	mg/L	150	50
Turbidity	NTU	150	50
BOD_5 20°C	mg/L	30	20
Oil and Grease	mg/L	15	10
Settleable Solids	ml/L	0.3	0.1
Sulfides	mg/L	1.0	
Phenols	mg/L	1.0	
Residual Chlorine	mg/L	0.1	
Methylene Blue Active Substances (MBAS)	mg/L	0.5	

ii. Table 2-Organic compounds

Constituent	Units	Discharge Limitations			
		Other Waters		MUN[3]	
		Daily Max	Monthly Avg.	Daily Max	Monthly Avg.
Volatile Organic Compounds					
1,1,2,2-tetrachloroethane	µg/L	1		0.34	0.17[4]
1,1,2-trichloroethane	µg/L	5		1.2	0.6
1,1,1-trichloroethane	µg/L	200		200	
1,1-dichloroethane	µg/L	5		5	
1,1-dichloroethylene	µg/L	6	3.2	0.11	0.057[4]
1,2-dichloroethane	µg/L	0.50		0.50	0.38[4]
1,2-dichloropropane	µg/L	5		1.1	0.52[4]
1,2-trans-dichloroethylene	µg/L	10		10	
1,3-dichloropropylene	µg/L	0.5		0.5	
Acrolein	µg/L	100		100	
Acrylonitrile	µg/L	1.7	0.66	0.12	0.059[4]
Acetone	µg/L	700		700	
Benzene	µg/L	1.0		1.0	
Bromoform	µg/L	720	360	8.6	4.3
Carbon tetrachloride	µg/L	0.5		0.5	0.25
Chlorobenzene	µg/L	30		30	
Chlorodibromomethane	µg/L	68	34	0.81	0.40[4]

3 MUN refers to discharges to those waterbodies designated MUN (Municipal and Domestic Supply) identified in the Basin Plan with an “E” or and “I” designation.

4 If the reported detection level is greater than the effluent limit for this constituent, then a non-detect using ML detection is deemed to be in compliance.

Constituent	Units	Discharge Limitations			
		Other Waters		MUN[3]	
		Daily Max	Monthly Avg.	Daily Max	Monthly Avg.
Dichlorobromomethane	µg/L	92	46	1.1	0.56
Chloroethane	µg/L	100		100	
Chloroform	µg/L	100		100	
Methyl ethyl ketone	µg/L	700		700	
Ethylbenzene	µg/L	700		700	
Ethylene dibromide	µg/L	0.05		0.05	
Methyl tertiary butyl ether (MTBE)	µg/L	5		5	
Methylbromide	µg/L	10		10	
Methylchloride	µg/L	3		3	
Methylene chloride	µg/L	3,200	1,600	9.5	4.7
Tetrachloroethylene	µg/L	5.0		1.6	0.8
Toluene	µg/L	150		150	
Trichloroethylene	µg/L	5.0		5.0	2.7
Vinyl chloride	µg/L	0.5		0.5	
Xylenes	µg/L	1750		1750	
Pesticides and PCBs					
4,4'-DDD	µg/L	0.0017	0.00084	0.0017	0.00083[4]
4,4'-DDE	µg/L	0.0012	0.00059	0.0012	0.00059[4]
Aldrin	µg/L	0.00028	0.00014	0.00027	0.00013[4]
alpha-BHC	µg/L	0.026	0.013	0.0079	0.0039[4]
beta-BHC	µg/L	0.092	0.046	0.028	0.014
Endosulfan Sulfate	µg/L	480	240	220	110
Endrin Aldehyde	µg/L	1.6	0.81	1.5	0.76
Gamma-BHC	µg/L	0.12	0.063	0.039	0.019[4]
PCBs	µg/L	0.00034	0.00017	0.00034	0.00017[4]
Semi-Volatile Organic Compounds					
1,2 Dichlorobenzene	µg/L	600		600	
1,2-Diphenylhydrazine	µg/L	1.1	0.54	0.081	0.040[4]
1,3 Dichlorobenzene	µg/L	5,200	2,600	800	400
1,4 Dichlorobenzene	µg/L	5		5	
2,4,6-Trichlorophenol	µg/L	13	6.5	4.3	2.1[4]
2,4-Dichlorophenol	µg/L	1600	790	190	93
2,4-Dimethylphenol	µg/L	4,600	2,300	1100	540
2,4-Dinitrophenol	µg/L	28,000	14,000	140	70
2,4-Dinitrotoluene	µg/L	18	9.1	0.23	0.11[4]
2-Chloronaphthalene	µg/L	8,600	4,300	3,400	1,700
2-Chlorophenol	µg/L	800	400	241	120
2-Methyl-4,6-Dinitrophenol	µg/L	1540	765	26.9	13.4
3,3-Dichlorobenzidine	µg/L	0.16	0.077	0.088	0.04[4]
Acenaphthene	µg/L	5,400	2,700	2,400	1,200
Anthracene	µg/L	220,000	110,000	19,000	9,600

Constituent	Units	Discharge Limitations			
		Other Waters		MUN[3]	
		Daily Max	Monthly Avg.	Daily Max	Monthly Avg.
Benzidine	µg/L	0.0011	0.00054	0.00025	0.00012[4]
Benzo(a)Anthracene	µg/L	0.098	0.049	0.0089	0.0044[4]
Benzo(a)Pyrene	µg/L	0.098	0.049	0.0089	0.0044[4]
Benzo(b)Fluoranthene	µg/L	0.098	0.049	0.0089	0.0044[4]
Benzo(k)Fluoranthene	µg/L	0.098	0.049	0.0089	0.0044[4]
Bis(2-Chloroethyl)Ether	µg/L	2.8	1.4	0.063	0.031[4]
Bis(2-Chloroisopropyl)Ether	µg/L	340,000	170,000	2,800	1,400
Bis(2-Ethylhexyl)Phthalate	µg/L	11	5.9	3.7	1.8[4]
Butylbenzyl Phthalate	µg/L	10,000	5,200	6,000	3,000
Chrysene	µg/L	0.098	0.049	0.0089	0.0044[4]
Dibenzo(a,h)Anthracene	µg/L	0.098	0.049	0.0089	0.0044[4]
Diethyl Phthalate	µg/L	240,000	120,000	46,000	23,000
Dimethyl Phthalate	µg/L	5,800,000	2,900,000	629,000	313,000
Di-n-Butyl Phthalate	µg/L	24,000	12,000	5,400	2,700
Fluoranthene	µg/L	740	370	600	300
Fluorene	µg/L	28,000	14,000	2,600	1,300
Hexachlorobenzene	µg/L	0.0016	0.00077	0.0015	0.00075[4]
Hexachlorobutadiene	µg/L	100	50	0.89	0.44[4]
Hexachlorocyclopentadiene	µg/L	34,000	17,000	480	240
Hexachloroethane	µg/L	18	8.9	3.8	1.9
Indeno(1,2,3-cd) Pyrene	µg/L	0.098	0.049	0.0088	0.0044[4]
Isophorone	µg/L	1200	600	17	8.4
Naphthalene	µg/L	21		21	
Nitrobenzene	µg/L	3,800	1,900	34	17
N-Nitrosodimethyl amine (NDMA)	µg/L	16	8.1	0.0014	0.00069[4]
N-Nitrosodi-n-Propylamine	µg/L	2.8	1.4	0.011	0.005[4]
N-Nitrosodiphenylamine	µg/L	32	16	10	5.0
Phenol	µg/L	1,000	no limit	1,000	no limit
Pyrene	µg/L	22,000	11,000	1930	960
Miscellaneous					
Asbestos	fib/L	no limit	no limit	14,000,000	7,000,000
Di-isopropyl ether (DIPE)	µg/L	0.8	0	0.8[4]	
1,4-Dioxane	µg/L	3		3	
Perchlorate	µg/L	6		6	
2,3,7,8-TCDD (Dioxin)	µg/L	0.000000028	0.000000014	0.000000026	0.000000013[4]
Tertiary butyl alcohol (TBA)	µg/L	12		12	
Total petroleum hydrocarbons	µg/L	100		100	

b. Limits applicable to discharges to freshwater waterbodies where no TMDLs has been established

i. Table 3-Hardness-dependent metals

Hardness (mg/L)	Units	up to 200		200 – 300		300 and above	
		Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.
Cadmium	µg/L	2.8	5	4.1	5	5	5
Copper	µg/L	10.4	20.8	16.6	33.3	22.1	44.4
Lead	µg/L	4.4	8.7	8.3	16.7	12.8	25.6
Nickel	µg/L	60	100	90	100	100	100
Silver	µg/L	4.0	8.1	10	20	20	41
Zinc	µg/L	86	170	130	260	170	350

ii. Table 4-Other compounds

Constituents	Units	Discharge Limitations			
		Other Waters		MUN[3]	
		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
Metals					
Antimony	µg/L	6		6	
Arsenic	µg/L	10		10	
Beryllium	µg/L	4		4	
Chromium III	µg/L	50		50	
Chromium VI	µg/L	16	8	16	8
Cyanide	µg/L	8.5	4.2	8.5	4.2[5]
Mercury	µg/L	0.1	0.05[4]	0.1	0.05[5]
Selenium	µg/L	8	4	8	4
Thallium	µg/L	13	6	3.4	1.7
Organic Compounds					
Pentachlorophenol	µg/L	1.5	0.73	0.56	0.28[5]
Chlordane	µg/L	0.0012	0.00059	0.0012	0.00057[5]
4,4'-DDT	µg/L	0.0012	0.00059	0.0012	0.00059[5]
Dieldrin	µg/L	0.00028	0.00014	0.00028	0.00014[5]
alpha-Endosulfan	µg/L	0.092	0.046	0.092	0.046[5]
beta-Endosulfan	µg/L	0.092	0.046	0.092	0.046[5]
Endrin	µg/L	0.059	0.029	0.059	0.029[5]
Heptachlor	µg/L	0.00042	0.00021	0.00042	0.00021[5]
Heptachlor Epoxide	µg/L	0.00022	0.00011	0.00020	0.00010[5]
Toxaphene	µg/L	0.0015	0.00075	0.0015	0.00073[5]

c. Limits applicable to discharges to freshwater waterbodies where TMDLs has been established

iii. Table 5-Los Angeles River and Tributaries Metals TMDL[6]

[5] If the reported detection level is greater than the effluent limit for this constituent, then a non detect using ML detection is deemed to be in compliance.

Reach	Units	Copper		Lead		Zinc		Selenium		Cadmium	
		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
Reach 5 and 6	µg/L	30	15	19	9.5			5	2.5	3.1	1.6
Reach 4	µg/L	26	13	10	5					3.1	1.6
Reach 3 above LA-Glendale WRP and Verdugo	µg/L	23	11.5	12	6					3.1	1.6
Reach 3 below LA-Glendale WRP	µg/L	26	13	12	6					3.1	1.6
Burbank Western Channel (above WRP)	µg/L	26	13	14.	7					3.1	1.6
Burbank Western Channel (below WRP)	µg/L	19	9.5	9.1	4.5					3.1	1.6
Reach 2 and Arroyo Seco	µg/L	22	11	11	5.5					3.1	1.6
Reach 1	µg/L	23	11.5	12	6					3.1	1.6
Compton Creek	µg/L	19	9.5	8.9	4.5					3.1	1.6
Rio Hondo Rch. 1	µg/L	13	12.5	5.0	2.5	131	65.5			3.1	1.6

ii. Table 6-Ballona Creek and Tributaries Metals TMDL[6]

Constituents	Units	Discharge Limitations	
		Daily Max.	Monthly Avg.
Metals			
Copper	µg/L	24	12.5
Lead	µg/L	13	6.5
Selenium	µg/L	5	2.5
Zinc	µg/L	304	152

iii Table 7-San Gabriel River and its Tributaries

Reach	Units	Copper	Lead	Zinc	Selenium

[6] This effluent limit shall be deemed vacated at such time as Regional Board Resolutions R05-006 and R05-007 are vacated in compliance with a writ of mandate in the mater of Cities of Bellflower et al v. State Water Resources Control Board et al, Los Angeles Superior Court #BS101732. The Regional Board shall provide notice to the discharger of any such action.

		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
San Jose Creek Reach 1 (Confluence to temple street)	μg/L							5	2.5
San Jose Creek Reach 2 (Temple St. to I-10 at White Ave.)	μg/L							5	2.5
San Gabriel River Reach 1 (Firestone to Estuary)	μg/L	18	9						
San Gabriel River Reach 2 (Whittier Narrows to Firestone)	μg/L			166	83				
Coyote Creek	μg/L	20	10	106	53	158	79		
Estuary	μg/L	3.7	1.8						

iv. Table 8-Calleguas Creek, its Tributaries and Mugu Lagoon

Reach	Units	Copper		Nickel		Selenium	
		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
1-Mabu Lagoon	μg/L	----	5.6	----	8.2	----	----
2- Calleguas Creek South	μg/L	----	13.7	----	8.2	----	----
3- Revolon Slough	μg/L	----	27	----	149	----	----
4- Calleguas Creek North	μg/L	----	3.7	----	8.3	----	5
5-Beardsley Channel	μg/L	----	3.7	----	8.3	----	5
6-Arroyo Las Posas	μg/L	----	----	----	----	----	----
7-Arroyo Simi	μg/L	----	----	----	----	----	----
8-Tapo Canyon	μg/L	----	----	----	----	----	----
9-Conejo Creek	μg/L	----	29.1	----	160	----	----
10-Hill Canyon reach of Conejo Creek	μg/L	----	29.1	----	160	----	----
11-Arroyo Santa Rosa	μg/L	----	29.1	----	160	----	----
12-North Fork Conejo Creek	μg/L	----	29.1	----	160	----	----
13-Arroyo Conejo (S.Fork Conejo Cr)	μg/L	----	29.1	----	160	----	----

Table 9-TMDL for Organochloride (OC) Pesticides, Polycholrinated Biphenyls (PCBs) in Calleguas Creek, Its Tributaries, and Magu Lagoon

Constituents	Units	Discharge Limitations	
		Daily Max.	Monthly Avg.
Chlordane	ng/L	1.2	0.59[5]
4,4-DDD	ng/L	1.7	0.84[5]
4,4-DDE	ng/L	1.2	0.59[5]
4,4-DDT	ng/L	1.2	0.59[5]
Dleldrin	ng/L	0.28	0.14[5]
PCBs	ng/L	0.34	0.17[5]
Toxaphene	ng/L	0.33	0.16[5]

d. Table 10-Limits applicable to discharges to saltwater waterbodies

Constituents	Units	Discharge Limitations	
		Daily Max.	Monthly Avg.
Metals			
Antimony	µg/L	6	
Arsenic	µg/L	10	5
Beryllium	µg/L		
Cadmium	µg/L	5	
Chromium III	µg/L	50	
Chromium VI	µg/L	82	41
Copper	µg/L	5.8	2.9
Cyanide	µg/L	1.0	0.50[5]
Lead	µg/L	14	7
Mercury	µg/L	0.1	0.05[5]
Nickel	µg/L	14	6.7
Selenium	µg/L	120	58
Silver	µg/L	2.2	1.1
Thallium	µg/L	13	6
Zinc	µg/L	95	47
Organic Compounds			
Pentachlorophenol	µg/L	13	6.4
Chlordane	µg/L	0.0012	0.00059[5]
4,4'-DDT	µg/L	0.0012	0.00059[5]
Dieldrin	µg/L	0.00028	0.00014[5]
Alpha-Endosulfan	µg/L	0.014	0.0071[5]
Beta-Endosulfan	µg/L	0.014	0.0071[5]
Endrin	µg/L	0.0038	0.0019[5]
Heptachlor	µg/L	0.00042	0.00021[5]
Heptachlor Epoxide	µg/L	0.00022	0.00011[5]
Toxaphene	µg/L	0.00033	0.00016[5]

2. The pH of the discharge shall at all times be within the range of 6.5 and 8.5.

3. The temperature of the discharge shall not exceed 86°F.

4. Attachment B establishes the applicable effluent limits for mineral and nitrogen constituents for discharges covered by this Order. The discharge of an effluent with mineral and nitrogen constituents in excess of applicable limits established in Attachment B is prohibited. In the letter of determination, the Executive Officer shall indicate the watershed/stream reach limitations in Attachment B applicable to the particular discharge. Creekside construction dewatering discharges covered under Part D.2.d.vi are determined to have hydrologic connection and/or similar water chemistry between groundwater and surface water. Therefore, since the groundwater and surface water are essentially the same, discharges qualified under creekside dewatering as approved by Executive Office are not required to comply with Attachment B (TDS, sulfate, chloride) except for nitrogen and boron.

