RECEIVED
OCT 2 1 2014
DIVISION OF WATER QUALITY

ATTACHMENT F – NOTICE OF INTENT

WATER QUALITY ORDER NO. 2011-0003-DWQ
GENERAL PERMIT NO. CAG 990006

STATEWIDE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FOR RESIDUAL PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM AQUATIC ANIMAL INVASIVE SPECIES CONTROL APPLICATIONS

I. NOTICE OF INTENT STATUS (see Instructions)

Mark only one item A. ☒ New Applicator B. ☐ Change of Information: WDID# _____ C. ☐ Change of ownership or responsibility: WDID# _____

II. DISCHARGER INFORMATION

A. Name			
Metropolitan Water District of Southern California			
B. Mailing Address			
P.O. Box 54153			
C. City	D.County	E. State	F. Zip
Los Angeles	Los Angeles	CA	90054
G. Contact Person	H. Email address	I. Title	J. Phone
Daniel J. Guillory	dguillory@mwdh2o.com	Team Manager, Env Programs	213-217-5507

III. BILLING ADDRESS (Enter Information *only* if different from Section II above)

A. Name			
B. Billing Address			
C. City	D. County	E. State	F. Zip
G. Email address	H. Title	I. Phone	

IV. RECEIVING WATER INFORMATION

A. Pesticide residue discharge to (check all that apply):

☐ 1. Canals, ditches, or other constructed conveyance facilities owned and controlled by Discharger.
Name of the conveyance system: _____

☒ 2. Canals, ditches, or other constructed conveyance facilities owned and controlled by an entity other than the Discharger.
Owner's name: Los Angeles County Department of Public Works
Name of the conveyance system: San Dimas Wash

☐ 3. Directly to river, lake, creek, stream, bay, ocean, etc.
Name of water body: _____

B. Regional Water Quality Control Board(s) where application areas are located (REGION 1, 2, 3, 4, 5, 6, 7, 8, or 9): Region 4
(List all regions where pesticide application is proposed.)

A map showing the locations of A1-A3 in each Regional Water Board shall be included.

V. PESTICIDE APPLICATION INFORMATION

A. Target Organisms:

Quagga Mussels

B. Pesticides Used: List name, active ingredients and, if known, degradation by-products.

Sodium Hypochlorite

C. Period of Application: Start Date July 1 End Date June 30
Every year for the life of the permit

D. Types of Adjuvants Added by the Discharger:
None

VI. AQUATIC PESTICIDES APPLICATION PLAN

A. Has an Aquatic Pesticides Application Plan been prepared?"
☒ Yes ☐ No
If not, when will it be prepared? _____

* A copy of the APAP shall be included with the NOI.

B. Is the applicator familiar with its contents?

☒ Yes ☐ No

VII. NOTIFICATION

Have potentially affected public and governmental agencies been notified? ☒ Yes ☐ No

If yes, a copy of the notifications shall be attached to the NOI.

VIII. FEE

Have you included payment of the filing fee (for first-time enrollees only) with this submittal? ...
☒ YES ☐ NO ☐ NA

IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to ensure 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 or imprisonment. Additionally, I certify that the provisions of the General Permit, including developing and implementing a monitoring program, will be complied with."

A. **Printed Name:** Daniel J. Guillory

B. **Signature:** _____ **Date:** 10/21/14

C. **Title:** Team Manager, Environmental Program Support

X. FOR STATE WATER BOARD USE ONLY

WDID:	**Date NOI Received:**	**Date NOI Processed:**
Case Handler's Initial:	**Fee Amount Received*:** $	**Check #:**

Aquatic Pesticide Application Plan

Metropolitan Water District of Southern California

Central Basin 48

Aquatic Pesticide Application Plan (APAP)

For the

Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Pesticide Discharges to Waters of the United States from Aquatic Animal Invasive Species Control Applications

Water Quality Order No. 2011-0003-DWQ

General Permit # CAG990006

Prepared by:
Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012
Contact: Daniel J. Guillory
(213)217-5507

Submitted to:
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
Contact: Russell Norman
(916) 323-5598

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direct supervision in accordance with a system designed to insure that qualified personnel properly gathered and evaluated 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".

Signed and Agreed:

Daniel J. Guillory
Licensed Professional Engineer (Civil) #C48307
Environmental Program Support Team Manager
Metropolitan Water District of Southern California

Jeff Ruffner
Metropolitan Water District of Southern California

John W. Niedhamer
Pest Control Adviser #75184
Qualified Applicator License #102993
Metropolitan Water District of Southern California

Metropolitan Water District of Southern California

Central Basin 48

Aquatic Pesticide Application Plan

Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Pesticide Discharges to Waters of the United States from Aquatic Animal Invasive Species Control Applications
Water Quality Order No. 2011-0003-DWQ
General Permit # CAG990006

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Aquatic Pesticide Application Plan

In March 2011, the State Water Resources Control Board (SWRCB) prepared Water Quality Order # 2011-0003-DWQ, which Statewide General National Pollutant Discharge Elimination System Permit for Residual Pesticide Discharges (Permit) to Waters of the United States from Aquatic Animal Invasive Species Control Applications. The purpose of of the Permit was to:

1. Minimize the extent and duration of adverse impacts to beneficial uses of water bodies treated with aquatic pesticides; and
2. Substantially reduce the potential discharger liability incurred for releasing water treated with aquatic pesticides into waters of the United States.

The Permit will expire on February 29, 2016 unless it is administratively extended.

The Permit requires compliance with the following:

- The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries in California, a.k.a. the State Implementation Plan, or SIP (SWRCB 2000)
- The California Toxics Rule (CTR)
- Applicable Regional Water Quality Control Board (RWQCB) Basin Plan Water Quality Objectives (WQOs) (CVRWQCB 2003)

Coverage under the Permit is available to single dischargers and potentially to regional dischargers for releases of potential and/or actual pollutants to waters of the United States. Dischargers eligible for coverage under the Permit are public entities that conduct resource or pest management control measures, including local, state, and federal agencies responsible for control of aquatic invasive species that adversely impact operation and use of drinking water reservoirs, water conveyance facilities, irrigation canals, flood control channels, detention basins and/or natural water bodies.

The Permit does not cover indirect or non-point source discharges, whether from agricultural or other applications of pesticides to land, that may be conveyed in storm water or irrigation runoff. The Permit only covers pesticides that are applied according to label directions and that are registered for use on aquatic sites by the California Department of Pesticide Regulation (DPR). Based on State Water Board staff's review of DPR's database, only sodium hypochlorite-based pesticide products are registered to control aquatic animal invasive species.

For the purposes of applying for, and complying with the Permit, Metropolitan has created this APAP. Using Integrated Invasive Species Management (IISM) techniques, Metropolitan intends to apply aquatic pesticides, specifically sodium hypochlorite-based pesticide products, as identified in a new Notice of Intent to Comply (NOI) submitted to the SWRCB.

This APAP is a comprehensive plan developed by Metropolitan that describes the project, the need for the project, what may be done to reduce water quality impacts, and how those impacts will be monitored. Specifically, this APAP contains the following fourteen (14) elements:

1. Description of ALL the water body(ies) or water body systems in which pesticides are being planned to be applied or may be applied to control aquatic animal invasive species;

2. Discussion of the factors influencing the decision to select pesticide applications for aquatic animal invasive species control;

3. Pesticide products or type expected to be used and if known, their degradation by-products, the method in which they are applied, and if applicable, the adjuvants and surfactants used;

4. Description of ALL the application areas and the target areas in the system that are being planned to be applied or may be applied. Provide a map showing these areas;

5. Other control methods used (alternatives) and their limitations;

6. How much product is needed and how this amount was determined;

7. Representative monitoring locations and the justification for selecting these locations;

8. If applicable, list the gates or control structures and inspection schedule of those gates or control structures to ensure that they are not leaking;

9. Evaluation of available BMPs to determine if there are feasible alternatives to the selected pesticide application project that could reduce potential water quality impacts;

10. Description of the BMPs to be implemented. The BMPs shall include, at the minimum:

    a. Measures to prevent pesticide spill;

    b. Measures to ensure that only a minimum and consistent amount is used;

    c. Plan to educate Discharger's staff and pesticide applicator on any potential adverse effects to waters of the U.S. from the pesticide application;

    d. Descriptions of specific BMPs for each pesticide product used; and

    e. Descriptions of specific BMPs for each type of environmental setting (agricultural, urban, and wetland).

11. Identification of the problem. Prior to the first pesticide application covered under this General Permit that will result in a discharge of residual pesticides to waters of the US, and at least once each calendar year thereafter prior to the first pesticide application for that calendar year, the Discharger must do the following for each pest management area:

    a. If applicable, establish densities for pest populations to serve as action threshold(s) for implementing pest management strategies;

    b. Identify each target pest species to develop species-specific pest management strategies based on developmental and behavioral considerations for each species;

    c. Identify known breeding areas for source reduction, larval control program, and habitat management; and

    d. Analyze existing surveillance data to identify new or unidentified sources of each pest problem as well as areas that have recurring pest problems.

12. Examination of Alternatives. Dischargers shall examine alternatives to pesticide use in order to reduce the need for applying pesticides. Such methods include:

a. Evaluating the following management options, in which the impact to water quality, impact to non-target organisms, pesticide resistance, feasibility, and cost effectiveness should be considered:

- No action
- Prevention
- Mechanical or physical methods
- Cultural methods
- Biological control agents
- Pesticides

If there are no alternatives to pesticides, dischargers shall use the least amount of pesticide necessary to effectively control the target pest.

b. Using the least intrusive method of pesticide application.

13. Correct Use of Pesticides

Dischargers must ensure that all reasonable precautions are taken to minimize the impacts caused by pesticide applications. Pesticide applicators should be trained in the proper application of pesticides and handling of spills. All errors in application and spills must be reported to the proper authority. Discussion of the factors influencing the decision to select an aquatic pesticide for animal invasive species control;

14. If applicable, specify a website where public notices, required in Section VII.B, may be found.

This APAP is organized to address the aforementioned 1 through 14 elements.

Element 1: Description of the Water System

Metropolitan is a consortium of 26 cities and water districts that provide drinking water to 19 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura counties. Metropolitan currently provides an average of 1.7 billion gallons of water per day to a 5,200 square-mile service area.

Quagga Mussels (related to Zebra Mussels) were discovered in Lake Mead in January 2007. The high production of larval stages (veligers) in the Lower Colorado River during the summer of 2007 led to the rapid transport of veligers into the Colorado River Aqueduct (CRA). By July 2007 mussels were detected in the Metropolitan owned and operated Lake Mathews and Lake Skinner reservoirs. Quagga mussel numbers have continued to increase and are a source of new veligers from reproduction within these lakes. Subsequently, legislation (AB1683) was passed and went into effect in October 2007, which included Section 2301 to the Department of Fish and Game Code which declares it illegal to "import Quagga or Zebra Mussels, or to cause them to be placed or planted in any waters in the state."

Metropolitan regularly delivers water to its Member Agencies for groundwater basin recharge, which in-turn may be transferred to their sub-agencies and deposited into targeted spreading grounds and percolation basins. Metropolitan's imported water resources primarily consist of State Project Water (SPW) and Colorado River Water (CRW). To date, only one of these sources, CRW, has been found to contain Quagga mussels. A key and effective component of Metropolitan's Quagga Mussel Control Program is constant chlorination of its system used to transport CRW.

The Upper San Gabriel Valley Municipal Water District (USGVMWD) is one of Metropolitan's member agencies, and has placed an order to purchase 5,000 acre-feet of water from Metropolitan to be passed on to the Main San Gabriel Basin Watermaster (the Watermaster). The Watermaster will use this untreated (raw) water for replenishment of the Main San Gabriel Groundwater Basin. The water is to be delivered from a connection on Metropolitan's distribution system to the Watermaster utilizing channels and spreading grounds owned and operated by the Los Angeles County Department of Public Works (LACDPW). The source water for this groundwater basin recharge order will be Colorado River Water.

Metropolitan will deliver water to Upper San Gabriel Municipal Water District through Metropolitan's Service Connection (known as CenB-48 or CB-48) at an average flow rate of approximately 35 cfs.

Once released at CB-48, the water will enter a soft-bottomed portion of the San Dimas Wash in the City of San Dimas (See Figure 1 – Aerial View of San Dimas Wash and Spreading Grounds). Approximately 1,500 feet downstream of the delivery point, the soft bottomed channel transitions to a concrete-lined, rectangular channel. The Wash will convey the water to the Forbes and Ben Lomond Spreading Grounds for percolation into the Main San Gabriel Aquifer. The water will not go beyond this point and will not reach waters of the United States.

As a result of the presence of Quagga Mussel veligers, Metropolitan has determined the need to use an aquatic pesticide (sodium hypochlorite) to prevent the spread of quagga mussels to downstream waters of the US. Metropolitan's "project", as defined by the Permit, is the use of an aquatic pesticide (sodium hypochlorite) to control Quagga Mussels in San Dimas Wash.

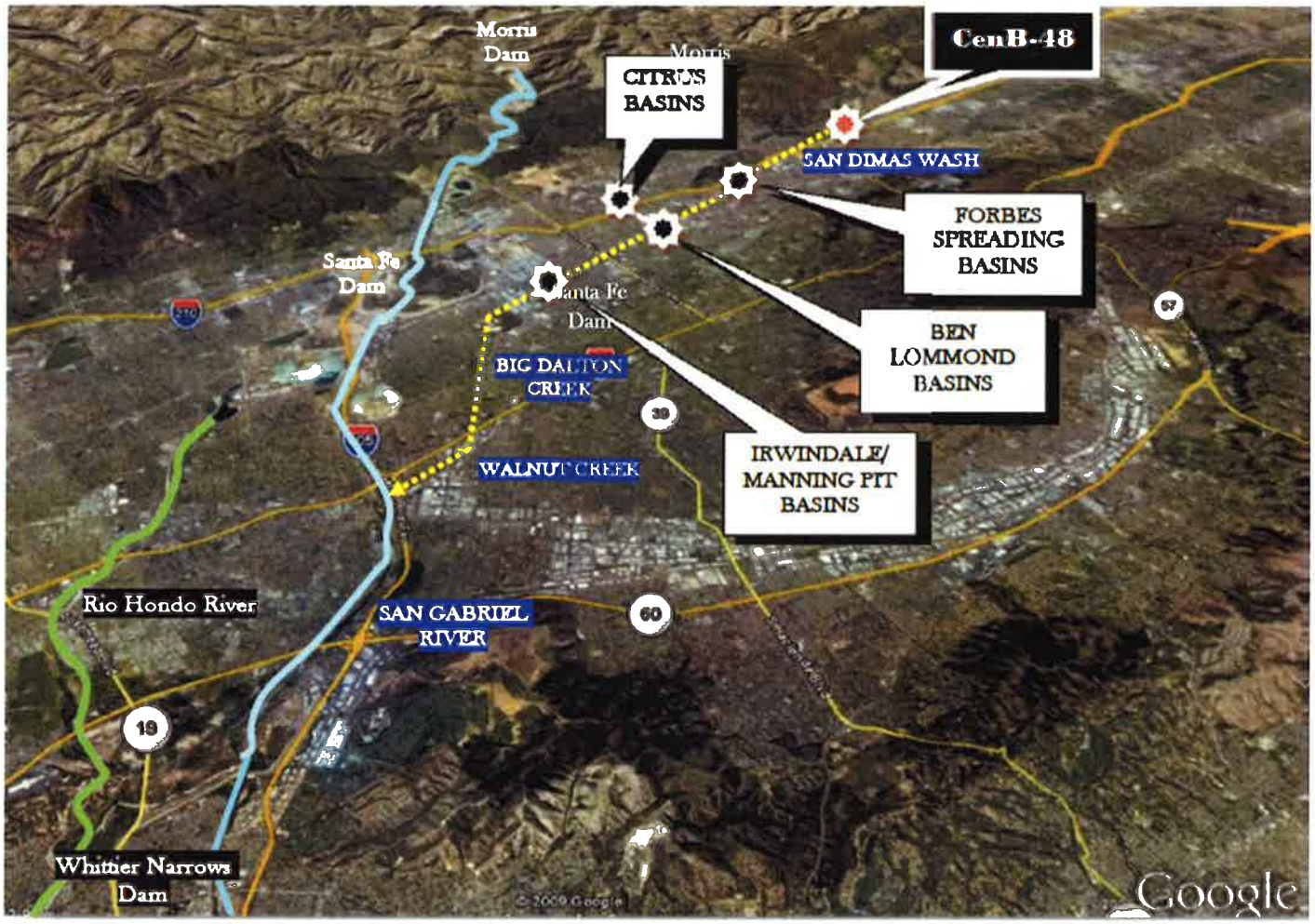


Figure 1: Aerial View of San Dimas Wash and Spreading Grounds

Element 2: Discussion of Factors Influencing Pesticide Use

Metropolitan's Quagga Mussel Control Program specifies the methodology that must be followed to determine the appropriate quagga mussel controls for water releases. A decision matrix was developed to designate the downstream risk category and for establishing feasible approaches for reducing the risk of spread of Quagga Mussels (Figure 2 – Decision Pathway for Colorado River Water Releases).