5. Pass-through or uncontrollable discharges of PCBs shall not exceed daily average concentrations of 14 ng/L into fresh waters or 30 ng/L into estuarine waters.

6. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test less than 70% survival.

7. The discharge shall meet effluent limitations and toxic and effluent standards established pursuant to sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto.

C. Land Discharge Specifications

Not Applicable.

D. Reclamation Specifications

Not Applicable.

VI. RECEVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following to be present in receiving waters:

a. Toxic pollutants at concentrations that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.

b. Biostimulatory substances at concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.

c. Chemical substances in amounts that adversely affect any designated beneficial use.

d. Visible floating materials, including solids, liquids, foams, and scum.

e. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the receiving water or on objects in the water.

f. Suspended or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses.

g. Taste or odor-producing substances in concentrations that alter the natural taste, odor, and/or color of fish, shellfish, or other edible aquatic resources; cause nuisance; or adversely affect beneficial uses.

h. Substances that result in increases of $BOD_5$20°C that adversely affect beneficial uses.

i. Fecal coliform concentration which exceed a log mean of 200 per 100 ml (based on a minimum of not less than five samples equally spaced over a 30-day period), any single sample shall not exceed 400 per 100 ml.

j. Concentrations of toxic substances that are toxic to, or cause detrimental physiological responses in, human, animal, or aquatic life.

2. The discharge shall not cause the following to occur in the receiving waters:

a. The dissolved oxygen to be depressed below:

WARM[1] designated waters	5 mg/L
COLD[1] designated waters	6 mg/L
COLD and SPWN[1] Designated waters	7 mg/L

[1] Beneficial Uses: WARM - Warm Freshwater Habitat; COLD - Cold Freshwater Habitat; SPWN - Spawning, Reproduction, and/or Early Development.

b. The pH to be depressed below 6.5 or raised above 8.5, and the ambient pH levels to be changed from natural conditions in inland waters more than 0.5 units or in estuaries more than 0.2 units.

c. The temperature at any time or place and within any given 24-hour period to be altered by more than 5°F above natural temperature; but at no time be raised above 80°F for waters with a beneficial use of WARM (Warm Freshwater Habitat).

d. The turbidity to increase to the extent that such an increase causes nuisance or adversely affects beneficial uses; such increase shall not exceed 20% when the natural turbidity is over 50 NTU or 10% when the natural turbidity is 50 NTU or less.

e. Residual chlorine in concentrations that persist and impairs beneficial uses.

f. Any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses or increase pesticide concentration in bottom sediments or aquatic life.

3. The discharge shall not alter the color, create a visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters.

4. The discharge shall not degrade surface water communities and population including vertebrate, invertebrate, and plant species.

5. The discharge shall not damage, discolor, nor cause formation of sludge deposits on flood control structures or facilities nor overload their design capacity.

6. The discharge shall not cause problems associated with breeding of mosquitoes, gnats, black flies, midges, or other pests.

B. Groundwater Limitations

Not Applicable.

VII. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

a. The Executive Officer may require any discharger authorized under this Order to apply for and obtain an individual NPDES permit with more specific requirements. The Executive Officer may require any discharger authorized to discharge under this permit to apply for an individual permit only if the discharger has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual permit, the authority to discharge under this general permit is no longer applicable.

b. The discharger shall comply with all the applicable items of the ***Standard Provisions and Reporting for Waste Discharge Requirements*** (Standard Provisions), which are part of this general permit (Attachment D). If there is any conflict between provisions stated herein and the Standard Provisions, those provisions stated herein prevail.

c. Prior to application, the discharger shall submit for Executive Officer's approval the list of chemicals and proprietary additives that may affect the discharge, including rates/quantities of application, compositions, characteristics, and material safety data sheets, if any.

d. Oil or oily materials, chemicals, refuse, or other materials that may cause pollution in storm water and/or urban runoff shall not be stored or deposited in areas where they may be picked up by rainfall/urban runoff and discharged to surface waters. Any spill of such materials shall be contained, removed and cleaned immediately.

e. This Order neither exempts the discharger from compliance with any other laws, regulations, or ordinances that may be applicable, nor legalizes the waste disposal facility.

f. The discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

h. Any discharge authorized under this Order may request to be excluded from the coverage of this Order by applying for an individual permit.

i. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from treatment facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

B. Monitoring and Reporting Program Requirements

The Executive Officer is herby authorized to prescribe a Monitoring and Reporting Program for each authorized discharger. The Discharger shall comply with the MRP accompanying the transmittal for enrollment under this General NPDES permit, and future revisions thereto. If there is any conflict between provisions stated in the MRP and the Regional Water Board Standard Provisions, those provisions stated in the MRP shall prevail.

C. Special Provisions

1. Reopener Provision

a. This Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order.

b. Pursuant to 40 CFR sections 122.62 and 122.63, this Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order. In addition, if receiving water quality is threatened due to discharges covered under this permit, this permit will be reopened to incorporate more stringent effluent limitations for the constituents creating the threat. TMDLs have not been developed for all the parameters and receiving waters on the 303(d) list. When TMDLs are developed this permit may be reopened to incorporate appropriate limits. In addition, if TMDL identifies that a particular discharge covered under this permit is a load that needs to be reduced; this permit will be reopened to incorporate appropriate TMDL based limit and/or to remove any applicable exemptions.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

Not Applicable

3. Best Management Practices and Pollution Prevention

All Dischargers are encouraged to implement Best Management Practices and Pollution Prevention Plans to minimize pollutant concentrations in the discharge.

4. Construction, Operation and Maintenance Specifications

All owners or operators authorized discharge under the General Permit shall maintain and update, as necessary, a Groundwater Treatment System Operation and Maintenance (O&M) Manual to assure efficient and effective treatment of contaminated groundwater (pollutants concentrations above water quality criteria and goals). The O&M Manual shall address, but not limited to, the following.

The O&M manual shall specify both normal operating and critical maximum or minimum values for treatment process variables including influent concentrations, flow rates, water levels, temperatures, time intervals, and chemical feed rates.

The O&M manual shall specify an inspection and maintenance schedule for active and reserve system and shall provide a log sheet format to document inspection observations and record completion of maintenance tasks.

The O&M manual shall include a Contingency and Notification Plan. The plan shall include procedures for reporting personnel to assure compliance with this General Permit, as well as authorization letters from the Executive Officer.

The O&M manual shall specify safeguards to prevent noncompliance with limitations and requirements of the General Permit resulting from equipment failure, power loss, vandalism, or ten-year return frequency rainfall.

5. Engineering Design Report

For all new dischargers and existing dischargers where significant changes have made since prior submittals to the Regional Water Board, the NOI shall be accompanied by treatment flow schematic diagram and a certification, which demonstrates that the treatment process and the physical design of the treatment components will ensure compliance with the prohibitions, effluent limitations, and other conditions of the General Permit.

7. Special Provisions for Municipal Facilities (POTWs Only)

Not Applicable

8. Other Special Provisions

a. Expiration and Continuation of this Order

This Order expires on June 5, 2013; however, for those dischargers authorized to discharge under this Order, it shall continue in full force and effect until a new order is adopted. Notwithstanding Provision J (Expiration and Continuation of this Order) of Order No. R4-2003-0111, discharges regulated under Order No. R4-2003-0111 on or before sixtieth day of notification of adoption of this Order, that has submitted a completed NOI may continue under Order No. R4-2003-0111 until enrolled under this General Permit.

b. Reauthorization

Upon reissuance of a new general permit order, dischargers authorized under this Order shall file a Notice of Intent or a new Report of Waste Discharge within 60 days of notification by the Executive Officer.

c. Rescission

Except for enforcement purposes, Order No. R4-2003-0111, adopted by this Regional Board on August 7, 2003, is rescinded effective June 5, 2008.

9. Compliance Schedules

Not Applicable

VIII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section V of this Order will be determined as specified below:

A. General.

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Multiple Sample Data.

When determining compliance with an AMEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

C. Average Monthly Effluent Limitation (AMEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar month exceeds the AMEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. The

Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

D. Average Weekly Effluent Limitation (AWEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar week exceeds the AWEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

E. Maximum Daily Effluent Limitation (MDEL).

If a daily discharge <(or when applicable, the median determined by subsection B above for multiple sample data of a daily discharge)> exceeds the MDEL for a given parameter, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

F. Instantaneous Minimum Effluent Limitation.

If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

G. Instantaneous Maximum Effluent Limitation.

If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

DEFINITIONS, ACRONYMS & ABBREVIATIONS

DEFINITIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters include~~d~~, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (***n***) is odd, then the median = $X_{(\boldsymbol{n}+1)/2}$. If ***n*** is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the ***n***/2 and ***n***/2+1).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;

μ is the arithmetic mean of the observed values; and

n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ACRONYMS & ABBREVIATIONS

AMEL	Average Monthly Effluent Limitation
B	Background Concentration
BAT	Best Available Technology Economically Achievable
Basin Plan	***Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties***
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practices
BMPPP	Best Management Practices Plan
BPJ	Best Professional Judgment
BOD	Biochemical Oxygen Demand
BPT	Best practicable treatment control technology
C	Water Quality Objective
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTR	California Toxics Rule
CV	Coefficient of Variation
CWA	Clean Water Act
CWC	California Water Code
DMR	Discharge Monitoring Report
DNQ	Detected But Not Quantified
ECA	Effluent Concentration Allowance
ELAP	California Department of Health Services Environmental Laboratory Accreditation Program
ELG	Effluent Limitations, Guidelines and Standards
gpd	gallons per day
IC	Inhibition Coefficient
IC_{15}	Concentration at which the organism is 15% inhibited
IC_{25}	Concentration at which the organism is 25% inhibited
IC_{40}	Concentration at which the organism is 40% inhibited
IC_{50}	Concentration at which the organism is 50% inhibited
LA	Load Allocations
LOEC	Lowest Observed Effect Concentration
LTA	Long-Term Average
MDEL	Maximum Daily Effluent Limitation
MDL	Method Detection Limit
MEC	Maximum Effluent Concentration
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
ML	Minimum Level
MRP	Monitoring and Reporting Program
ND	Not Detected
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTR	National Toxics Rule
OAL	Office of Administrative Law

POTW	Publicly-Owned Treatment Works
PMP	Pollutant Minimization Plan
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
RPA	Reasonable Potential Analysis
RWQCB	Regional Water Quality Control Board
SCP	Spill Contingency Plan
SIP	State Implementation Policy (***Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California***)
SMR	Self Monitoring Reports
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Test Acceptability Criteria
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document
TSS	Total Suspended Solid
TU	Toxicity Unit
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirements
WET	Whole Effluent Toxicity
WLA	Waste Load Allocations
WQBEL	Water Quality-Based Effluent Limitation
µg/L	Micrograms per Liter

ATTACHMENT A
SCREENING LEVEL FOR GENERAL NPDES PERMIT
(Screening to be conducted on untreated groundwater or wastewater sample prior to issuance of permit)

Pollutant	MUN[a] (µg/L)	Others[b] (µg/L)	Minimum Levels (ML) (µg/L)
VOLATILE ORGANICS			
1,1 Dichloroethane	5	5	1
1,1 Dichloroethylene	0.057	3.2	0.5
1,1,1 Trichloroethane	200	200	2
1,1,2 Trichloroethane	0.60	42	0.5
1,1,2,2 Tetrachloroethane	0.17	1	0.5
1,2 Dichlorobenzene	600	600	0.5
1,2 Dichloroethane	0.38	99	0.5
1,2 Dichloropropane	0.52	39	0.5
1,2-Trans Dichloroethylene	10	10	1
1,3 Dichlorobenzene	400	2600	2
1,3 Dichloropropylene	0.5	0.5	0.5
1,4 Dichlorobenzene	5	0.5	0.5
2-Chloroethyl vinyl ether	--	--	1
Acetone	700	700	na
Acrolein	100	100	5
Acrylonitrile	0.059	0.66	2.0
Benzene	1.0	1	0.5
Bromoform	4.3	360	0.5
Carbon Tetrachloride	0.25	0.5	0.5
Chlorobenzene	30	21000	2
Chlorodibromo-methane	0.401	34	0.5
Chloroethane	100	100	2
Chloroform	100	100	2
Dichlorobromo-methane	0.56	46	0.5
Ethylbenzene	700	700	2
Ethylene Dibromide	0.05	0.05	na
Methyl Bromide	10	4000	2.0
Methyl Chloride	3	3	0.5
Methyl ethyl ketone	700	700	na
Methyl tertiary butyl ether (MTBE)	5	5	na
Methylene Chloride	4.7	1600	0.5
Tetrachloroethylene	0.8	8.85	0.5
Toluene	150	150	2
Trichloroethylene	2.7	5	0.5
Vinyl Chloride	0.5	0.5	0.5
Xylenes	1750	1750	na

Pollutant	MUN[a] (µg/L)	Others[b] (µg/L)	Minimum Levels (ML) (µg/L)
METALS[1]			
Antimony (Sb)	14	4300	5
Arsenic (As)	50	36	10
Beryllium (Be)	4	--	0.5
Cadmium (Cd)	2.4	9.4	0.5
Chromium III (Cr^{3+})	50	--	10
Chromium VI (Cr^{6+})	11	50	5
Copper (Cu)	9.4	3.7	0.5
Cyanide (CN)	5.2	--	5
Lead (Pb)	3.2	8.5	0.5
Mercury (Hg)	0.050	0.051	0.2
Nickel (Ni)	52	8.3	1
Selenium (Se)	5.0	71	2
Silver (Ag)	4	2.2	0.25
Thallium (Ti)	1.7	6.3	1
Zinc (Zn)	122	86	20
PESTICIDES AND PCBs			
4,4'-DDD	0.00083	0.00084	0.05
4,4'-DDE	0.00059	0.00059	0.05
4,4'-DDT	0.00059	0.00059	0.01
Alpha-Endosulfan	0.056	0.0087	0.02
Alpha-BHC	0.0039	0.013	0.01
Aldrin	0.00013	0.00014	0.005
Beta-Endosulfan	0.056	0.0087	0.01
beta-BHC	0.014	0.046	0.005
Chlordane	0.00057	0.00059	0.1
delta-BHC	--	--	0.005
Dieldrin	0.00014	0.00014	0.01
Endosulfan Sulfate	110	240	0.05
Endrin	0.036	0.0023	0.01
Endrin Aldehyde	0.76	0.81	0.01
Heptachlor	0.00021	0.00021	0.01
Heptachlor Epoxide	0.0001	0.00011	0.01
gamma-BHC	0.019	0.063	0.02
PCB 1016	0.00017	0.00017	0.5
PCB 1221	0.00017	0.00017	0.5
PCB 1232	0.00017	0.00017	0.5
PCB 1242	0.00017	0.00017	0.5
PCB 1248	0.00017	0.00017	0.5
PCB 1254	0.00017	0.00017	0.5
PCB 1260	0.00017	0.00017	0.5
Toxaphene	0.00073	0.00075	0.5

(a) = Applies to water with Municipal and Domestic Supply (MUN) (indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

(1) = Metals concentrations are expressed as total recoverable.