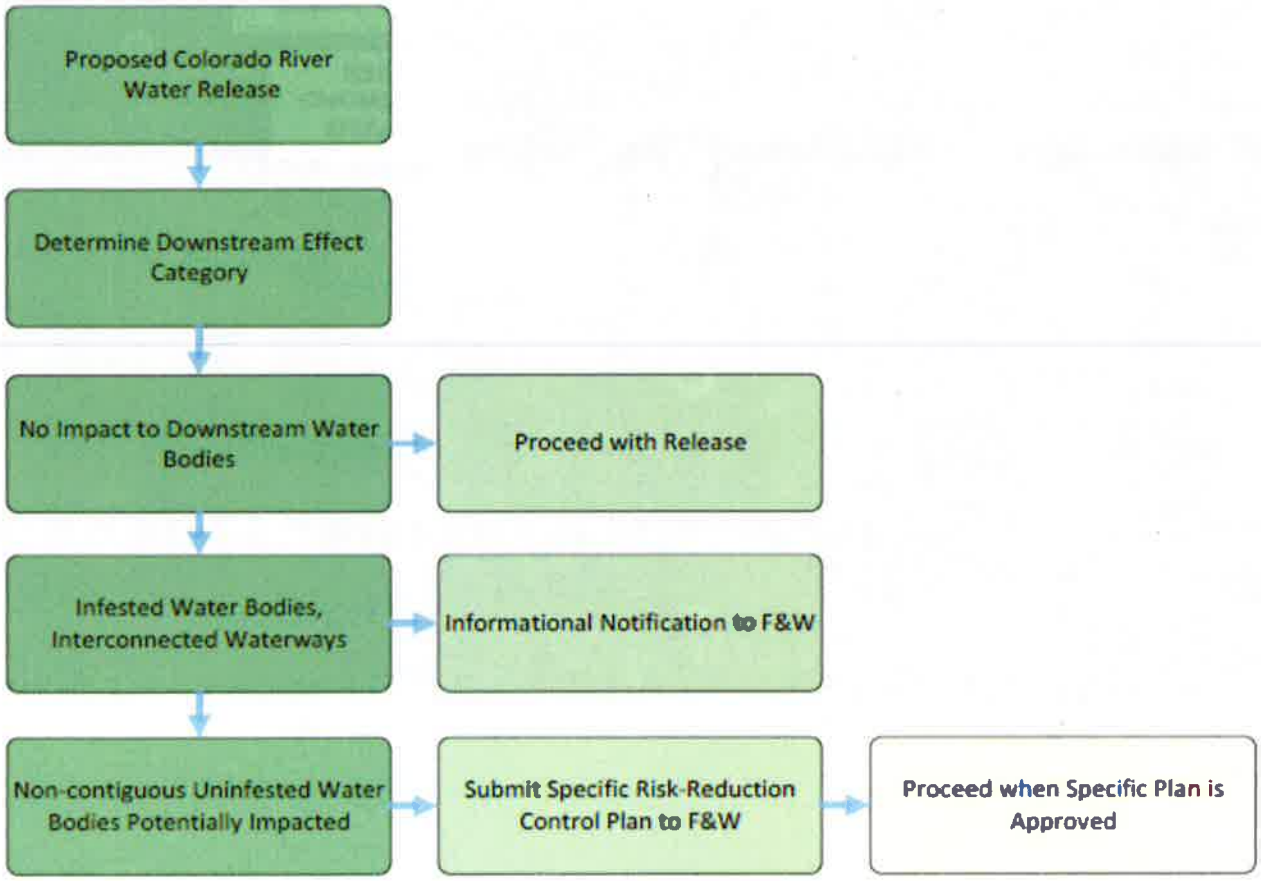


Figure 2 - Decision Pathway For Colorado River Water Releases

When it has been determined that a non-contiguous uninfested water body can be potentially impacted by a water release, such as San Dimas Wash, Metropolitan will follow the risk reduction pathway illustrated in Figure 3 – Risk Reduction Decision Matrix for Potentially Impacted Downstream Non-Contiguous Uninfested Water Bodies). The primary objective of the risk-reduction plan is to avoid contact of infested water with an uninfested water body by either percolating it into the ground or containing and returning to the original water body. In cases where neither of these options is feasible, i.e., due to location and/or volume of water to be released, a specific risk reduction plan (specific plan) will be prepared and submitted to a designated contact person for each Fish and Wildlife Region affected by the release.

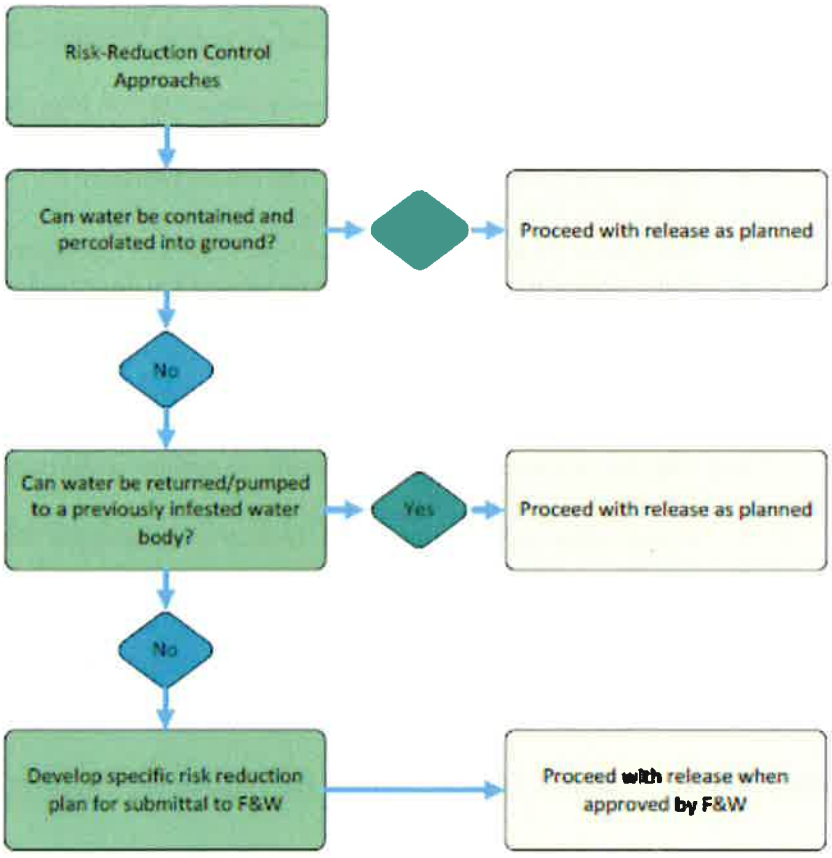


Figure 3 – Risk-Reduction Matrix For Potentially Impacted Downstream Non-Contiguous Uninfested Water Bodies

Steps and options for consideration for reduction of risk of transmission of quagga mussels to a downstream, non-contiguous uninfested water body are presented in Table 1. Metropolitan has received approval on the specific plan from the California Department of Fish and Wildlife (Attachment 1). The specific plan has been incorporated into this APAP and includes chlorination and other approved quagga mussel controls to be implemented.

Option or Process	Steps for Specific Release Plan Preparation
Affected Area Review	• Review of aerial photographs • Site review by Metropolitan's conveyance system management • Verification of downstream effect category
Risk-Reduction Plan Development Options	• Determine estimated volume of water to be released • Determine if percolation into the ground is feasible • Determine if a water exchange with non-infested raw water is feasible • Determine if treated water could be released instead (dechlorinated if needed) • Apply chlorination for veliger control with dechlorination for environmental compliance (as needed) • Minimum chlorine target exposure time and concentration is 1 hour at 0.5 mg/L free residual • Determine if a combination of the above options could be implemented to satisfy the volume requirements • Release Plan reviewed for environmental compliance by Metropolitan personnel • Additional options may be considered on a case-by-case basis depending on the weather, type, and nature of the release

TABLE 1 – Risk Reduction Procedures for Water Releases into Non-Contiguous, Non-Infested Downstream Water Bodies

Element 3: Pesticides Used, Known Degradation Byproducts, Application Methods and Adjuvants

Based on a review of DPR's database, only sodium hypochlorite-based pesticide products are registered to control aquatic animal invasive species. Therefore, Metropolitan intends to apply only sodium hypochlorite-based pesticide products for the purposes of this Permit.

Pesticide	Application Method(s)	Adjuvant
Sodium Hypochlorite	Drip, Handgun, or boom sprayer (solution form), Strainer or Burlap Bags (granular or solid form)	None

The applications will be made in accordance with the product label.

Known sodium hypochlorite degradation byproducts include salt, chlorate and oxygen as represented by the chemical equations as follows:

3 NaOCl -> 2 NaCl + NaClO3

2 NaOCl -> 2 NaCl + O2

Element 4: Description of Application Areas

Metropolitan will deliver 5,000 acre-foot (AF) of water to Upper San Gabriel Municipal Water District through Metropolitan's Service Connection (CB-48) at an average flow rate of approximately 35 cfs. During delivery of the first 4,860 acre-feet of the order, Metropolitan will deliver CRW at a flow rate of approximately 35 cfs. Sodium Hypochlorite will not be added to the discharge during this portion of the project.

Metropolitan will use a non-CRW water source for delivery of the final 140 AF to flush the channel at a rate of 5 cfs for 14 days. Once released at CB-48, the water will enter a soft-bottomed portion of the San Dimas Wash in the City of San Dimas. Approximately 1,500 feet downstream of the delivery point, the soft bottomed channel transitions to a concrete-lined, rectangular channel. Sodium hypochlorite solution will be added at this point and a 0.5 mg/L chlorine residual will be maintained throughout the wetted portion of the concrete-lined San Dimas Wash (see Figure 4 - Sodium Hypochlorite Delivery Point). The Wash will convey all the water in the San Dimas Wash to the Forbes and Ben Lomond Spreading Grounds for percolation into the Main San Gabriel Aquifer.

The proposed application area for this APAP is limited to the application of sodium hypochlorite to kill quagga mussels located within the San Dimas Wash until entry into the spreading basins. The size of the sodium hypochlorite applications area is approximately 1,000 square feet from the location where it is being added in the concrete-lined portion of the San Dimas Wash to the inlet to the Forbes Spreading ground in San Dimas, California.

Figure 4 – Sodium Hypochlorite Delivery Point

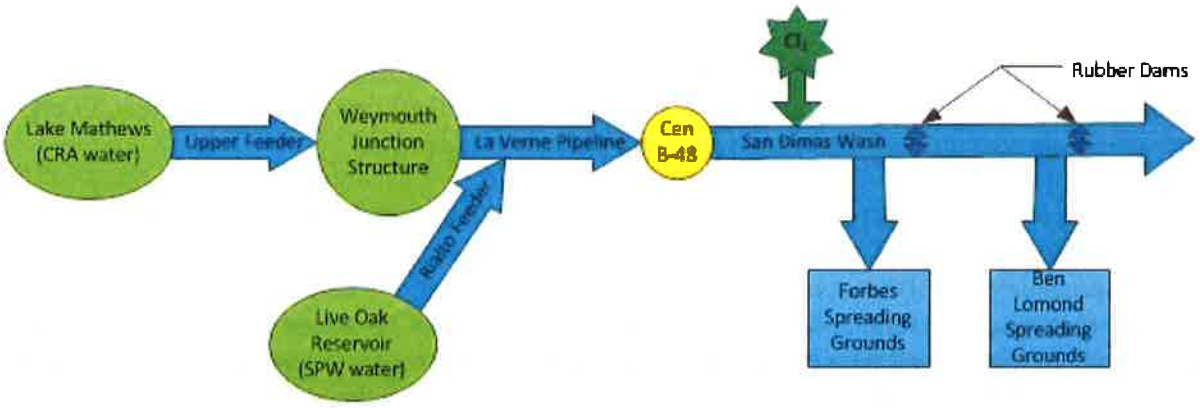


Figure 5 – Schematic Flow Diagram

Following deliveries, the soft-bottomed portion of the San Dimas Wash and the spreading basins will be allowed to percolate and desiccate for 14 days (Figure 5 - Schematic Flow Diagram). Metropolitan staff will coordinate with LACDPW staff to assure the 14-day desiccation is completed as soon as possible following deliveries, and that no water will be allowed to leave the spreading grounds or channel until the desiccation is complete. The water release and chlorination can be summarized in Table 2 – Chlorination Summary Table:

		Flow Rate		
Volume	**Days**	**CRW**	**Non-CRW**	**Chlorine**
(AF)		(CFS)	(CFS)	S.D. Wash Channel
4860	1 to 70	30	5	OFF
140	71 to 84	0	5	ON
During actual or forecast rain				
	Rain	0	5	ON

Table 2 – Chlorination Summary Table

Following deliveries, certain specified inlets to the concrete-lined portion of the San Dimas Wash may also be spot-treated with sodium hypochlorite to supplement the channel treatment. At project conclusion, any remaining water in the San Dimas Wash will be monitored to ensure that the chlorine residual meets receiving water limits before it is allowed to proceed downstream for possible contact with Waters of the US.

Element 5: Other Control Methods Used

Following deliveries, the soft-bottomed portion of the San Dimas Wash and the spreading basins will be allowed to percolate and desiccate for 14 days. Metropolitan staff will coordinate with LACDPW staff to assure the 14-day desiccation is completed as soon as possible following deliveries, and that no water will be allowed to leave the spreading grounds or channel until the desiccation is complete.

Both the Forbes and Ben Lomond Spreading Grounds will be desiccated after completion of deliveries to assure complete kill of any veligers or Quagga Mussels that may have been introduced during delivery. The majority of the San Dimas Wash desiccates; however, a small nuisance flow of approximately 3 cfs has been noted which prevents complete desiccation. At project conclusion, any remaining water in the San Dimas Wash will be monitored to ensure that the chlorine residual meets receiving water limits before it is allowed to proceed downstream for possible contact with Waters of the US.

Element 6: Determination of Product Needed

Based on State Water Board staff's review of DPR's database, only sodium hypochlorite-based pesticide products are registered to control aquatic animal invasive species. Therefore, Metropolitan intends to apply only sodium hypochlorite-based pesticide products for the purposes of this Permit.

Metropolitan proposes to use a 12.5% sodium hypochlorite solution during the last 14 days of water delivery to maintain a 0.5 mg/L chlorine residual in the wetted portion of the concrete-lined wash. The chlorine demand of the water is expected to be about 2 mg/L. Therefore, to achieve a residual of 0.5 mg/L, a chlorine dose of 2.5 mg/L will be applied. The dose will be regulated to ensure that the residual is at or slightly above 0.5 mg/L. At the above dose of 2.5 mg/L, about 960 pounds of chlorine will be required to treat the final 140 acre-feet of water to be delivered during the final 14 days. Sodium hypochlorite at the rate of 2.4 gallons per hour will be injected into the 5 cfs water flow for these 14 days to achieve the desired residual. About 806 gallons of 12.5% sodium hypochlorite solution is expected to be used for this operation.

Element 7: Monitoring Locations

Visual monitoring will be performed for all aquatic pesticide applications and be recorded by qualified personnel.

The following forms, or equivalent, will be used to record monitoring data:

- Attachment 7 – Aquatic Pesticide Application Log
- Attachment 8 – Background Sampling Form
- Attachment 9 – Event Sampling Form
- Attachment 10 – Post-Event Sampling Form

Chlorine residual monitoring and sampling will be done at the inlets to the Forbes and Ben Lomond Spreading grounds. The sample locations were chosen to verify the efficacy of the sodium hypochlorite applications. Additional monitoring and sampling may be conducted based upon site considerations, including hydrology, and environmental setting, conveyance and settling basins. Figures 6-12 below depict the project area.

Figure 6: Aerial view looking northeast to the Forbes Spreading Grounds and discharge path (white arrow) from CB-48 via the San Dimas Wash channel.