ATTACHMENT A
SCREENING LEVEL FOR GENERAL NPDES PERMIT

Pollutant	MUN[(a)]	Others[(b)]	Minimum Levels (ML)	Pollutant	MUN[a)]	Others[(b)]	Minimum Levels (ML)
	(µg/L)	(µg/L)	(µg/L)		(µg/L)	(µg/L)	(µg/L)
SEMI – VOLATILE ORGANICS				**SEMI – VOLATILE ORGANICS (continued)**			
1,2 Diphenylhydrazine	0.040	0.54	1	Dibenzo(a,h)-anthracene	0.0044	0.049	0.1
1,2,4 Trichlorobenzene	70	--	5	Diethyl phthalate	23000	120000	10
2 Chlorophenol	120	400	5	Dimethyl phthalate	313000	2900000	10
2,4 Dichlorophenol	93	790	5	di-n-Butyl phthalate	2700	12000	10
2,4 Dimethylphenol	540	2300	2	di-n-Octyl phthalate	--	--	10
2,4 Dinitrophenol	70	14000	5	Fluoranthene	300	370	10
2,4 Dinitrotoluene	0.11	9.1	5	Fluorene	1300	14000	10
2,4,6 Trichlorophenol	2.1	6.5	10	Hexachlorobenzene	0.00075	0.00077	1
2,6 Dinitrotoluene	--	--	5	Hexachlorobutadiene	0.44	50	1
2-Nitrophenol	--	--	10	Hexachloro-cyclopentadiene	50	17000	5
2-Chloronaphthalene	1700	4300	10	Hexachloroethane	1.9	8.9	1
3,3' Dichlorobenzidine	0.04	0.077	5	Indeno(1,2,3,cd)-pyrene	0.0044	0.049	0.05
3-Methyl-4-Chlorophenol	--	--	1	Isophorone	8.4	600	1
2-Methyl-4,6-Dinitrophenol	13	765	5	N-Nitrosodimethyl amine (NDMA)	0.00069	8.1	5
4-Nitrophenol	--	--	5	N-Nitroso-di-n-propyl amine	0.005	1.4	5
4-Bromophenyl phenyl ether	--	--	5	N-Nitrosodiphenyl amine	5.0	16	1
4-Chlorophenyl phenyl ether	--	--	5	Naphthalene	21	--	10
Acenaphthene	1200	2700	1	Nitrobenzene	17	1900	10
Acenaphthylene	--	--	10	Pentachlorophenol	0.28	7.9	1
Anthracene	9600	110000	5	Phenanthrene	--	--	5
Benzidine	0.00012	0.00054	5	Phenol	21000	4600000	50
Benzo (a) Anthracene	0.0044	0.049	5	Pyrene	960	11000	10
Benzo (a) Pyrene	0.0044	0.049	2	**MISCELLANEOUS**			
Benzo (b) Fluoranthene	0.0044	0.049	10	Asbestos (in fibers/L k,s.)	7000000	7000000	
Benzo (g,h,i) Perylene	--	--	5	Di-isopropyl ether (DIPE)	0.8	0.8	2
Benzo (k) Fluoranthene	0.0044	0.049	2	1,4-Dioxane	3	3	
Bis (2-Chloroethoxyl) methane	--	--	5	Ethanol	1000	1000	1000
Bis(2-Chloroethyl) ether	0.031	1.4	1	Ethyl tertiary butyl ether (ETBE)	2	2	2
Bis(2-Chloroisopropyl) ether	1400	170000	10	Methanol	1000	1000	1000
Bis(2-Ethylhexyl) phthalate	1.8	5.9	5	Methyl tertiary butyl ether (MTBE)	5	5	
Butyl benzyl phthalate	3000	5200	10	Perchlorate	4	4	
Chrysene	0.0044	0.049	5	2,3,7,8-TCDD (Dioxin)	1.3E-08	1.3E-08	1.0E-05
				Tertiary amyl methyl ether (TAME)	2	2	2
				Tertiary butyl alcohol (TBA)	12	12	10
				Total petroleum hydrocarbons	100	100	

(a) = Applies to water with Municipal and Domestic Supply (MUN) (indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

ATTACHMENT B

Discharge of wastewater within a watershed/stream reach with constituent concentrations in excess of the following daily maximum limits is prohibited:

	WATERSHED/STREAM REACH	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[*] (mg/L)	Nitrogen[**] (mg/L)
1.	Miscellaneous Ventura Coastal Streams:			no waterbody specific limits		
2.	Ventura River Watershed:					
	a. Above Camino Cielo Road	700	300	50	1.0	5
	b. Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5
	c. Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5
	d. Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10
	e. Between Main St. and Ventura River Estuary			no waterbody specific limits		
3.	Santa Clara River Watershed:					
	a. Above Lang gaging station	500	100	50	0.5	5
	b. Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5
	c. Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10
	d. Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	5
	e. Between Blue Cut gaging station and A Street, Fillmore	1300	600	100	1.5	5
	f. Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	80	1.5	5
	g. Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	---
	h. Between Highway 101 Bridge and Santa Clara River Estuary			no waterbody specific limits		
	i. Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5
	j. Sespe Creek above gaging station, 500 feet downstream from Little Sespe Creek	800	320	60	1.5	5
	k. Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5
4.	Calleguas Creek Watershed:					
	a. Above Potrero Road	850	250	150	1.0	10
	b. Below Potrero Road			no waterbody specific limits		
5.	Miscellaneous Los Angeles County Coastal Streams:			no waterbody specific limits		
	a. Malibu Creek Watershed:	2000	500	500	2.0	10
	b. Ballona Creek Watershed:			no waterbody specific limits		
6.	Dominguez Channel Watershed:			no waterbody specific limits		
7.	Los Angeles River Watershed:					
	a. Los Angeles River and Tributaries-upstream of Sepulveda Flood Control Basin	950	300	150	---	8
7.	Los Angeles River Watershed (continued):					
	b. Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only.	950	300	190	---	8
	c. Other tributaries to Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	---	8
	d. Los Angeles River - between Figueroa Street and L. A. River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway	1500	350	190	---	8
	e. Other tributaries to Los Angeles River – between Figueroa	1550	350	150	---	8

(*) Where naturally occurring boron results in concentrations higher than the stated limit, a site-specific limit may be determined on a case-by-case basis.

(**) Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical limits for all streams.

WATERSHED/STREAM REACH			TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron(*) (mg/L)	Nitrogen(**) (mg/L)
		Street and Los Angeles River Estuary. Includes Arroyo Seco downstream of spreading grounds.					
	f.	Rio Hondo - between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180	---	8
	g.	Rio Hondo - upstream of Whittier Narrows Flood Control Basin	750	300	150	---	8
	h.	Santa Anita Creek above Santa Anita spreading grounds	250	30	10	---	---
	i.	Eaton Canyon Creek above Eaton Dam	250	30	10	---	---
	j.	Arroyo Seco above spreading grounds	300	40	15	---	---
	k.	Big Tujunga Creek above Hansen Dam	350	50	20	---	---
	l.	Pacoima Wash above Pacoima spreading grounds	250	30	10	---	---
8.	San Gabriel River Watershed:						
	a.	San Gabriel River above Morris Dam	250	30	10	0.6	2
	b.	San Gabriel River between Morris Dam and Ramona Blvd.	450	100	100	0.5	8
	c.	San Gabriel River and tributaries – between Ramona Blvd. and Valley Blvd.	750	300	150	1.0	8
	d.	San Gabriel River – between Valley Blvd. and Firestone Blvd. Includes Whittier Narrows Flood Control Basin and San Jose Creek - downstream of 71 Freeway only.	750	300	180	1.0	8
	e.	San Jose Creek and tributaries - upstream of 71 Freeway	750	300	150	1.0	8
	f.	San Gabriel River - between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street). Includes Coyote Creek.	no waterbody specific limits				
	g.	All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	---	---
9.	Los Angeles Harbor/ Long Beach Harbor Watershed		no waterbody specific limits				
10.	Santa Ana River Watershed						
	a.	San Antonio Creek***	225	25	---	---	---
	b.	Chino Creek***	---	---	---	---	---
11.	Island Watercourses:						
	a.	Anacapa Island	no waterbody specific limits				
	b.	San Nicolas Island	no waterbody specific limits				
	c.	Santa Barbara island	no waterbody specific limits				
	d.	Santa Catalina Island	no waterbody specific limits				
	e.	San Clemente Island	no waterbody specific limits				

*** These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by the Santa Ana Regional Board. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the CWA and the CWC and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [***40 CFR §122.41(a)***].

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [***40 CFR §122.41(a)(1)***].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [***40 CFR §122.41(c)***].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [***40 CFR §122.41(d)***].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [***40 CFR §122.41(e)***].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [***40 CFR §122.41(g)***].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [***40 CFR §122.5(c)***].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), USEPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [***40 CFR §122.41(i)***] [***CWC 13383(c)***]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [***40 CFR §122.41(i)(1)***];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [40 CFR §122.41(i)(2)];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [40 CFR §122.41(i)(3)];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [40 CFR §122.41(i)(4)].

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility [***40 CFR §122.41(m)(1)(i)***].

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [***40 CFR §122.41(m)(1)(ii)***].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [***40 CFR §122.41(m)(2)***].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [***40 CFR §122.41(m)(4)(i)***]:

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [***40 CFR §122.41(m)(4)(A)***];

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [40 CFR §122.41(m)(4)(B)]; and

   c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [40 CFR §122.41***(m)(4)(C)***].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [***40 CFR §122.41(m)(4)(ii)***].

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [***40 CFR §122.41(m)(3)(i)***].

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard

Provisions - Reporting V.E below [***40 CFR §122.41(m)(3)(ii)***].

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [***40 CFR §122.41(n)(1)***].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [***40 CFR §122.41(n)(2)***].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [***40 CFR §122.41(n)(3)***]:

    a. An upset occurred and that the Discharger can identify the cause(s) of the upset [***40 CFR §122.41(n)(3)(i)***];

    b. The permitted facility was, at the time, being properly operated [***40 CFR §122.41(n)(3)(i)***];

    c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [***40 CFR §122.41(n)(3)(iii)***]; and

    d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [***40 CFR §122.41(n)(3)(iv)***].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [***40 CFR §122.41(n)(4)***].

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [***40 CFR §122.41(f)***].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [***40 CFR §122.41(b)***].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [***40 CFR §122.41(l)(3)***] [***40 CFR §122.61***].

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [***40 CFR §122.41(j)(1)***].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [***40 CFR §122.41(j)(4)***] [***40 CFR §122.44(i)(1)(iv)***].

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [***40 CFR §122.41(j)(2)***].

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements [***40 CFR §122.41(j)(3)(i)***];

2. The individual(s) who performed the sampling or measurements [***40 CFR §122.41(j)(3)(ii)***];

3. The date(s) analyses were performed [***40 CFR §122.41(j)(3)(iii)***];

4. The individual(s) who performed the analyses [***40 CFR §122.41(j)(3)(iv)***];

5. The analytical techniques or methods used [***40 CFR §122.41(j)(3)(v)***]; and

6. The results of such analyses [***40 CFR §122.41(j)(3)(vi)***].

C. Claims of confidentiality for the following information will be denied [*40 CFR §122.7(b)*]:

1. The name and address of any permit applicant or Discharger [***40 CFR §122.7(b)(1)***]; and

2. Permit applications and attachments, permits and effluent data [***40 CFR §122.7(b)(2)***].

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, SWRCB, or USEPA within a reasonable time, any information which the Regional Water Board, SWRCB, or USEPA may request to determine whether

cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, SWRCB, or USEPA copies of records required to be kept by this Order [***40 CFR §122.41(h)***] [***CWC 13267***].

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, SWRCB, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [***40 CFR §122.41(k)***].

2. All permit applications shall be signed as follows:

    a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [***40 CFR §122.22(a)(1)***];

    b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [***40 CFR §122.22(a)(2)***]; or

    c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [***40 CFR §122.22(a)(3)***].

3. All reports required by this Order and other information requested by the Regional Water Board, SWRCB, or USEPA shall be signed by a person described in paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in paragraph (2.) of this provision [***40 CFR §122.22(b)(1)***];

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [***40 CFR §122.22(b)(2)***]; and

   c. The written authorization is submitted to the Regional Water Board, SWRCB, or USEPA [***40 CFR §122.22(b)(3)***].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, SWRCB or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR §122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [***40 CFR §122.22(d)***].

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [***40 CFR §122.41(l)(4)***].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or SWRCB for reporting results of monitoring of sludge use or disposal practices [***40 CFR §122.41(l)(4)(i)***].

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [***40 CFR §122.41(l)(4)(ii)***].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [***40 CFR §122.41(l)(4)(iii)***].

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [***40 CFR §122.41(l)(5)***].