Figure 7: Aerial view looking north to the Forbes Spreading Grounds showing the inlet flow from the San Dimas Channel (white dotted line)

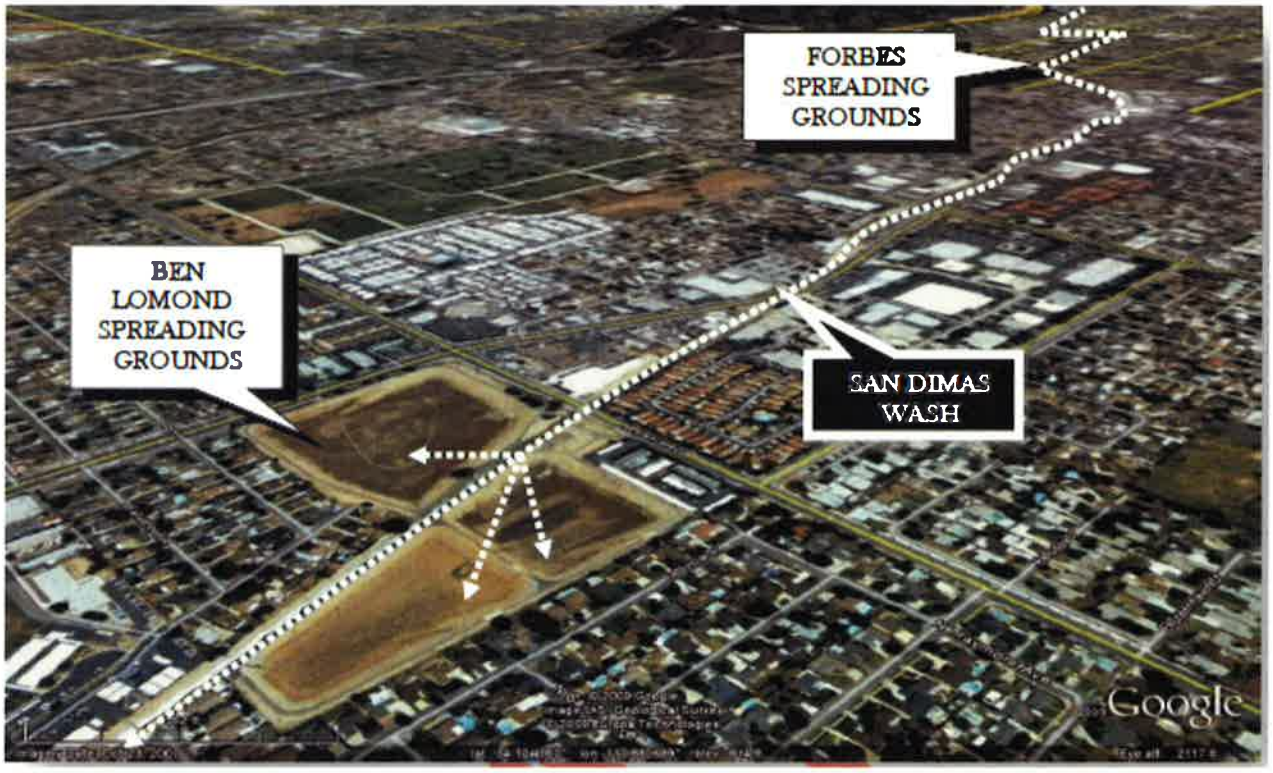


Figure 8: Aerial view looking northeast to the Ben Lomond Spreading Grounds and the CB-48 discharge flow path via the San Dimas channel

Figure 9: Aerial view looking north to the Ben Lomond Spreading Grounds showing the inlet flow path from the San Dimas Channel (white line).

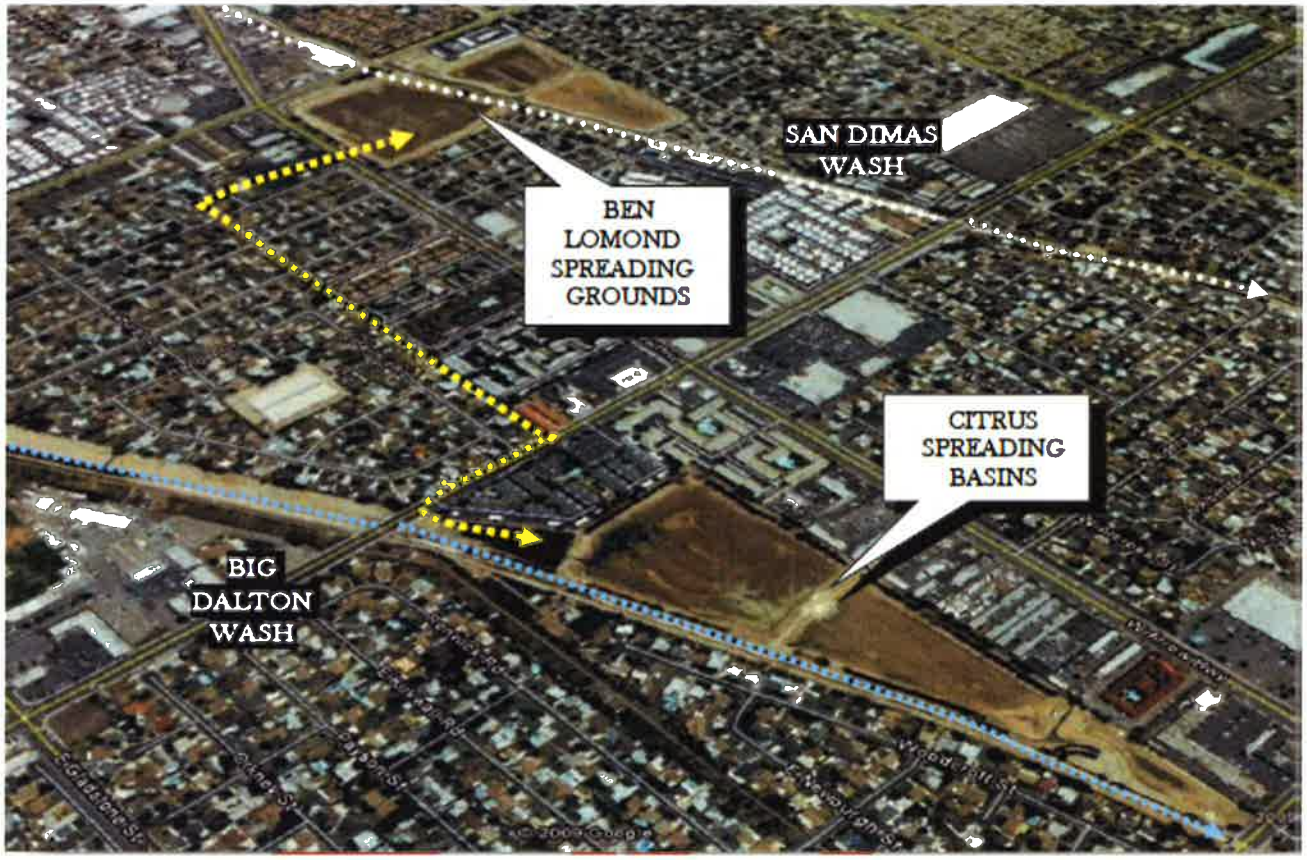


Figure 10: Aerial view looking south east to the Citrus Spreading Basins from the San Dimas Wash (white dotted line) and the Big Dalton Wash (blue dotted line)

Figure 11: Looking east to Big Dalton Creek Rubber Dam and 60" inlet slide gate (inside circle) near Basin No. 1of Citrus Spreading Basins

Figure 12: View looking north to the Citrus Spreading Basins and inlet from Big Dalton Wash (yellow dotted line) or from the Ben Lomond Basins/San Dimas Wash via interconnection pipeline (white dotted arrow)

Metropolitan uses sodium hypochlorite on an as-needed basis only to control quagga mussels in the CWA.

All the delivered water and the small nuisance flow from urban runoff (3 cfs) will be directed to the settling basins for percolation. MWD will monitor downstream of the inflatable dams to ensure that any water returning to San Dimas Wash does not come into contact with any Waters of the US.

Compliance data to be considered by MWD staff is the level of total chlorine residual. Compliance is achieved when all water has percolated to groundwater. It is not anticipated that any water will leach past the rubber dams. If chlorinated water does indeed leach past the rubber dams, Metropolitan will ensure that the chlorine residual is below 10 µg/L of total chlorine prior to any contact will surface waters. An overview of the sampling plan is described in Table 3 – Monitoring and Sampling Plan below.

Table 3: Monitoring and Sampling Plan

Sample Type	Constituent/Parameter	Units	Sample Method	Minimum Sampling Frequency	Sample Type Requirement	Required Analytical Test Method
Visual	1. San Dimas Wash 2. Appearance of San Dimas Wash (sheen, color, clarity, etc.) 3. Weather conditions (fog, rain, wind, etc.)	Not applicable	Visual Observation	Once Daily[1]	Background, Event, and Post-Event Monitoring	Not applicable

Physical	1. Temperature[2]	ºF	Grab[4]	Once Daily[1]	Background, Event, and Post-Event Monitoring	[5]
	2. pH[3]	Number				
	3. Turbidity[3]	NTU				
	4. Electrical Conductivity[3] @	µmhos/cm				
Chemical	1. Chlorine	µg/	Grab[4]	Once Daily[1]	Background, Event, and Post-Event Monitoring	[5]
	2. Dissolved Oxygen[3]	mg/L				

[1] Will be applying sodium hypochlorite continuously during application period. All water will be confined behind dams and prevented from contacting receiving waters.

[2] Field testing.

[3] Field or laboratory testing.

[4] Samples shall be collected at three feet below the surface, or mid-depth if water body is less than six feet deep.

[5] Pollutants shall be analyzed using the analytical methods described in 40 C.F.R. Part 136.

Element 8: Gates and Control Structures

Metropolitan will deliver water to Upper San Gabriel Municipal Water District through Metropolitan's Service Connection (CB-48) at an average flow rate of approximately 35 cfs. Once released at CB-48, the water will enter a soft-bottomed portion of the San Dimas Wash in the City of San Dimas. Approximately 1,500 feet downstream of the delivery point, the soft bottomed channel transitions to a concrete-lined, rectangular channel. The Wash will convey the water to the Forbes and Ben Lomond Spreading Grounds for percolation into the Main San Gabriel Aquifer. The Rubber dams in the Wash at the Forbes (See Figure 13 – Looking east to San Dimas Channel and the Forbes intake slide gate and channel rubber dam) and Ben Lomond intakes (See Figures 14 – Slide gate at Forbes Looking south to San Dimas Channel between Basin No. 1 & 2, showing the 77") will divert and control the flow, directing it into the basins. Pictures of the rubber dam used at the Forbes Spreading Grounds are below (See Figure 15 – Pictures of the Rubber Dam at Forbes Spreading Basin). The dam at Ben Lomond is similar. The dams will be inspected on a daily basis for the duration of the discharge and until all water has been directed to the spreading grounds. At the end of the project the chlorine residual will be measured in the San Dimas Wash to ensure that it meets the receiving water limits.

Figure 13: Looking east to San Dimas Channel and the Forbes intake slide gate and channel rubber dam

Figure 14: Slide gate at Forbes Looking south to San Dimas Channel between Basin No. 1 & 2, showing the 77"

Figure 15: Pictures of the Rubber Dam at Forbes Spreading Basin

Element 9: Evaluation of BMPs to Determine Feasible Alternatives to Pesticide Use

Metropolitan has evaluated feasible alternatives to pesticide use. The evaluation of BMPs to determine feasible alternatives to Pesticide is found in Elements 2 – Discussion of Factors Influencing Pesticide Use and in Element 5 - Other Control Methods Used.

Element 10: Description of BMPs to Be Implemented

Metropolitan must, at a minimum, implement the following BMPs to ensure the safe, efficient and efficacious use of aquatic pesticides.

10.1 Measures to Prevent Spills and For Spill Containment in the Event of a Spill

For spill prevention and cleanup measures, Metropolitan staff follows the aquatic pesticide (sodium hypochlorite) label instructions and the information provided on the safety data sheet (SDS) for containing and cleaning up the spill. Staff also follows the emergency response procedures detailed in Metropolitan's Health, Safety, and Environmental (HSE) Manual (Attachment 3 – HSE 202.000 Spills and Releases Notification Procedures).

During applications, staff must take all necessary precautions when mixing and loading aquatic pesticides. All label instructions must be followed to ensure safe handling and loading of pesticides (Attachment 4 - Sodium Hypochlorite Chemical Label). Application equipment must be regularly checked and maintained to identify and minimize the likelihood of leaks developing or failure that could lead to a spill. Spill and cleanup equipment must be kept in good working order and readily available at each application site.

If aquatic pesticides are spilled, they must be prevented from entering any water bodies to the extent practicable. Metropolitan staff is trained to contain any spilled material, and are familiar with the use of kitty litter, "pigs" and "pillows". Spills must be cleaned up according to label instructions, and all equipment used to remove spills must be properly contained and disposed of or decontaminated, as appropriate. Applicators must report spills as required by Metropolitan policy and in a manner consistent with local, state and federal requirements.

10.2 Measures to Ensure That Only a Minimum and Consistent Amount is Used

The following BMPs are employed to help ensure that a minimum and consistent amount of aquatic pesticide application rate is used.

10.2.1 Calculations

As a result of the presence of Quagga Mussel veligers, Metropolitan has determined the need to use an aquatic pesticide (sodium hypochlorite) to prevent the spread of quagga mussels. In order to kill quagga mussels that may be in the wet portion of the delivery channel, Metropolitan will chlorinate a 140 acre-foot volume with a sodium

hypochlorite solution and maintain a 0.5 mg/L residual throughout the wetted portion of the concrete-lined San Dimas Wash. The hypochlorite solution will be added to the channel using Metropolitan's mobile chlorination equipment (Attachment 7 – Mobile Bleach Unit Training Manual, which will be located downstream of the soft-bottomed portion of the San Dimas Wash.

The amount of sodium hypochlorite is calculated based upon the 140 acre-feet volume and the need to maintain 0.5 mg/L chlorine residual. About 806 gallons of 12.5% sodium hypochlorite solution is expected to be used for this operation.

Daily pesticide use records will be maintained by application personnel and forwarded to the District Pest Control Adviser. A Summary Monthly Pesticide Use Report listing total use must be filed with the County Agricultural Commissioner each month, by the District Pest Control Adviser.

10.2.2 Written Recommendations Reviewed and Approved by PCA

Prior to application, a Pest Control Advisor (PCA) licensed by California Department of Pesticide Regulation (DPR) and/or qualified Metropolitan staff will scout the area(s) to be treated, confirms identification of pest(s) present, and checks applicable product label(s) for control efficacy. Metropolitan staff will calculate and provide a recommendation to the PCA on the amount of sodium hypochlorite needed for the application. The PCA reviews and approves the recommendations, including rates of application, and any warnings or conditions to limit adverse environmental impacts. Licensed PCAs must complete 40 hours of continuing education every 2 years to stay licensed, and therefore are up-to-date on the latest techniques for pest control. Metropolitan has a licensed PCA on staff.

10.2.3 Applications Made According to Label

All aquatic pesticide applications are made according to the product label in accordance with regulations of the U.S. EPA, CalEPA, Cal OSHA, DPR, and the local Agricultural Commissioner. Metropolitan's PCA regularly monitor updates and amendments to the label so that applications are in accordance with label directions. Metropolitan's PCA and/or a member of MWD's staff are on-site for applications to ensure compliance with the label and aquatic pesticide use recommendations.

10.2.4 Applications Made by Qualified Applicator Certificate Holders

Metropolitan staff make applications approved by the PCA. Metropolitan staff have knowledge of proper equipment loading, nozzle selection, calibration, and operation so that spills are minimized, precise applications are conducted according to the label, and only target species are treated.

10.3 Plan to Educate MWD's Staff and Pesticide Applicator On Any Potential Adverse Effects to Waters of the U.S .From the Pesticide Application

As described in the sections above, Metropolitan's PCA holders must meet continuing education requirements to stay licensed, and therefore are up-to-date on the latest techniques for pest control reducing potential impact on the environment. The PCA provides on the job training to pesticide applicators.

10.4 Descriptions of Specific BMPs for each Pesticide Product Used

As necessary, inflatable dams, valves, intakes, etc. will be closed as necessary to prevent discharge of residual aquatic pesticides. Additionally, public agencies are notified prior to any aquatic pesticide applications that could potentially impact their operations and the information is also posted on Metropolitan's website at www.mwdh2o.com.

10.5 Description of BMPs for Each Environmental Setting

10.5.1 Applications Made According to Label

All aquatic pesticide applications are made according to the product label in accordance with regulations of the U.S. EPA, CalEPA, DPR, Cal OSHA and the local Agricultural Commissioner. Precautions on the product label to prevent adverse environmental impacts must be followed. For example, allowing chlorinated water to percolate and dechlorination will be conducted to ensure that Waters of the U.S. and beneficial uses are not adversely impacted.