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [***40 CFR §122.41(l)(6)(i)***].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [***40 CFR §122.41(l)(6)(ii)***]:

a. Any unanticipated bypass that exceeds any effluent limitation in this Order [***40 CFR §122.41(l)(6)(ii)(A)***].

b. Any upset that exceeds any effluent limitation in this Order [***40 CFR §122.41(l)(6)(ii)(B)***].

c. Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours [***40 CFR §122.41(l)(6)(ii)(C)***].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [***40 CFR §122.41(l)(6)(iii)***].

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [***40 CFR §122.41(l)(1)***]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR §122.29(b) [***40 CFR §122.41(l)(1)(i)***]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [***40 CFR §122.41(l)(1)(ii)***].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [***40 CFR §122.41(l)(1)(iii)***].

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or SWRCB of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [***40 CFR §122.41(l)(2)].***

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting E.3, E.4, and E.5 at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [***40 CFR §122.41(l)(7)***].

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, SWRCB, or USEPA, the Discharger shall promptly submit such facts or information [***40 CFR §122.41(l)(8)***].

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water

Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions [***40 CFR §122.41(a)(2)***] [***CWC 13385 and 13387***].

B. Any person may be assessed an administrative penalty by the Regional Water Board for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000 [***40 CFR §122.41(a)(3)***].

C. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both [***40 CFR §122.41(j)(5)***].

D. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both [***40 CFR §122.41(k)(2)***].

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [***40 CFR §122.42(a)***]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [***40 CFR §122.42(a)(1)***]:

a. 100 micrograms per liter (µg/L) [***40 CFR §122.42(a)(1)(i)***];

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [***40 CFR §122.42(a)(1)(ii)***];

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [***40 CFR §122.42(a)(1)(iii)***]; or

d. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [***40 CFR §122.42(a)(1)(iv)***].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [***40 CFR §122.42(a)(2)***]:

a. 500 micrograms per liter (µg/L) [***40 CFR §122.42(a)(2)(i)***];

b. 1 milligram per liter (mg/L) for antimony [***40 CFR §122.42(a)(2)(ii)***];

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [***40 CFR §122.42(a)(2)(iii)***]; or

a. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [*40 CFR §122.42(a)(2)(iv)*].

Publicly-Owned Treatment Works (POTWs) (Not Applicable)

ATTACHMENT G

SWRCB Minimum Levels in ppb (µg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

ATTACHMNET G (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3’ Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	

ATTACHMNET G (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

ATTACHMNET G (continued)

Table 2d – PESTICIDES – PCBs*	GC
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

California Regional Water Quality Control Board
Los Angeles Region
Recipient of the 2001 *Environmental Leadership Award* from Keep California Beautiful

Linda S. Adams
Secretary for Environmental Protection

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Arnold Schwarzenegger
Governor

ORDER NO. R4-2009-0047

WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES OF NONPROCESS WASTEWATER
TO SURFACE WATERS
IN
COASTAL WATERSHEDS OF LOS ANGELES AND VENTURA COUNTIES

(GENERAL NPDES PERMIT NO. CAG994003)

This Order was adopted by the Regional Water Quality Control Board on:	**April 2, 2009**
This Order shall become effective on:	**May 4, 2009**
This Order shall expire on:	**April 30, 2014**
The Discharger shall file a Report of Waste Discharge (Notice of Intent) in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**60 days from the date of notification of adoption of this Order**
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Board have classified this discharge as a minor discharge.	

IT IS HEREBY ORDERED, that Order No. R4-2004-0058 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (CWC) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA), and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, Tracy J. Egoscue, Executive Officer, do hereby certify the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on April 2, 2009.

Tracy J. Egoscue, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

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I. FACILITY/DISCHARGE INFORMATION

This Order (hereafter, General Permit) is intended to authorize discharges of noncontact cooling water, boiler blowdown, air conditioning condensate, water treatment plant filter backwash, swimming pool drainage where disallowed by a municipal permittee, groundwater seepage, and swimming pool filter backwash water to surface waters in the Region.

II. NOTIFICATION REQUIREMENTS

A. Eligibility Criteria

a. This order covers discharges to surface waters of noncontact cooling water, boiler blowdown, air conditioning condensate, water treatment plant filter backwash, swimmimg pool filter backwash water, swimming pool drainage, and groundwater seepage.

b. To be covered under this Order, a discharger must:

i. Demonstrate that pollutant concentrations in the discharge shall not cause violation of any applicable water quality objective for the receiving waters, including discharge prohibitions;

ii. Demonstrate that discharge shall not exceed the water quality criteria for toxics and other pollutants (Attachment A and Part V of this Order), and have no reasonable potential to cause or contribute to an excursion above the criteria.

iii. Perform reasonable potential analysis using a representative sample of wastewater to be discharged. The sample shall be analyzed and the data compared to the water quality screening criteria for the constituents listed on Attachment A to determine the applicability of toxics limitations and most appropriate permit for regulations of the discharge. If the analytical test results exceeds the water quality screening criteria listed on Attachment A, then a reasonable potential for discharge of toxics shall be considered to exist and appropriate effluent limitations shall apply to the discharge.

iv. The discharge shall not cause acute nor chronic toxicity in receiving waters;

v. If necessary, the discharge shall pass through a treatment system designed and operated to reduce the concentration of contaminants to meet the effluent limitations of this Order; and

vi. The discharger shall be able to comply with the terms or provisions of this General Permit.

c. New discharges and existing discharges regulated under existing general or individual permits, which meet the eligibility criteria, may be regulated under this Order.

d. For the purpose of renewal of existing individual NPDES permits with this General Permit, provided that all the conditions of this General Permit are met, renewal is effective upon issuance of a notification by the Executive Officer and issuance of a new monitoring program.

e. When an individual NPDES permit with more specific requirements is issued to a discharger, the applicability of this Order to that discharger is automatically terminated on the effective date of the individual permit.

B. Ineligibility

The discharge of wastewater contaminated with toxic pollutants with no effluent limitations in this permit are not eligible for enrollment under this General Permit.

C. Authorization

To be authorized to discharge under this Order, the discharger must submit a Notice of Intent (NOI) in accordance with the requirements of Part D of this Order. Upon receipt of the application, the Executive Officer shall determine the applicability of this Order to such a discharge. If the discharge is eligible, the Executive Officer shall notify the discharger that the discharge is authorized under the terms and conditions of this Order and prescribe an appropriate monitoring and reporting program. For new discharges, the discharge shall not commence until receipt of the Executive Officer's written determination of eligibility for coverage under this general permit or until an individual NPDES permit is issued by the Regional Board.

D. Notice of Intent

a. Deadline for Submission

i. Renewal of permits for existing dischargers covered under individual permits that meet the eligibility criteria and have submitted a NOI will consist of a letter of determination from the Executive Officer of coverage under this Order.

ii. Existing dischargers covered under Order No. R4-2004-0058 will be sent a NOI form that must be completed and returned to the Regional Board within 60 days of receipt; otherwise permit coverage may be revoked. Existing dischargers enrolling under this Order are required to collect a representative wastewater sample and analyze it for all the constituents listed on Attachment A. Dischargers shall conduct this analysis and submit the result with a NOI. If the analytical sample result of any constituent other than those listed in Item V. of this Order exceeds the water quality screening criteria listed on Attachment A, the discharge shall be enrolled under other appropriate general permit. Existing discharge that has been enrolled under the current permit within the last one year can re-submit the analytical data used for their initial enrollment with their NOI form.

iii. New dischargers shall file a complete application at least 45 days before commencement of the discharge.

b. Forms for Report of Waste Discharge

i. Dischargers shall use the NOI Form.

ii. The discharger, upon request, shall submit any additional information that the Executive Officer deems necessary to determine whether the discharge meets the criteria for coverage under this Order, to prescribe an appropriate monitoring and reporting program, or both.

iii. The discharger must obtain and analyze (using appropriate methods) a representative sample of the wastewater to be discharged under this Order. The analytical method used shall be capable of achieving a detection limit at or below the minimum level, otherwise, a written explanation shall be provided. The analytical result shall be submitted with the NPDES application. The data shall be tabulated and shall include the results for every constituent listed on Attachment A.

iv. The following should be included with the NOI Form:

1. The feasibility study on reuse and/or alternative disposal methods of the wastedwater;

2. Description of the treatment system, if any;

3. The type of chemicals that will be used (if any) during the operation and maintenance of the treatment system, if any;

4. Flow diagram of the treatment system;

5. Preventive maintenance procedures.

v. Title 23 of the California Code of Regulations (CCR), Division 3, Chapter 9, Article (1)(A), section 2200, ***Annual Fee Schedule,*** requires that all discharges subject to a specific general permit shall pay annual fee.

c. Notice of Termination

Dischargers shall submit a Notice of Termination or Transfer (NOTT) when coverage under this General Permit is no longer needed. An NOTT contains the Waste Discharge Identification Number (WDID), the name and address of the owner of the facility. The NOTT shall be signed and dated by the owner certifying that the discharge associated with Permit No. CAG994003 have been eliminated or that there has been a change in ownership. Upon submission, the discharger is no longer authorized to discharge wastewater associated with this General Permit.

d. Change of Ownership

Coverage under this Order may be transferred in case of change of ownership of land or discharge facility provided the existing discharger notifies the Executive Officer at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new dischargers containing a specific date of transfer of coverage, responsibility for compliance with this Order, and liability between them.

III. FINDINGS

The California Regional Water Quality Control Board, Los Angeles Region (hereinafter Regional Water Board), finds:

A. Background

a. On April 1, 2004, the Regional Board adopted Order No. R4-2004-0058 General NPDES Permit No. CAG994003-Waste Discharge Requirements for Discharges of nonprocess wastewater to surface waters. This General Permit expires on April 30, 2009. Approximately 31 dischargers are enrolled under this General Permit. This Order renews the requirements of this General Permit.

b. On September 22, 1989, the United States Environmental Protection Agency (USEPA) granted the State of California, through the State Water Resources Control Board (State Board) and the Regional Boards, the authority to issue general National Pollutant Discharge Elimination System (NPDES) permits pursuant to 40 Code of Federal Regulations (40 CFR) parts 122 and 123.

c. 40 CFR section 122.28 provides for issuance of general permits to regulate a category of point sources if the sources:

   a. Involve the same or substantially similar types of operations;
   b. Discharge the same type of waste;
   c. Require the same type of effluent limitations or operating conditions;
   d. Require similar monitoring; and
   e. Are more appropriately regulated under a general permit rather than individual permits.

d. General waste discharge requirements and NPDES permits enable Regional Board staff to expedite the processing of requirements, simplify the application process for dischargers, better utilize limited staff resources, and avoid the expense and time involved in repetitive public noticing, hearings, and permit adoptions.

B. Facility and Discharge Description

a. Discharges covered under this permit include but are not limited to, noncontact cooling water, boiler blowdown, air conditioning condensate, water treatment plant filter backwash, filter backwash, swimming pool drainage, and/or groundwater seepage.

b. Wastewater discharges specifically excluded from coverage under this Order include:

Discharges that fall into separate categories, such as cooling water discharges from power plants and petroleum refineries.

c. Pursuant to section 2, Article X, California Constitution, and section 275 of the California Water Code on preventing waste and unreasonable use of waters of the state, this Regional Board encourages, wherever practical, water conservation and/or re-use of wastewater. To obtain coverage under this Order, the discharger shall first investigate the feasibility of conservation, land disposal and/or reuse of the wastewater.

C. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. Background and Rationale for Requirements

The Regional Water Board developed the requirements of this Order based on information submitted as part of the applications for several like facilities, through monitoring and reporting programs, and through special studies and the following information.

a. The effluent limitations for discharges covered under this permit are calculated assuming no dilution. For most practical purposes, discharges from facilities covered under this permit do not flow directly into receiving water with significant flow volume to consider dilution credit or to allocate a mixing zone. Most discharges flows to storm drain systems that discharge to creeks and streams. Many of these creeks and streams are dry during the summer months. Therefore, for many months of the year, these discharges may represent all or nearly all of the flow in some portions of the receiving creeks or streams. These discharges therefore have the potential to recharge groundwaters protected as drinking waters.

An exception to this policy may be applied based on approved mixing zone study and based on demonstration of compliance with water quality objectives in the receiving water as prescribed in the Basin Plan. This exception process is more appropriate for an individual permit, and would not be appropriate for a general permit, that should be protective of most stringent water quality objectives and beneficial uses. If discharger requests that a dilution credit be included in the computation of effluent limit or that a mixing zone be allowed, an individual permit will be required. However, if no mixing zone is proposed, this general permit provides coverage for all discharges to receiving water bodies in Coastal Watersheds of Los Angeles and Ventura Counties.

b. This order regulates the discharge of nonprocess wastewater that may or may not be impacted by toxic compounds and/or conventional pollutants.

Various biological, chemical, physical, thermal treatment systems could be employed to remove toxics or conventional pollutants in the wastewater. For example, air stripping, carbon absorption, chemical oxidation treatment systems could be used to remove volatile organic compounds in wastewater. Reverse osmosis, ion exchange, or pH adjustment could be used as treatment technologies to remove conventional pollutants and heavy metals. Biological systems could be used to degrade or remove semi-volatile organic compounds. This permit does not provide specific treatment technologies for the universe of toxic compounds that could be found in wastewater. When treatment is required prior to discharge, dischargers will be required to submit during the permitting process schematics of treatment flow diagrams with descriptions of the treatment system including statements on the effectiveness of the system to achieve the applicable permit limitations.

c. This permit includes effluent limitations for heavy metals for discharges to both freshwater and saltwater bodies. For purposes of this permit, saltwater is defined as waterbodies with saline, estuarine or marine beneficial use designations. Additional clarification for applying saltwater objectives is contained in the CTR. All other inland surface waters are considered freshwater. The toxicity of certain metals in freshwater including cadmium, chromium III, copper, lead, nickel, silver and zinc are dependent on water hardness. The CTR expresses the objectives for these metals through equations where the hardness of the receiving water is a variable. To simplify the permitting process, it is necessary that fixed hardness values be used in these equations. This order requires the discharger to propose appropriate receiving water hardness or effluent hardness based on analytical results of receiving water or effluent samples. Upon approval of the Executive Officer, this hardness value will be used to determine the appropriate heavy metal limitation from the Table 3 of the Order.

d. Total Maximum Daily Load (TMDLs) for heavy metals, nutrients and other toxic pollutants have been developed for various watersheds in Los Angeles and Ventura County Watersheds. Where ever applicable, Section V.B. of this Order prescribes appropriate TMDL for these pollutants. Generally where wet weather and dry weather TMDLs are specified, this permit applies only dry weather TMDL to streamline the permitting process. However, where wet weather TMDL is specified and no dry weather TMDL is specified, then wet weather TMDL is specified in this permit. Receiving waters with specified TMDL include Los Angeles River and tributaries (copper, cadmium, lead, zinc and silver), Ballona Creek and tributaries (copper, lead, zinc, and silver), San Gabriel River and tributaries (copper, lead, zinc, and silver), Calleguas Creek and tributaries and Mugu Lagoon (copper, nickel, lead, zinc, silver and pesticides). TMDL limitations will not be prescribed for discharges that show no reasonable potential for these constituents to be in the effluent above the applicable screening criteria. If discharge can not meet these effluent limitations immediately, the discharger can apply for individual permit and seek a Time Schedule Order with interim limits for the pollutants of concern.

e. Because this Order is intended to serve as a general NPDES permit and covers discharges to all surface waters in the Los Angeles Region, the effluent limitations establish pursuant to this general order are established to protect the most protective water quality objective for the surface water beneficial uses in the Los Angeles Region.