All District employees handling aquatic pesticides must wear recommended Personal Protection Equipment. PPE requirements for the State of California may exceed label requirements: all applicators must wear (at the very least) long sleeves, long pants, boots, gloves and proper eye protection. Anything above and beyond that which is required by the pesticide label must be worn as well. Respiratory protection will be according to the pesticide label. A copy of the pesticide label and Safety Data Sheet will be on site during the entire application. The location of Emergency Medical Care will be clearly posted on site.

Metropolitan's PCA or qualified Metropolitan staff are on-site for applications to ensure compliance with the label and aquatic pesticide use recommendations.

10.5.2 Review and Approval by PCA

Prior to application, a PCA licensed by DPR and/or qualified Metropolitan staff will scout the area to be treated and check the sodium hypochlorite product label for control efficacy. In collaboration with Metropolitan staff, the PCA then approves the project plan prepared by Metropolitan staff, including rates of application, and any warnings or conditions that limit the application so that beneficial uses are not adversely impacted.

Metropolitan's PCA or qualified Metropolitan staff are on-site for applications to ensure compliance with the label and aquatic pesticide use recommendations. Any Metropolitan employees, who do not have Qualified Applicator Licenses from the State Department of Pesticide Regulation or Qualified Applicator Certificates, will be working under the license of the Metropolitan's PCA. The PCA will either be present or be on call (within one hour) during the entire application process.

10.5.3 Applications Made by Trained Metropolitan Employees

Any District employees performing application tasks must receive Pesticide Safety Training prior to handling any pesticide materials. Training must be documented and it must be renewed annually. These applicators have knowledge of proper equipment loading, nozzle selection, calibration, and operations so that spills are minimized, precise application rates are made according to the label, and only target species are treated.
Calibration ensures that the correct quantity and rate of pesticide is applied.

Element 11: Identification of the Pest Problem

11.1 Pest Densities Action Thresholds

CRW has been found to contain Quagga mussels. Section 2301 to the Fish and Game Code that made it illegal to import quagga or zebra mussels, or to cause them to be placed or planted in any waters in the state. However, Section 2301(d) allows public water supply operators to continue water deliveries in compliance with a Fish and Wildlife approved mussel control plan. In addition, operators of water supply systems are required to implement measures, in cooperation with Fish and Wildlife, to control or eradicate any infestation that may occur in a water supply system, in accordance with an approved plan. The Department of Fish and Wildlife has approved the Metropolitan's Quagga Mussel Control Program Raw Water Discharge Plan for MWD Service Connection CB-48. Metropolitan will be following this plan.

11.2 Target Species Pest Management Strategies

The Department of Fish and Wildlife has approved the Quagga Mussel Control Program Raw Water Discharge Plan for MWD Service Connection CB-48. Metropolitan will be following this plan.

11.3 Pest Source Reduction, Larval Control and Habitat Management

CRW has been found to contain Quagga mussels. The Department of Fish and Wildlife has approved the Metropolitan's Quagga Mussel Control Program Raw Water Discharge Plan for MWD Service Connection CB-48. Metropolitan will be following this plan.

11.4 Recurring, New or Unidentified Sources of Pest Problem

CRW has been found to contain Quagga mussels. There are no new or unidentified sources of quagga mussels.

Element 12: Examination of Pesticide Use Alternatives

12.1 Evaluation of Other Management Options

12.1.1 No Action

No action is only feasible when Quagga mussels veligers are not present.

12.1.2 Prevention

Quagga mussels are already present in the CWA. Metropolitan must make water delivers to its member agencies and sodium hypochlorite is the only approved pesticide for quagga mussel control.

12.1.3 Mechanical or Physical Methods

Metropolitan has tested quagga mussel filters without success.

12.1.4 Cultural Methods

Non-pesticide cultural controls methods that Metropolitan can implement include desiccating any Quagga veligers in the release. Desiccation is not possible due to the 3cfs urban runoff nuisance flow in the San Dimas wash,

12.1.5 Biological Control Agents

Not available.

12.1.6 Pesticides

After all other alternatives have been evaluated; the application of aquatic pesticides may be the only viable option available in order to prevent the quagga mussels. There are no current alternatives to using sodium hypochlorite that is registered for use in California.

In order to reduce the amount and impact, the application of sodium hypochlorite will be done to maintain a total chlorine reading of 0.5 mg/L until entry into the percolation basins.

12.2 Using the Least Intrusive Method of Aquatic Pesticide Application

Metropolitan considers all feasible options in order to use the least intrusive method available when making applications. Metropolitan will employ a mobile chlorination trailer or other appropriate methods (using sodium hypochlorite) for the application. Based on the need to safely hold, transport and properly apply algaecides and aquatic pesticides, Metropolitan employs feasible techniques that are the least intrusive as possible.

Element 13: Correct Use of Pesticides

Trained Metropolitan staff will only apply aquatic pesticides recommended by the PCA. These applicators have knowledge of proper equipment loading, nozzle selection, calibration, and operations so that spills are minimized and precise application rates are made according to the product label.

For spill prevention and cleanup measures, Metropolitan staff follows the aquatic pesticide (sodium hypochlorite) label instructions and the information provided on the safety data sheet (SDS) for containing and cleaning up the spill. Staff also follows the emergency response procedures detailed in Metropolitan's Health, Safety, and Environmental (HSE) Manual (refer to HSE 202.000 Spills and Releases Notification Procedure and other related procedures).

During applications, staff must take all necessary precautions when mixing and loading aquatic pesticides. All label instructions must be followed to ensure safe handling and loading of pesticides. Application equipment must be regularly checked and maintained to identify and minimize the likelihood of leaks developing or failure that could lead to a spill. Spill and cleanup equipment must be kept in good working order and readily available at each application site.

If aquatic pesticides are spilled, they must be prevented from entering any water bodies to the extent practicable. Metropolitan staff is trained to contain any spilled material, and are familiar with the use of kitty litter, "pigs" and

"pillows". Spills must be cleaned up according to label instructions, and all equipment used to remove spills must be properly contained and disposed of or decontaminated, as appropriate. Applicators must report spills as required by Metropolitan policy and in a manner consistent with local, state and federal requirements.

Element 14: Public Notices Website Location

Public Notice Requirements

Every calendar year, at least 15 days prior to the first application of aquatic pesticide, Metropolitan must notify potentially affected public agencies. The notification must be posted on Metropolitan's website at www.mwdh2o.com.

References

SWRCB. 2011. Statewide General National Pollutant Discharge Elimination System (NPDES) Permit for Residual Pesticide Discharges to Waters of the United States from Aquatic Animal Invasive Species Control Applications, Water Quality Order No. 2011-0003-DWQ, General Permit # CAG990006.

Central Basin APAP
ATTACHMENT 1

Department of Fish and Game Approval of Quagga Mussel Control Program

Guillory,Dan

From: Guillory,Dan
Sent: Monday, October 13, 2014 9:19 AM
To: Guillory,Dan
Subject: Approval of Quagga Mussel Control Program

-----Original Message-----
From: Tavares, Eloise@Wildlife [mailto:Eloise.Tavares@wildlife.ca.gov]
Sent: Friday, September 26, 2014 11:31 AM
To: Boyd,Glen K
Cc: O'Brien, John@Wildlife; Stewart, Terri@Wildlife
Subject: Plan Approval

Dear Mr. Boyd:

Thank you for the Metropolitan Water District of Southern (MWD) California Quagga Mussel Control Program Raw Water Discharge Plan for MWD Service Connection CENB-48 (Plan). The Department of Fish and Wildlife (formerly known as the Department of Fish and Game) approves this revised Plan and appreciates working with you and with your agency.

If you have any questions, comments or suggestions please feel free to contact me at (562) 342-7155 or eloise.tavares@wildlife.ca.gov.

Sincerely,
Eloise Tavares, MPPA

Central Basin APAP
ATTACHMENT 2

HSE 202.000 Spills and Releases Notification Procedure

SPILLS AND RELEASES NOTIFICATION PROCEDURE

1.0 SCOPE

This procedure provides instructions on reporting to appropriate federal, state and local regulatory agencies (and Metropolitan management) the accidental release or threatened release of hazardous materials, including petroleum products, and hazardous waste. This procedure also provides instructions on the reporting of spills of industrial waste materials (sludge and other non-hazardous wastes) that may leave Metropolitan property or enter a stream or storm water conveyance system. The procedure defines release categories based on material and circumstances of the release and defines reporting thresholds based on the significance/level of risk. Further, the procedure establishes notification responsibilities for Metropolitan personnel.