E. California Environmental Quality Act (CEQA)

Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. Technology-Based Effluent Limitations

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations[1], require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3 of CWA.

G. Water Quality-Based Effluent Limitations

Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi). The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria which are taken from the California Toxics Rule (CTR). These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water. The attached fact sheet for this Order includes specific bases for the effluent limitations.

H. Water Quality Control Plans.

The Regional Water Board adopted a Water Quality Control Plan for the Los Angeles Region (hereinafter Basin Plan) on June 13, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

a. Basin Plan. The Basin Plan contains water quality objectives for, and lists the beneficial uses of, specific water bodies (receiving waters) in the Los Angeles Region. Typical beneficial uses covered by this Order include the following:

i. Inland surface waters above an estuary - municipal and domestic supply, industrial service and process supply, agricultural supply, groundwater recharge, freshwater replenishment, aquaculture, warm and cold freshwater habitats, inland saline water and wildlife habitats, water contact and noncontact recreation, fish migration, and fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

ii. Inland surface waters within and below an estuary - industrial service supply, marine and wetland habitats, estuarine and wildlife habitats, water contact and noncontact recreation, commercial and sport fishing, aquaculture, migration of aquatic organisms, fish migration, fish spawning, preservation of rare and endangered species, preservation of biological habitats, and shellfish harvesting.

iii. Coastal Zones (both nearshore and offshore) - industrial service supply, navigation, water contact and noncontact recreation, commercial and sport fishing, marine habitat, wildlife habitat, fish migration and spawning, shellfish harvesting, and rare, threatened, or endangered species habitat.

Requirements of this Order implement the Basin Plan.

Total Maximum Daily Loads: Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Los Angeles Region has been developing TMDLs for metals, nutrients and other toxic compounds. This Order implements approved and relevant TMDLs. Detailed discussion on TMDLs is provided in the Attachment F.

b. The State Board adopted a ***Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California*** (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975.

c. The State Board adopted a ***Water Quality Control Policy for the Enclosed Bays and Estuaries of California*** in May 1974 (Policy). The Policy contains narrative and numerical water quality objectives that are designed to prevent water quality degradation and protect beneficial uses in enclosed bays and estuaries.

The Policy also lists principles of management that include the State Board's goal to phase out all discharges (excluding cooling waters), particularly industrial process water, to enclosed bays and estuaries as soon as practicable. The waste described above is not considered an industrial process wastewater.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR)

USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. State Implementation Policy

On March 2, 2000, the State Water Board adopted the ***Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*** (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. Compliance Schedules and Interim Requirements (Not Applicable)

L. Alaska Rule.

On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards become effective for CWA purposes (40 CFR §131.21, 65 FR 24641, April 27, 2000). Under USEPA's new regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants that are no more stringent than required by CWA. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards.

N. Antidegradation Policy

Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in detail in the Fact Sheet (Attachment F), the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements

Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR §122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

P. Endangered Species Act.

This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. Monitoring and Reporting

Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (hereinafter MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

R. Standard and Special Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

S. Provisions and Requirements Implementing State Law (Not Applicable)

T. Notification of Interested Parties.

The Regional Water Board has notified the discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet (Attachment F) of this Order.

U. Consideration of Public Comment.

The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet (Attachment F) of this Order.

IV. DISCHARGE PROHIBITIONS

A. The discharge of wastes other than those which meet eligibility requirements of this Order is prohibited unless the discharger obtains coverage under another general permit or an individual permit that regulates the discharge of such wastes.

B. Bypass or overflow of contaminated nonprocess wastewater to waters of the State either at the treatment system or from any of the collection or transport systems or pump stations tributary to the treatment system is prohibited.

C. The discharge shall not cause, have a reasonable potential to cause, or contribute to an in-stream excursion above any applicable criterion promulgated by USEPA pursuant to section 303 of the CWA, or water quality objective adopted by the State or Regional Board.

D. The discharge of any radiological, chemical, or biological warfare agent or high level radiological waste is prohibited.

E. The purposeful or knowing discharge of ploychlorinated biphenols (PCBs) is prohibited.

V. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Discharge of an effluent from the outfall location(s) listed in the enrollment authorization fact sheet in excess of the following limitations is prohibited. (In the authorization letter, when a discharger is enrolled under this permit, the Executive Officer shall list in the fact sheet each constituent(s) from the appropriate limitations table(s) below that is applicable to the specific discharge).

a. Limits applicable to discharges to freshwater or saltwater bodies

Table 1—General Constituents

Constituents	Units	Discharge Limitations	
		Daily Maximum	Monthly Average
Total Suspended Solids	mg/L	150	50

Constituents	Units	Discharge Limitations	
		Daily Maximum	Monthly Average
Turbidity	NTU	150	50
BOD_5 20°C	mg/L	30	20
Oil and Grease	mg/L	15	10
Settleable Solids	ml/L	0.3	0.1
Sulfides	mg/L	1.0	
Residual Chlorine	mg/L	0.1	
Methylene Blue Active Substances (MBAS)	mg/L	0.5	

Table 2—Organic Compounds

Constituent	Units	Discharge Limitations			
		Other Waters		MUN[4]	
		Daily Max	Monthly Avg.	Daily Max	Monthly Avg.
Volatile Organic Compounds					
1,1,2-trichloroethane	µg/L	5		1.2	0.6
1,1,1-trichloroethane	µg/L	200		200	
1,1-dichloroethane	µg/L	5		5	
1,1-dichloroethylene	µg/L	6	3.2	0.11	0.057[3]
1,2-dichloroethane	µg/L	0.50		0.50	0.38[3]
1,2-trans-dichloroethylene	µg/L	10		10	
Benzene	µg/L	1.0		1.0	
Carbon tetrachloride	µg/L	0.5		0.5	0.25
Tetrachloroethylene	µg/L	5.0		1.6	0.8
Trichloroethylene	µg/L	5.0		5.0	2.7
Vinyl chloride	µg/L	0.5		0.5	

b. Limits applicable to discharges to freshwater waterbodies where no TMDLs has been established

4 MUN refers to discharges to those waterbodies designated MUN (Municipal and Domestic Supply) identified in the Basin Plan with an "E" or and "I" designation.

3 If the reported detection level is greater than the effluent limit for this constituent, then a non-detect using ML detection is deemed to be in compliance.

Table 3—Hardness-dependent Metals

Hardness (mg/L)	Units	up to 200		200 – 300		300 and above	
		Monthly Avg.	**Daily Max.**	**Monthly Avg.**	**Daily Max.**	**Monthly Avg.**	**Daily Max.**
Cadmium	µg/L	2.8	5	4.1	5	5	5
Copper	µg/L	10.4	20.8	16.6	33.3	22.1	44.4
Lead	µg/L	4.4	8.7	8.3	16.7	12.8	25.6
Nickel	µg/L	60	100	90	100	100	100
Silver	µg/L	4.0	8.1	10	20	20	41
Zinc	µg/L	86	170	130	260	170	350

Table 4—Other Compounds

Constituents	Units	Discharge Limitations			
		Other Waters		MUN[2]	
		Daily Max.	**Monthly Avg.**	**Daily Max.**	**Monthly Avg.**
Metals					
Antimony	µg/L	6		6	
Arsenic	µg/L	10		10	
Beryllium	µg/L	4		4	
Chromium III	µg/L	50		50	
Chromium VI	µg/L	16	8	16	8
Iron	µg/L	300	---	300	---
Manganese	µg/L	50	---	50	---
Mercury	µg/L	0.1	0.05[3]	0.1	0.05[3]
Selenium	µg/L	8	4	8	4

c. Limits applicable to discharges to freshwater waterbodies where TMDLs has been established

Table 5—Los Angeles River and Tributaries Metals TMDL[4]

Reach	Units	Copper		Lead		Zinc		Selenium		Cadmium	
		Daily Max.	**Monthly Avg.**	**Daily Max.**	**Monthly Avg.**	**Daily Max.**	**Monthly Avg.**	**Daily Max.**	**Monthly Avg.**	**Daily Max.**	**Monthly Avg.**
Reach 5 and 6	µg/L	30	15	19	9.5			5	2.5	3.1	1.6
Reach 4	µg/L	26	13	10	5					3.1	1.6
Reach 3 above LA-Glendale WRP and Verdugo	µg/L	23	11.5	12	6					3.1	1.6
Reach 3 below LA-Glendale WRP	µg/L	26	13	12	6					3.1	1.6

4 This effluent limit shall be deemed vacated at such time as Regional Board Resolutions R05-006 and R05-007 are vacated in compliance with a writ of mandate in the mater of Cities of Bellflower et al v. State Water Resources Control Board et al, Los Angeles Superior Court #BS101732. The Regional Board shall provide notice to the discharger of any such action.

Reach	Units	Copper		Lead		Zinc		Selenium		Cadmium	
		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
Burbank Western Channel (above WRP)	µg/L	26	13	14.	7					3.1	1.6
Burbank Western Channel (below WRP)	µg/L	19	9.5	9.1	4.5					3.1	1.6
Reach 2 and Arroyo Seco	µg/L	22	11	11	5.5					3.1	1.6
Reach 1	µg/L	23	11.5	12	6					3.1	1.6
Compton Creek	µg/L	19	9.5	8.9	4.5					3.1	1.6
Rio Hondo Rch. 1	µg/L	13	12.5	5.0	2.5	131	65.5			3.1	1.6

Table 6—Ballona Creek and Tributaries Metals TMDL[4]

Constituents	Units	Discharge Limitations	
		Daily Max.	Monthly Avg.
Metals			
Copper	µg/L	24	12.5
Lead	µg/L	13	6.5
Selenium	µg/L	5	2.5
Zinc	µg/L	304	152

Table 7—San Gabriel River and its Tributaries

Reach	Units	Copper		Lead		Zinc		Selenium	
		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
San Jose Creek Reach 1 (Confluence to temple street)	µg/L							5	2.5
San Jose Creek Reach 2 (Temple St. to I-10 at White Ave.)	µg/L							5	2.5
San Gabriel River Reach 1 (Firestone to Estuary)	µg/L	18	9						
San Gabriel River Reach 2 (Whittier Narrows to Firestone)	µg/L			166	83				
Coyote Creek	µg/L	20	10	106	53	158	79		
Estuary	µg/L	3.7	1.8						

Table 8—Calleguas Creek, its Tributaries and Mugu Lagoon

Reach	Units	Copper		Nickel		Selenium	
		Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.	Daily Max.	Monthly Avg.
1-Mabu Lagoon	µg/L	----	5.6	----	8.2	----	----
2- Calleguas Creek South	µg/L	----	13.7	----	8.2	----	----
3- Revolon Slough	µg/L	----	27	----	149	----	----
4- Calleguas Creek North	µg/L	----	3.7	----	8.3	----	5
5-Beardsley Channel	µg/L	----	3.7	----	8.3	----	5
6-Arroyo Las Posas	µg/L	----	----	----	----	----	----
7-Arroyo Simi	µg/L	----	----	----	----	----	----
8-Tapo Canyon	µg/L	----	----	----	----	----	----
9-Conejo Creek	µg/L	----	29.1	----	160	----	----
10-Hill Canyon reach of Conejo Creek	µg/L	----	29.1	----	160	----	----
11-Arroyo Santa Rosa	µg/L	----	29.1	----	160	----	----
12-North Fork Conejo Creek	µg/L	----	29.1	----	160	----	----
13-Arroyo Conejo (S.Fork Conejo Cr)	µg/L	----	29.1	----	160	----	----

d. Limits applicable to discharges to saltwater waterbodies

Table 9—Limits applicable to saltwater waterbodies

Constituents	Units	Discharge Limitations	
		Daily Max.	Monthly Avg.
Metals			
Antimony	µg/L	6	
Arsenic	µg/L	10	5
Beryllium	µg/L		
Cadmium	µg/L	5	
Chromium III	µg/L	50	
Chromium VI	µg/L	82	41
Copper	µg/L	5.8	2.9
Lead	µg/L	14	7
Mercury	µg/L	0.1	0.05[3]
Nickel	µg/L	14	6.7
Selenium	µg/L	120	58
Silver	µg/L	2.2	1.1

Constituents	Units	Discharge Limitations	
		Daily Max.	Monthly Avg.
Zinc	µg/L	95	47

e. The pH of the discharge shall at all times be within the range of 6.5 and 8.5.

f. The temperature of the discharge shall not exceed 86°F.

g. Attachment B establishes the applicable effluent limits for mineral and nitrogen constituents for discharges covered by this Order. The discharge of an effluent with mineral and nitrogen constituents in excess of applicable limits established in Attachment B is prohibited. In the letter of determination, the Executive Officer shall indicate the watershed/stream reach limitations in Attachment B applicable to the particular discharge.

h. Pass-through or uncontrollable discharges of PCBs shall not exceed daily average concentrations of 14 ng/L into fresh waters or 30 ng/L into estuarine waters.

i. The acute toxicity of the effluent shall be such that the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test less than 70% survival.

j. The discharge shall meet effluent limitations and toxic and effluent standards established pursuant to sections 301, 302, 304, 306, and 307 of the Clean Water Act, and amendments thereto.

B. Land Discharge Specifications

Not Applicable.

C. Reclamation Specifications

Not Applicable.

VI. RECEVING WATER LIMITATIONS

A. Surface Water Limitations

a. The discharge shall not cause the following to be present in receiving waters:

i Toxic pollutants at concentrations that will bioaccumulate in aquatic life to levels that are harmful to aquatic life or human health.

ii .Biostimulatory substances at concentrations that promote aquatic growth to the extent that such growth causes nuisance or adversely affects beneficial uses.

iii. Chemical substances in amounts that adversely affect any designated beneficial use.

iv. Visible floating materials, including solids, liquids, foams, and scum.

v. Oils, greases, waxes, or other materials in concentrations that result in a visible film or coating on the surface of the receiving water or on objects in the water.

vi. Suspended or settleable materials in concentrations that cause nuisance or adversely affect beneficial uses.

vii. Taste or odor-producing substances in concentrations that alter the natural taste, odor, and/or color of fish, shellfish, or other edible aquatic resources; cause nuisance; or adversely affect beneficial uses.

viii. Substances that result in increases of $BOD_5$20°C that adversely affect beneficial uses.

ix. Fecal coliform concentration which exceed a log mean of 200 per 100 ml (based on a minimum of not less than five samples equally spaced over a 30-day period), any single sample shall not exceed 400 per 100 ml.

x. Concentrations of toxic substances that are toxic to, or cause detrimental physiological responses in, human, animal, or aquatic life.

b. The discharge shall not cause the following to occur in the receiving waters:

i The dissolved oxygen to be depressed below:

WARM[5] designated waters	5 mg/L
COLD[5] designated waters	6 mg/L
COLD[5] and SPWN[5] Designated waters	7 mg/L

ii. The pH to be depressed below 6.5 or raised above 8.5, and the ambient pH levels to be changed from natural conditions in inland waters more than 0.5 units or in estuaries more than 0.2 units.

iii. The temperature at any time or place and within any given 24-hour period to be altered by more than 5°F above natural temperature; but at no time be raised above 80°F for waters with a beneficial use of WARM (Warm Freshwater Habitat).

[5] Beneficial Uses: WARM – Warm Freshwater Habitat; COLD – Cold Freshwater Habitat; SPWN – Spawning, Reproduction, and/or Early Development.

iv. The turbidity to increase to the extent that such an increase causes nuisance or adversely affects beneficial uses; such increase shall not exceed 20% when the natural turbidity is over 50 NTU or 10% when the natural turbidity is 50 NTU or less.

v. Residual chlorine in concentrations that persist and impairs beneficial uses.

vi. Any individual pesticide or combination of pesticides in concentrations that adversely affect beneficial uses or increase pesticide concentration in bottom sediments or aquatic life.

c. The discharge shall not alter the color, create a visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters.

d. The discharge shall not degrade surface water communities and population including vertebrate, invertebrate, and plant species.

e. The discharge shall not damage, discolor, nor cause formation of sludge deposits on flood control structures or facilities nor overload their design capacity.

f. The discharge shall not cause problems associated with breeding of mosquitoes, gnats, black flies, midges, or other pests.

B. Groundwater Limitations

Not Applicable.

VII. PROVISIONS

A. Standard Provisions

a. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

b. The Discharger shall comply with the following provisions:

i. The Executive Officer may require any discharger authorized under this Order to apply for and obtain an individual NPDES permit with more specific requirements. The Executive Officer may require any discharger authorized to discharge under this permit to apply for an individual permit only if the discharger has been notified in writing that a permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form, a statement setting a deadline for the discharger to file the application, and a statement that on the effective date of the individual permit, the authority to discharge under this general permit is no longer applicable.

ii. The discharger shall comply with all the applicable items of the ***Standard Provisions and Reporting for Waste Discharge Requirements*** (Standard Provisions), which are part of this general permit (Attachment D). If there is any conflict between provisions stated herein and the Standard Provisions, those provisions stated herein prevail.

iii. Prior to application, the discharger shall submit for Executive Officer's approval the list of chemicals and proprietary additives that may affect the discharge, including rates/quantities of application, compositions, characteristics, and material safety data sheets, if any.

iv. Oil or oily materials, chemicals, refuse, or other materials that may cause pollution in storm water and/or urban runoff shall not be stored or deposited in areas where they may be picked up by rainfall/urban runoff and discharged to surface waters. Any spill of such materials shall be contained, removed and cleaned immediately.

v. This Order neither exempts the discharger from compliance with any other laws, regulations, or ordinances that may be applicable, nor legalizes the waste disposal facility.

vi. The discharger shall at all times properly operate and maintain all facilities and systems installed or used to achieve compliance with this Order.

vii. Any discharge authorized under this Order may request to be excluded from the coverage of this Order by applying for an individual permit.

viii. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from treatment facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

B. Monitoring and Reporting Program Requirements

The Executive Officer is herby authorized to prescribe a Monitoring and Reporting Program for each authorized discharger. The Discharger shall comply with the MRP accompanying the transmittal for enrollment under this General NPDES permit, and future revisions thereto. If there is any conflict between provisions stated in the MRP and the Regional Water Board Standard Provisions, those provisions stated in the MRP shall prevail.

C. Special Provisions

a. Reopener Provision

i. This Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order.

ii. Pursuant to 40 CFR sections 122.62 and 122.63, this Order may be modified, revoked and reissued, or terminated for cause. Reasons for modification may include new information on the impact of discharges regulated under this Order become available, promulgation of new effluent standards and/or regulations, adoption of new policies and/or water quality objectives, and/or new judicial decisions affecting requirements of this Order. In addition, if receiving water quality is threatened due to discharges covered under this permit, this permit will be reopened to incorporate more stringent effluent limitations for the constituents creating the threat. TMDLs have not been developed for all the parameters and receiving waters on the 303(d) list. When TMDLs are developed this permit may be reopened to incorporate appropriate limits. In addition, if TMDL identifies that a particular discharge covered under this permit is a load that needs to be reduced; this permit will be reopened to incorporate appropriate TMDL based limit and/or to remove any applicable exemptions.

b. Special Studies, Technical Reports and Additional Monitoring Requirements

Not Applicable

c. Best Management Practices and Pollution Prevention

All Dischargers are encouraged to implement Best Management Practices and Pollution Prevention Plans to minimize pollutant concentrations in the discharge.

d. Construction, Operation and Maintenance Specifications

All owners or operators authorized discharge under the General Permit shall maintain and update, as necessary, a Groundwater Treatment System Operation and Maintenance (O&M) Manual to assure efficient and effective treatment of contaminated groundwater (pollutants concentrations above water quality criteria and goals). The O&M Manual shall address, but not limited to, the following.

The O&M manual shall specify both normal operating and critical maximum or minimum values for treatment process variables including influent concentrations, flow rates, water levels, temperatures, time intervals, and chemical feed rates.

The O&M manual shall specify an inspection and maintenance schedule for active and reserve system and shall provide a log sheet format to document inspection observations and record completion of maintenance tasks.

The O&M manual shall include a Contingency and Notification Plan. The plan shall include procedures for reporting personnel to assure compliance with this General Permit, as well as authorization letters from the Executive Officer.

The O&M manual shall specify safeguards to prevent noncompliance with limitations and requirements of the General Permit resulting from equipment failure, power loss, vandalism, or ten-year return frequency rainfall.

e. Engineering Design Report

For all new dischargers and existing dischargers where significant changes have made since prior submittals to the Regional Water Board, the NOI shall be accompanied by treatment flow schematic diagram and a certification, which demonstrates that the treatment process and the physical design of the treatment components will ensure compliance with the prohibitions, effluent limitations, and other conditions of the General Permit.

f. Special Provisions for Municipal Facilities (POTWs Only)

Not Applicable

g. Other Special Provisions

i. Expiration and Continuation of this Order

This Order expires on April 30, 2014; however, for those dischargers authorized to discharge under this Order, it shall continue in full force and effect until a new order is adopted. Notwithstanding Provision J (Expiration and Continuation of this Order) of Order No. R4-2004-0058, discharges regulated under Order No. R4-2004-0058 on or before sixtieth day of notification of adoption of this Order, that has submitted a completed NOI may continue under Order No. R4-2004-0058 until enrolled under this General Permit.

ii. Reauthorization

Upon reissuance of a new general permit order, dischargers authorized under this Order shall file a Notice of Intent or a new Report of Waste Discharge within 60 days of notification by the Executive Officer.

iii. Rescission

Except for enforcement purposes, Order No. R4-2004-0058, adopted by this Regional Board on April 1, 2004, is rescinded effective April 30, 2009.

h. Compliance Schedules

Not Applicable

VIII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section V of this Order will be determined as specified below:

A. General.

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Multiple Sample Data.

When determining compliance with an AMEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has n odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

C. Average Monthly Effluent Limitation (AMEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar month exceeds the AMEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

D. Average Weekly Effluent Limitation (AWEL).

If the average (or when applicable, the median determined by subsection B above for multiple sample data) of daily discharges over a calendar week exceeds the AWEL for a given parameter, this will represent a single violation, though the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. The Discharger will only be considered out of compliance for days when the discharge occurs. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

E. Maximum Daily Effluent Limitation (MDEL).

If a daily discharge <(or when applicable, the median determined by subsection B above for multiple sample data of a daily discharge)> exceeds the MDEL for a given parameter, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

F. Instantaneous Minimum Effluent Limitation.

If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

G. Instantaneous Maximum Effluent Limitation.

If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

DEFINITIONS, ACRONYMS & ABBREVIATIONS

DEFINITIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (***n***) is odd, then the median = $X_{(n+1)/2}$. If ***n*** is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the ***n***/2 and ***n***/2+1).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ACRONYMS & ABBREVIATIONS

AMEL	Average Monthly Effluent Limitation
B	Background Concentration
BAT	Best Available Technology Economically Achievable
Basin Plan	***Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties***
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practices
BMPPP	Best Management Practices Plan
BPJ	Best Professional Judgment
BOD	Biochemical Oxygen Demand
BPT	Best practicable treatment control technology
C	Water Quality Objective
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CTR	California Toxics Rule
CV	Coefficient of Variation
CWA	Clean Water Act
CWC	California Water Code
DMR	Discharge Monitoring Report
DNQ	Detected But Not Quantified
ECA	Effluent Concentration Allowance
ELAP	California Department of Health Services Environmental Laboratory Accreditation Program
ELG	Effluent Limitations, Guidelines and Standards
gpd	gallons per day
IC	Inhibition Coefficient
IC_{15}	Concentration at which the organism is 15% inhibited
IC_{25}	Concentration at which the organism is 25% inhibited
IC_{40}	Concentration at which the organism is 40% inhibited
IC_{50}	Concentration at which the organism is 50% inhibited

LA	Load Allocations
LOEC	Lowest Observed Effect Concentration
LTA	Long-Term Average
MDEL	Maximum Daily Effluent Limitation
MDL	Method Detection Limit
MEC	Maximum Effluent Concentration
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
ML	Minimum Level
MRP	Monitoring and Reporting Program
ND	Not Detected
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTR	National Toxics Rule
OAL	Office of Administrative Law
POTW	Publicly-Owned Treatment Works
PMP	Pollutant Minimization Plan
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
RPA	Reasonable Potential Analysis
RWQCB	Regional Water Quality Control Board
SCP	Spill Contingency Plan
SIP	State Implementation Policy (***Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California***)
SMR	Self Monitoring Reports
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Test Acceptability Criteria
TDS	Total Dissolved Solids
TIE	Toxicity Identification Evaluation
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document
TSS	Total Suspended Solid
TU	Toxicity Unit
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirements
WET	Whole Effluent Toxicity
WLA	Waste Load Allocations
WQBEL	Water Quality-Based Effluent Limitation
µg/L	Micrograms per Liter

ATTACHMENT A
SCREENING LEVEL FOR GENERAL NPDES PERMIT

(Screening to be conducted on untreated groundwater or wastewater sample prior to issuance of permit)

Pollutant	MUN[(a)] (µg/L)	Others[(b)] (µg/L)	Minimum Levels (ML) (µg/L)	Pollutant	MUN[(a)] (µg/L)	Others[(b)] (µg/L)	Minimum Levels (ML) (µg/L)
VOLATILE ORGANICS				**METALS[(1)]**			
1,1 Dichloroethane	5	5	1	Antimony (Sb)	14	4300	5
1,1 Dichloroethylene	0.057	3.2	0.5	Arsenic (As)	50	36	10
1,1,1 Trichloroethane	200	200	2	Beryllium (Be)	4	--	0.5
1,1,2 Trichloroethane	0.60	42	0.5	Cadmium (Cd)	2.4	9.4	0.5
1,1,2,2 Tetrachloroethane	0.17	1	0.5	Chromium III (Cr^{3+})	50	--	10
1,2 Dichlorobenzene	600	600	0.5	Chromium VI (Cr^{6+})	11	50	5
1,2 Dichloroethane	0.38	99	0.5	Copper (Cu)	9.4	3.7	0.5
1,2 Dichloropropane	0.52	39	0.5	Cyanide (CN)	5.2	--	5
1,2-Trans Dichloroethylene	10	10	1	Lead (Pb)	3.2	8.5	0.5
1,3 Dichlorobenzene	400	2600	2	Mercury (Hg)	0.050	0.051	0.2
1,3 Dichloropropylene	0.5	0.5	0.5	Nickel (Ni)	52	8.3	1
1,4 Dichlorobenzene	5	0.5	0.5	Selenium (Se)	5.0	71	2
2-Chloroethyl vinyl ether	--	--	1	Silver (Ag)	4	2.2	0.25
Acetone	700	700	na	Thallium (Ti)	1.7	6.3	1
Acrolein	100	100	5	Zinc (Zn)	122	86	20
Acrylonitrile	0.059	0.66	2.0	**PESTICIDES AND PCBs**			
Benzene	1.0	1	0.5	4,4'-DDD	0.00083	0.00084	0.05
Bromoform	4.3	360	0.5	4,4'-DDE	0.00059	0.00059	0.05
Carbon Tetrachloride	0.25	0.5	0.5	4,4'-DDT	0.00059	0.00059	0.01
Chlorobenzene	30	21000	2	Alpha-Endosulfan	0.056	0.0087	0.02
Chlorodibromo-methane	0.401	34	0.5	Alpha-BHC	0.0039	0.013	0.01
Chloroethane	100	100	2	Aldrin	0.00013	0.00014	0.005
Chloroform	100	100	2	Beta-Endosulfan	0.056	0.0087	0.01
Dichlorobromo-methane	0.56	46	0.5	beta-BHC	0.014	0.046	0.005
Ethylbenzene	700	700	2	Chlordane	0.00057	0.00059	0.1
Ethylene Dibromide	0.05	0.05	na	delta-BHC	--	--	0.005
Methyl Bromide	10	4000	2.0	Dieldrin	0.00014	0.00014	0.01
Methyl Chloride	3	3	0.5	Endosulfan Sulfate	110	240	0.05
Methyl ethyl ketone	700	700	na	Endrin	0.036	0.0023	0.01
Methyl tertiary butyl ether (MTBE)	5	5	na	Endrin Aldehyde	0.76	0.81	0.01
Methylene Chloride	4.7	1600	0.5	Heptachlor	0.00021	0.00021	0.01
Tetrachloroethylene	0.8	8.85	0.5	Heptachlor Epoxide	0.0001	0.00011	0.01
Toluene	150	150	2	gamma-BHC	0.019	0.063	0.02
Trichloroethylene	2.7	5	0.5	PCB 1016	0.00017	0.00017	0.5
Vinyl Chloride	0.5	0.5	0.5	PCB 1221	0.00017	0.00017	0.5
Xylenes	1750	1750	na	PCB 1232	0.00017	0.00017	0.5
				PCB 1242	0.00017	0.00017	0.5
				PCB 1248	0.00017	0.00017	0.5
				PCB 1254	0.00017	0.00017	0.5
				PCB 1260	0.00017	0.00017	0.5
				Toxaphene	0.00073	0.00075	0.5

(a) = Applies to water with Municipal and Domestic Supply (MUN) (indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

(1) = Metals concentrations are expressed as total recoverable.

ATTACHMENT A
SCREENING LEVEL FOR GENERAL NPDES PERMIT

Pollutant	MUN[(a)] (µg/L)	Others[(b)] (µg/L)	Minimum Levels (ML) (µg/L)
SEMI – VOLATILE ORGANICS			
1,2 Diphenylhydrazine	0.040	0.54	1
1,2,4 Trichlorobenzene	70	--	5
2 Chlorophenol	120	400	5
2,4 Dichlorophenol	93	790	5
2,4 Dimethylphenol	540	2300	2
2,4 Dinitrophenol	70	14000	5
2,4 Dinitrotoluene	0.11	9.1	5
2,4,6 Trichlorophenol	2.1	6.5	10
2,6 Dinitrotoluene	--	--	5
2-Nitrophenol	--	--	10
2-Chloronaphthalene	1700	4300	10
3,3' Dichlorobenzidine	0.04	0.077	5
3-Methyl-4-Chlorophenol	--	--	1
2-Methyl-4,6-Dinitrophenol	13	765	5
4-Nitrophenol	--	--	5
4-Bromophenyl phenyl ether	--	--	5
4-Chlorophenyl phenyl ether	--	--	5
Acenaphthene	1200	2700	1
Acenaphthylene	--	--	10
Anthracene	9600	110000	5
Benzidine	0.00012	0.00054	5
Benzo (a) Anthracene	0.0044	0.049	5
Benzo (a) Pyrene	0.0044	0.049	2
Benzo (b) Fluoranthene	0.0044	0.049	10
Benzo (g,h,i) Perylene	--	--	5
Benzo (k) Fluoranthene	0.0044	0.049	2
Bis (2-Chloroethoxyl) methane	--	--	5
Bis(2-Chloroethyl) ether	0.031	1.4	1
Bis(2-Chloroisopropyl) ether	1400	170000	10
Bis(2-Ethylhexyl) phthalate	1.8	5.9	5
Butyl benzyl phthalate	3000	5200	10
Chrysene	0.0044	0.049	5
SEMI – VOLATILE ORGANICS (continued)			
Dibenzo(a,h)-anthracene	0.0044	0.049	0.1
Diethyl phthalate	23000	120000	10
Dimethyl phthalate	313000	2900000	10
di-n-Butyl phthalate	2700	12000	10
di-n-Octyl phthalate	--	--	10
Fluoranthene	300	370	10
Fluorene	1300	14000	10
Hexachlorobenzene	0.00075	0.00077	1
Hexachlorobutadiene	0.44	50	1
Hexachloro-cyclopentadiene	50	17000	5
Hexachloroethane	1.9	8.9	1
Indeno(1,2,3,cd)-pyrene	0.0044	0.049	0.05
Isophorone	8.4	600	1
N-Nitrosodimethyl amine (NDMA)	0.00069	8.1	5
N-Nitroso-di-n-propyl amine	0.005	1.4	5
N-Nitrosodiphenyl amine	5.0	16	1
Naphthalene	21	--	10
Nitrobenzene	17	1900	10
Pentachlorophenol	0.28	7.9	1
Phenanthrene	--	--	5
Phenol	21000	4600000	50
Pyrene	960	11000	10
MISCELLANEOUS			
Asbestos (in fibers/L k,s.)	7000000	7000000	
Di-isopropyl ether (DIPE)	0.8	0.8	2
1,4-Dioxane	3	3	
Ethanol	1000	1000	1000
Ethyl tertiary butyl ether (ETBE)	2	2	2
Methanol	1000	1000	1000
Methyl tertiary butyl ether (MTBE)	5	5	
Perchlorate	4	4	
2,3,7,8-TCDD (Dioxin)	1.3E-08	1.3E-08	1.0E-05
Tertiary amyl methyl ether (TAME)	2	2	2
Tertiary butyl alcohol (TBA)	12	12	10
Total petroleum hydrocarbons	100	100	

(a) = Applies to water with Municipal and Domestic Supply (MUN) (indicated with E and I in the Basin Plan) beneficial uses designations.

(b) = Applies to all other receiving waters.

ATTACHMENT B

Discharge of wastewater within a watershed/stream reach with constituent concentrations in excess of the following daily maximum limits is prohibited:

		WATERSHED/STREAM REACH	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[(*)] (mg/L)	Nitrogen[(**)] (mg/L)
1.		Miscellaneous Ventura Coastal Streams:			no waterbody specific limits		
2.		Ventura River Watershed:					
	a.	Above Camino Cielo Road	700	300	50	1.0	5
	b.	Between Camino Cielo Road and Casitas Vista Road	800	300	60	1.0	5
	c.	Between Casitas Vista Road and confluence with Weldon Canyon	1000	300	60	1.0	5
	d.	Between confluence with Weldon Canyon and Main Street	1500	500	300	1.5	10
	e.	Between Main St. and Ventura River Estuary			no waterbody specific limits		
3.		Santa Clara River Watershed:					
	a.	Above Lang gaging station	500	100	50	0.5	5
	b.	Between Lang gaging station and Bouquet Canyon Road Bridge	800	150	100	1.0	5
	c.	Between Bouquet Canyon Road Bridge and West Pier Highway 99	1000	300	100	1.5	10
	d.	Between West Pier Highway 99 and Blue Cut gaging station	1000	400	100	1.5	5
	e.	Between Blue Cut gaging station and A Street, Fillmore	1300	600	100	1.5	5
	f.	Between A Street, Fillmore and Freeman Diversion "Dam" near Saticoy	1300	650	80	1.5	5
	g.	Between Freeman Diversion "Dam" near Saticoy and Highway 101 Bridge	1200	600	150	1.5	---
	h.	Between Highway 101 Bridge and Santa Clara River Estuary			no waterbody specific limits		
	i.	Santa Paula Creek above Santa Paula Water Works Diversion Dam	600	250	45	1.0	5
	j.	Sespe Creek above gaging station, 500 feet downstream from Little Sespe Creek	800	320	60	1.5	5
	k.	Piru Creek above gaging station below Santa Felicia Dam	800	400	60	1.0	5
4.		Calleguas Creek Watershed:					
	a.	Above Potrero Road	850	250	150	1.0	10
	b.	Below Potrero Road			no waterbody specific limits		
5.		Miscellaneous Los Angeles County Coastal Streams:			no waterbody specific limits		
	a.	Malibu Creek Watershed:	2000	500	500	2.0	10
	b.	Ballona Creek Watershed:			no waterbody specific limits		
6.		Dominguez Channel Watershed:			no waterbody specific limits		
7.		Los Angeles River Watershed:					
	a.	Los Angeles River and Tributaries-upstream of Sepulveda Flood Control Basin	950	300	150	---	8
7.		Los Angeles River Watershed (continued):					
	b.	Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street. Includes Burbank Western Channel only.	950	300	190	---	8
	c.	Other tributaries to Los Angeles River - between Sepulveda Flood Control Basin and Figueroa Street	950	300	150	---	8
	d.	Los Angeles River - between Figueroa Street and L. A. River Estuary (Willow Street). Includes Rio Hondo below Santa Ana Freeway	1500	350	190	---	8
	e.	Other tributaries to Los Angeles River – between Figueroa	1500	350	150	---	8

(*) Where naturally occurring boron results in concentrations higher than the stated limit, a site-specific limit may be determined on a case-by-case basis.

(**) Nitrate-nitrogen plus nitrite-nitrogen (NO_3-N + NO_2-N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical limits for all streams.

WATERSHED/STREAM REACH			TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron[*] (mg/L)	Nitrogen[**] (mg/L)
		Street and Los Angeles River Estuary. Includes Arroyo Seco downstream of spreading grounds.					
	f.	Rio Hondo - between Whittier Narrows Flood Control Basin and Santa Ana Freeway	750	300	180	---	8
	g.	Rio Hondo - upstream of Whittier Narrows Flood Control Basin	750	300	150	---	8
	h.	Santa Anita Creek above Santa Anita spreading grounds	250	30	10	---	---
	i.	Eaton Canyon Creek above Eaton Dam	250	30	10	---	---
	j.	Arroyo Seco above spreading grounds	300	40	15	---	---
	k.	Big Tujunga Creek above Hansen Dam	350	50	20	---	---
	l.	Pacoima Wash above Pacoima spreading grounds	250	30	10	---	---
8.	San Gabriel River Watershed:						
	a.	San Gabriel River above Morris Dam	250	30	10	0.6	2
	b.	San Gabriel River between Morris Dam and Ramona Blvd.	450	100	100	0.5	8
	c.	San Gabriel River and tributaries – between Ramona Blvd. and Valley Blvd.	750	300	150	1.0	8
	d.	San Gabriel River – between Valley Blvd. and Firestone Blvd. Includes Whittier Narrows Flood Control Basin and San Jose Creek - downstream of 71 Freeway only.	750	300	180	1.0	8
	e.	San Jose Creek and tributaries - upstream of 71 Freeway	750	300	150	1.0	8
	f.	San Gabriel River - between Firestone Blvd. and San Gabriel River Estuary (downstream from Willow Street). Includes Coyote Creek.			no waterbody specific limits		
	g.	All other minor San Gabriel Mountain streams tributary to San Gabriel Valley	300	40	15	---	---
9.	Los Angeles Harbor/ Long Beach Harbor Watershed				no waterbody specific limits		
10.	Santa Ana River Watershed						
	a.	San Antonio Creek***	225	25	---	---	---
	b.	Chino Creek***	---	---	---	---	---
11.	Island Watercourses:						
	a.	Anacapa Island			no waterbody specific limits		
	b.	San Nicolas Island			no waterbody specific limits		
	c.	Santa Barbara island			no waterbody specific limits		
	d.	Santa Catalina Island			no waterbody specific limits		
	e.	San Clemente Island			no waterbody specific limits		

*** These watercourses are primarily located in the Santa Ana Region. The water quality objectives for these streams have been established by the Santa Ana Regional Board. Dashed lines indicate that numerical objectives have not been established, however, narrative objectives shall apply. Refer to the Santa Ana Region Basin Plan for more details.

ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the CWA and the CWC and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [*40 CFR §122.41(a)*].

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [*40 CFR §122.41(a)(1)*].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [*40 CFR §122.41(c)*].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [*40 CFR §122.41(d)*].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [*40 CFR §122.41(e)*].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [*40 CFR §122.41(g)*].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [*40 CFR §122.5(c)*].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), USEPA, and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [*40 CFR §122.41(i)*] [*CWC 13383(c)*]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [*40 CFR §122.41(i)(1)*];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [40 CFR §122.41(i)(2)];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [40 CFR §122.41(i)(3)];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [40 CFR §122.41(i)(4)].

G. Bypass

1. Definitions

   a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility [*40 CFR §122.41(m)(1)(i)*].

   b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [*40 CFR §122.41(m)(1)(ii)*].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [*40 CFR §122.41(m)(2)*].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [*40 CFR §122.41(m)(4)(i)*]:

    a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [*40 CFR §122.41(m)(4)(A)*];

    b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [40 CFR §122.41(m)(4)(B)]; and

    c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [40 CFR §122.41*(m)(4)(C)*].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [*40 CFR §122.41(m)(4)(ii)*].

5. Notice

    a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [*40 CFR §122.41(m)(3)(i)*].

    b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard

Provisions - Reporting V.E below [*40 CFR §122.41(m)(3)(ii)*].

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [*40 CFR §122.41(n)(1)*].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [*40 CFR §122.41(n)(2)*].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [*40 CFR §122.41(n)(3)*]:

    a. An upset occurred and that the Discharger can identify the cause(s) of the upset [*40 CFR §122.41(n)(3)(i)*];

    b. The permitted facility was, at the time, being properly operated [*40 CFR §122.41(n)(3)(i)*];

    c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [*40 CFR §122.41(n)(3)(iii)*]; and

    d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [*40 CFR §122.41(n)(3)(iv)*].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [*40 CFR §122.41(n)(4)*].

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [*40 CFR §122.41(f)*].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [*40 CFR §122.41(b)*].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [*40 CFR §122.41(l)(3)*] [*40 CFR §122.61*].

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [*40 CFR §122.41(j)(1)*].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [*40 CFR §122.41(j)(4)*] [*40 CFR §122.44(i)(1)(iv)*].

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [*40 CFR §122.41(j)(2)*].

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements [*40 CFR §122.41(j)(3)(i)*];
2. The individual(s) who performed the sampling or measurements [*40 CFR §122.41(j)(3)(ii)*];
3. The date(s) analyses were performed [*40 CFR §122.41(j)(3)(iii)*];
4. The individual(s) who performed the analyses [*40 CFR §122.41(j)(3)(iv)*];
5. The analytical techniques or methods used [*40 CFR §122.41(j)(3)(v)*]; and
6. The results of such analyses [*40 CFR §122.41(j)(3)(vi)*].

C. Claims of confidentiality for the following information will be denied [*40 CFR §122.7(b)*]:

1. The name and address of any permit applicant or Discharger [*40 CFR §122.7(b)(1)*]; and
2. Permit applications and attachments, permits and effluent data [*40 CFR §122.7(b)(2)*].

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, SWRCB, or USEPA within a reasonable time, any information which the Regional Water Board, SWRCB, or USEPA may request to determine whether

cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, SWRCB, or USEPA copies of records required to be kept by this Order [*40 CFR §122.41(h)*] [*CWC 13267*].

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, SWRCB, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [*40 CFR §122.41(k)*].

2. All permit applications shall be signed as follows:

   a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [*40 CFR §122.22(a)(1)*];

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [*40 CFR §122.22(a)(2)*]; or

   c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [*40 CFR §122.22(a)(3)*].

3. All reports required by this Order and other information requested by the Regional Water Board, SWRCB, or USEPA shall be signed by a person described in paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in paragraph (2.) of this provision [*40 CFR §122.22(b)(1)*];

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [*40 CFR §122.22(b)(2)*]; and

   c. The written authorization is submitted to the Regional Water Board, SWRCB, or USEPA [*40 CFR §122.22(b)(3)*].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, SWRCB or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR §122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [*40 CFR §122.22(d)*].

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [*40 CFR §122.41(l)(4)*].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or SWRCB for reporting results of monitoring of sludge use or disposal practices [*40 CFR §122.41(l)(4)(i)*].

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [*40 CFR §122.41(l)(4)(ii)*].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [*40 CFR §122.41(l)(4)(iii)*].

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [*40 CFR §122.41(l)(5)*].

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [*40 CFR §122.41(l)(6)(i)*].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [*40 CFR §122.41(l)(6)(ii)*]:

a. Any unanticipated bypass that exceeds any effluent limitation in this Order [*40 CFR §122.41(l)(6)(ii)(A)*].

b. Any upset that exceeds any effluent limitation in this Order [*40 CFR §122.41(l)(6)(ii)(B)*].

c. Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours [*40 CFR §122.41(l)(6)(ii)(C)*].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [*40 CFR §122.41(l)(6)(iii)*].

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [*40 CFR §122.41(l)(1)*]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR §122.29(b) [*40 CFR §122.41(l)(1)(i)*]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [*40 CFR §122.41(l)(1)(ii)*].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [*40 CFR §122.41(l)(1)(iii)*].

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or SWRCB of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [*40 CFR §122.41(l)(2)].*

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting E.3, E.4, and E.5 at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [*40 CFR §122.41(l)(7)*].

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, SWRCB, or USEPA, the Discharger shall promptly submit such facts or information [*40 CFR §122.41(l)(8)*].

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water

Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions [*40 CFR §122.41(a)(2)*] [*CWC 13385 and 13387*].

B. Any person may be assessed an administrative penalty by the Regional Water Board for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000 [*40 CFR §122.41(a)(3)*].

C. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both [*40 CFR §122.41(j)(5)*].

D. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both [*40 CFR §122.41(k)(2)*].

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [*40 CFR §122.42(a)*]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR §122.42(a)(1)*]:

a. 100 micrograms per liter (µg/L) [*40 CFR §122.42(a)(1)(i)*];

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [*40 CFR §122.42(a)(1)(ii)*];

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR §122.42(a)(1)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [*40 CFR §122.42(a)(1)(iv)*].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR §122.42(a)(2)*]:

a. 500 micrograms per liter (µg/L) [*40 CFR §122.42(a)(2)(i)*];

b. 1 milligram per liter (mg/L) for antimony [*40 CFR §122.42(a)(2)(ii)*];

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR §122.42(a)(2)(iii)*]; or

a. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [*40 CFR §122.42(a)(2)(iv)*].

Publicly-Owned Treatment Works (POTWs) (Not Applicable)

ATTACHMENT G

SWRCB Minimum Levels in ppb (µg/L)

The Minimum Levels (MLs) in this appendix are for use in reporting and compliance determination purposes in accordance with section 2.4 of the State Implementation Policy. These MLs were derived from data for priority pollutants provided by State certified analytical laboratories in 1997 and 1998. These MLs shall be used until new values are adopted by the SWRCB and become effective. The following tables (Tables 2a - 2d) present MLs for four major chemical groupings: volatile substances, semi-volatile substances, inorganics, and pesticides and PCBs.

Table 2a - VOLATILE SUBSTANCES*	GC	GCMS
1,1 Dichloroethane	0.5	1
1,1 Dichloroethene	0.5	2
1,1,1 Trichloroethane	0.5	2
1,1,2 Trichloroethane	0.5	2
1,1,2,2 Tetrachloroethane	0.5	1
1,2 Dichlorobenzene (volatile)	0.5	2
1,2 Dichloroethane	0.5	2
1,2 Dichloropropane	0.5	1
1,3 Dichlorobenzene (volatile)	0.5	2
1,3 Dichloropropene (volatile)	0.5	2
1,4 Dichlorobenzene (volatile)	0.5	2
Acrolein	2.0	5
Acrylonitrile	2.0	2
Benzene	0.5	2
Bromoform	0.5	2
Bromomethane	1.0	2
Carbon Tetrachloride	0.5	2
Chlorobenzene	0.5	2
Chlorodibromo-methane	0.5	2
Chloroethane	0.5	2
Chloroform	0.5	2
Chloromethane	0.5	2
Dichlorobromo-methane	0.5	2
Dichloromethane	0.5	2
Ethylbenzene	0.5	2
Tetrachloroethene	0.5	2
Toluene	0.5	2
Trans-1,2 Dichloroethylene	0.5	1
Trichloroethene	0.5	2
Vinyl Chloride	0.5	2

*The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

ATTACHMNET G (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
1,2 Benzanthracene	10	5		
1,2 Dichlorobenzene (semivolatile)	2	2		
1,2 Diphenylhydrazine		1		
1,2,4 Trichlorobenzene	1	5		
1,3 Dichlorobenzene (semivolatile)	2	1		
1,4 Dichlorobenzene (semivolatile)	2	1		
2 Chlorophenol	2	5		
2,4 Dichlorophenol	1	5		
2,4 Dimethylphenol	1	2		
2,4 Dinitrophenol	5	5		
2,4 Dinitrotoluene	10	5		
2,4,6 Trichlorophenol	10	10		
2,6 Dinitrotoluene		5		
2- Nitrophenol		10		
2-Chloroethyl vinyl ether	1	1		
2-Chloronaphthalene		10		
3,3' Dichlorobenzidine		5		
3,4 Benzofluoranthene		10	10	
4 Chloro-3-methylphenol	5	1		
4,6 Dinitro-2-methylphenol	10	5		
4- Nitrophenol	5	10		
4-Bromophenyl phenyl ether	10	5		
4-Chlorophenyl phenyl ether		5		
Acenaphthene	1	1	0.5	
Acenaphthylene		10	0.2	
Anthracene		10	2	
Benzidine		5		
Benzo(a) pyrene(3,4 Benzopyrene)		10	2	
Benzo(g,h,i)perylene		5	0.1	
Benzo(k)fluoranthene		10	2	
bis 2-(1-Chloroethoxyl) methane		5		
bis(2-chloroethyl) ether	10	1		
bis(2-Chloroisopropyl) ether	10	2		
bis(2-Ethylhexyl) phthalate	10	5		
Butyl benzyl phthalate	10	10		
Chrysene		10	5	
di-n-Butyl phthalate		10		
di-n-Octyl phthalate		10		
Dibenzo(a,h)-anthracene		10	0.1	
Diethyl phthalate	10	2		
Dimethyl phthalate	10	2		
Fluoranthene	10	1	0.05	
Fluorene		10	0.1	

ATTACHMNET G (continued)

Table 2b - SEMI-VOLATILE SUBSTANCES*	GC	GCMS	LC	COLOR
Hexachloro-cyclopentadiene	5	5		
Hexachlorobenzene	5	1		
Hexachlorobutadiene	5	1		
Hexachloroethane	5	1		
Indeno(1,2,3,cd)-pyrene		10	0.05	
Isophorone	10	1		
N-Nitroso diphenyl amine	10	1		
N-Nitroso-dimethyl amine	10	5		
N-Nitroso -di n-propyl amine	10	5		
Naphthalene	10	1	0.2	
Nitrobenzene	10	1		
Pentachlorophenol	1	5		
Phenanthrene		5	0.05	
Phenol **	1	1		50
Pyrene		10	0.05	

* With the exception of phenol by colorimetric technique, the normal method-specific factor for these substances is 1,000; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 1,000.

** Phenol by colorimetric technique has a factor of 1.

Table 2c – INORGANICS*	FAA	GFAA	ICP	ICPMS	SPGFAA	HYDRIDE	CVAA	COLOR	DCP
Antimony	10	5	50	0.5	5	0.5			1,000
Arsenic		2	10	2	2	1		20	1,000
Beryllium	20	0.5	2	0.5	1				1,000
Cadmium	10	0.5	10	0.25	0.5				1,000
Chromium (total)	50	2	10	0.5	1				1,000
Chromium VI	5							10	
Copper	25	5	10	0.5	2				1,000
Cyanide								5	
Lead	20	5	5	0.5	2				10,000
Mercury				0.5			0.2		
Nickel	50	5	20	1	5				1,000
Selenium		5	10	2	5	1			1,000
Silver	10	1	10	0.25	2				1,000
Thallium	10	2	10	1	5				1,000
Zinc	20		20	1	10				1,000

* The normal method-specific factor for these substances is 1; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance.

ATTACHMNET G (continued)

Table 2d – PESTICIDES – PCBs*	GC
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
a-Endosulfan	0.02
a-Hexachloro-cyclohexane	0.01
Aldrin	0.005
b-Endosulfan	0.01
b-Hexachloro-cyclohexane	0.005
Chlordane	0.1
d-Hexachloro-cyclohexane	0.005
Dieldrin	0.01
Endosulfan Sulfate	0.05
Endrin	0.01
Endrin Aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Lindane(g-Hexachloro-cyclohexane)	0.02
PCB 1016	0.5
PCB 1221	0.5
PCB 1232	0.5
PCB 1242	0.5
PCB 1248	0.5
PCB 1254	0.5
PCB 1260	0.5
Toxaphene	0.5

* The normal method-specific factor for these substances is 100; therefore, the lowest standard concentration in the calibration curve is equal to the above ML value for each substance multiplied by 100.

Techniques:

GC - Gas Chromatography
GCMS - Gas Chromatography/Mass Spectrometry
HRGCMS - High Resolution Gas Chromatography/Mass Spectrometry (i.e., EPA 1613, 1624, or 1625)
LC - High Pressure Liquid Chromatography
FAA - Flame Atomic Absorption
GFAA - Graphite Furnace Atomic Absorption
HYDRIDE - Gaseous Hydride Atomic Absorption
CVAA - Cold Vapor Atomic Absorption
ICP - Inductively Coupled Plasma
ICPMS - Inductively Coupled Plasma/Mass Spectrometry
SPGFAA - Stabilized Platform Graphite Furnace Atomic Absorption (i.e., EPA 200.9)
DCP - Direct Current Plasma
COLOR - Colorimetric

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 29, 2010

Mark Pestrella
Deputy Director
Department of Public Works
County of Los Angeles
900 South Fremont Street
Alhambra, CA 91803-1331

Re: San Gabriel Valley Area 2 Superfund Site, Baldwin Park Operable Unit; Temporary Discharge from Two California Domestic Water Company Wells

Dear Mr. Pestrella:

We are writing to direct the Los Angeles County Flood Control District to permit a proposed discharge to the San Gabriel River of groundwater from two wells operated by California Domestic Water Company ("Cal Domestic") in the San Gabriel Valley. As we have previously discussed with the Flood Control District, Cal Domestic's Well No. 10, a replacement well, requires development and Cal Domestic's Well No. 14 requires redevelopment due to excessive sand production. During development and redevelopment, the two wells will be pumped for a period of up to five days each at flow rates of 6,000 and 5,700 gallons per minute (gpm), respectively. The estimated total volume of water to be produced as part of this one-time effort is approximately 50 million gallons.

The two wells fall within the Baldwin Park Operable Unit of the San Gabriel Valley Superfund Site ("Baldwin Park Superfund Site") and their operation contributes to the remedy for the Baldwin Park Superfund Site. Cal Domestic has indicated that it needs to develop or redevelop these two wells in order to ensure the adequate supply of domestic drinking water to its customers. Cal Domestic seeks to perform the work on these wells this summer, and EPA has determined that this work is needed in connection with the remedial action being implemented at the Baldwin Park Superfund Site.

Pursuant to Section 104(e)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9604(e)(3), EPA has authority to obtain access to certain property to effectuate a response action under CERCLA. If the Flood Control District does not permit this discharge as set forth in this letter, EPA intends to issue a formal order to the District requiring it to do so under Section 104(e)(5)(A) of CERCLA.

Contaminant levels in the water to be pumped will exceed water quality standards for certain chemicals. The table summarizes contaminant levels in Cal Domestic Well No. 14 when sampled in February 2008, and applicable standards and criteria:

Chemical	Measured Concentration in Well No. 14 (ug/L)	Federal MCL, State MCL, or CA Notification Level (ug/L, whichever is lower)	California Toxics Rule (ug/L)
1,2 DCA	0.65	0.5	0.38
TCE	5.3	5	2.7
carbon tetrachloride	1.5	0.5	0.25
PCE	2.2	5	0.8
perchlorate	13	6	-
NDMA	0.041	0.010	0.00069

Due to the high discharge rates and total volume of water to be produced, EPA has concluded that the only practicable option is to discharge the untreated water to the San Gabriel River channel. The volume is too large to containerize (at 20,000 gallons per tank, it would require approximately 2,500 temporary storage tanks to containerize the water). It is impracticable to install a temporary water treatment system, which would require an effort of similar scale to the installation of the permanent treatment systems (hundreds of thousands to millions of dollars, many months to a year or more to design and install). The discharge rates are too high to discharge the water to a sanitary sewer and there are various logistical and other issues that make discharge to an existing spreading basin or re-injection impracticable. These well development activities need to proceed so that the Cal Domestic's wells can begin, or resume, pumping and treating contaminated groundwater, which is necessary to implement the cleanup remedy that EPA has selected for the Baldwin Park Superfund Site.

The Flood Control District's Valley Blvd. rubber dams will be deployed across the receiving water (the San Gabriel River channel). This will ensure that the discharged water will be fully contained within the boundaries of the Baldwin Park Superfund Site. The inflatable dams, located downstream of Valley Blvd., will allow the discharge to infiltrate into groundwater and will prevent the discharge from reaching any other portion of the river located within the Flood Control District's municipal separate storm sewer system.

The portion of the San Gabriel River channel that is within the boundaries of the Baldwin Park Superfund Site is subject to the control of the Flood Control District. Pursuant to Section 104(e)(3) of CERCLA, EPA has authority to obtain access to property that is part of, or adjacent to, a Superfund Site where such action is needed to effectuate a response action under CERCLA. As described above, EPA has made a determination under Section 104(e)(3) that access to the San Gabriel River channel for a limited period of time is necessary in order to discharge water from the two Cal Domestic wells that are undergoing development or redevelopment.

The discharge from the two Cal Domestic wells will also be governed by 40 C.F.R. Section 122.3(d), which exempts certain categories of discharges from NPDES permit requirements. Specifically, 40 C.F.R. Section 122.3(d) exempts "any discharge in compliance with the instructions of an On-Scene Coordinator pursuant to 40 C.F.R. Part 300 (The National Oil and Hazardous Substances Pollution Contingency Plan…" EPA has determined that the discharge is necessary in order to effectuate the response actions addressing groundwater contamination at the Baldwin Park Superfund Site. EPA, through its On-Scene Coordinator authority, will provide instructions to Cal Domestic on the manner in which the discharge is to be conducted. EPA anticipates that the duration of the discharge will be no more than five days per well.

In accordance with the authorities discussed above, EPA is directing that the Los Angeles County Flood Control District provide access for the Cal Domestic discharge. If the Flood Control District does not provide access, EPA may exercise its discretion to issue a formal order pursuant to CERCLA section 104(e)(5)(A).

Sincerely,

Kathleen Salyer for

Jane Diamond, Director
Superfund Division

cc : Jim Byerrum, California Domestic Water Co. (via PDF)
Samuel Unger, California Regional Water Quality Control Board, Los Angeles Region (via PDF)
John Kemmerer, EPA Region 9 Water Division (via PDF)
Carol Williams, Main San Gabriel Basin Watermaster (via PDF)
Grace Burgess, San Gabriel Basin Water Quality Authority (via PDF)
Norm Dupont, BPOU Cooperating Respondents (via PDF)