This procedure only applies to releases on Metropolitan property - for spills or releases that occur during transportation on public roads refer to HSE 203.000 – Hazardous Materials Transportation Program.

2.0 APPLICABILITY

This procedure applies to all Metropolitan personnel, with emphasis on:

- Treatment Plant and C&D Personnel;
- Treatment Plant Control Room Operators, Desert Operations Control Center personnel and Operations Control Center personnel;
- Treatment Plant and C&D Managers and Incident Commanders; and
- On-Call EHS Site Support Managers and Environmental Site Support staff

3.0 REGULATORY AUTHORITY

Many statutes require emergency notification of a release of a hazardous material or industrial waste, including:

- California Health and Safety Code §25270.7, 25270.8, 25507
- California Fire Code §8001.5.2.2
- Title 42, U.S. Code §9603, 11004
- Title 33, Chapter 26, U.S. Code

In addition to statutes, there are various regulations that require emergency notification in the event of a release of a hazardous material or hazardous waste, including:

- Title 19, California Code of Regulations (CCR), §2703, 2703c, 2705
- Title 22, CCR, §66265.56 (j), 66265.196 (e)
- Title 49 Code of Federal Regulations (CFR), Parts 100- 177, especially §171.15, and Part 263, §263.30
- Title 49 CFR, §171.16

It is required under the state law and regulations to immediately notify the California Emergency Management Agency (Cal/EMA) and the appropriate local regulatory agency of all significant releases or threatened release of hazardous materials. In addition, releases of industrial waste may require immediate

notification to the Regional Water Quality Control Board, State Fish and Game, and other appropriate state and local agencies.

Note: Under Title 19 Section 2703c, if the facility owner (e.g. MWD management) determines a release to be not significance, reporting is not required unless otherwise mandated by local ordinance. This procedure provides objective guidance to clarify the meaning of "significant".

Federal law and regulations require immediate notification of the National Response Center (NRC) and Cal/EMA for a hazardous material release exceeding a specified threshold quantity (known as a Federal reportable quantity or "EPA RQ") of a listed hazardous substance or hazardous waste – see Appendix D.

4.0 RESPONSIBITIES AND REQUIREMENTS

This section describes the responsibilities for internal and external (regulatory) notification of a spill or release of hazardous materials (including chlorine), hazardous waste or industrial waste.

Appendix A shows the notification process flow within Metropolitan, after the initial spill/release event. Appendices B and C provide a graphic presentation of the internal and external (regulatory agency) notification processes, including decision criteria and reporting thresholds.

Note: Any spill or release, regardless of size or location, which results in an injury, is reportable to regulatory agencies.

Metropolitan Personnel

All Metropolitan personnel are required to take the following actions regarding reporting of spills and releases (see also Appendix A):

Releases - General

1. Immediately call Control Center (see System Operating Orders) and report the following information:
   - Name and telephone/pager number of person reporting;
   - Time, description and location of release;
   - Identity of hazardous material(s) involved;
   - If an injury has occurred as a result of the release, describe the nature and extent of the injury and how it occurred;
   - If possible, estimate quantity of hazardous material(s) or industrial waste involved. (This initial quantity estimate is very important for a hazardous material or hazardous waste release, as it will help determine whether immediate regulatory agency notification is required);
     - If it is not feasible or practical to estimate the quantity of hazardous material, try to describe extent of the release.
   - Actions, if any, to be (or being) taken.

Releases That May Impact Other Plant Personnel and/or the Community:

1. Immediately evacuate spill/release area to appropriate/upwind evacuation assembly location.
2. Immediately call Control Center and report the following:
    - Whether a 9-1-1 call for emergency response is needed or has been made.
    - Name and telephone/pager number of person reporting;
    - Time, description and location of release;
    - Identity of hazardous material(s) involved;
    - If an injury has occurred as a result of the release, describe the nature and extent of the injury and how it occurred;
    - If possible, estimate of total quantity of any materials released (or potentially released) into the environment and/or off-site. (This initial quantity estimate is very important for a hazardous materials release, as it will help determine whether immediate regulatory agency notification is required);
    - If it is not feasible or practical to estimate the quantity of hazardous material, try to describe extent of the release.
    - Protective or evacuation actions taken (to be taken), if any.

Treatment Plant Control Room Operators and Desert Operations Control Center Personnel

All operator personnel are required to take the following actions regarding reporting of spills and releases (see also Appendix A):

Releases - General:

1. Evaluate release to determine if formal internal reporting may be required (see Appendix B for reporting threshold). If required, follow Appendix A on internal reporting sequence.
2. Record release details for report to facility Team Manager and Environmental Site Support representative (after-hours: the on-call Manager and on-call EHS Site Support person)
3. Initiate Corrective Maintenance WO, as applicable

Releases That May Impact Other Plant Personnel and/or the Community:

1. Call 9-1-1, if appropriate (if in doubt, call!) Note: If 9-1-1 is called, ensure that facility personnel are evacuated or sheltered-in-place, as appropriate.
2. Contact facility Team Manager and Environmental Site Support representative (after-hours: the on-call Manager/IC and have Operation Control Center contact on-call EHS Site Support person)

Treatment Plant Managers, C&D Managers and Incident Commanders

All Treatment Plant and C&D Managers are required to take the actions described below regarding reporting of spills and releases (see also Appendix A):

All facility Incident Commanders/On-Call Managers (IC), if available, are required to direct Chemical Response personnel to make an assessment of the release. This assessment may be skipped if the release clearly doesn't meet the internal reporting thresholds in Appendix B (e.g. a cup of oil). All hazard assessment information should be given to the Control Room Operator (or Desert Operations Control Center) as soon as possible, so that it can be communicated to the Environmental Site Support person for regulatory agency notification updates (after-hours this communication should be made to the on-call EHS Site Support person).

Releases - General:

1. Make notification to the MWD Incident Reporting System and Metropolitan management, as applicable.

Releases That May Impact Other Plant Personnel and/or the Community:

1. If there is an injury and/or the release may impact other plant personnel and/or the community, either the Control Center Operator or the IC shall immediately contact 9-1-1 and request outside emergency response assistance (if in doubt, call 9-1-1!). The IC and CRO should coordinate this notification, if time permits.
2. Make notification to MWD Incident Reporting system and Metropolitan management.

Environmental Site Support Representatives / On-Call EHS Site Support Personnel

All Environmental Site Support representatives or on-call EHS Site Support personnel are required to take the actions described below regarding reporting of spills and releases, depending on the type and size of the release (see also Appendices A, B, C and D).

Releases For Internal Reporting Only (see Appendix B):

1. Document all details of the release, including a narrative description of why the release met the Internal-Reporting-only criteria and record this information in the EHS Spill/Release database;
2. Make sure that Metropolitan management and the MWD Incident Reporting System have been notified.

Releases That Require Agency Notification (see Appendices C and D):

1. For all spills or releases above the agency reporting threshold, immediately report to the CUPA, the California Emergency Management Agency (Cal/EMA) Warning Center, and if necessary, depending upon the amount and type of the materials released into the environment, the National Response Center (NRC – for reporting to EPA) - see Appendix D. (list of RQ's)
2. Record in the MWD Incident Reporting System and the EHS Spill/Release database, both the Cal/EMA and, if applicable, NRC Notification 'Control Number'. These numbers are MWD's proof that the proper notification was made to these agencies.
3. Provide the following information as part of regulatory agency notification:
   a) Name and telephone number of person reporting;
   b) Description, time and on-site location of the release (including facility name, address and phone number);

c) Name and preliminary estimate of quantity of hazardous material(s) or industrial waste(s) involved (an estimate or range is acceptable and can be amended at a later time);
d) Where the material(s) have been released to (secondary containment, asphalt in front of storage area, into the dirt over the curb, etc.)
e) What, if any, protective, evacuation or shelter-in-place actions were taken by facility personnel;
f) If an outside emergency response is being requested (and the type of response);
g) If an outside emergency response is NOT being requested, be sure to specifically state that it is not being requested;
h) A description of the possible threat to health, safety, property or environment;
i) Any injuries or exposures;
j) Potential off-site impact (if any). If there is the potential for a public health or safety threat – the nature and extent of the threat and any 'needed' evacuation/shelter-in-place advisory must be communicated.
k) If applicable, whether the material has/will enter a "water of the state", describe the extent of occurrence or potential occurrence.
l) If there is no potential off-site impact, then state this.

4. Record the details of the release, including a narrative description of why the release met the agency reporting criteria, in the EHS Spill/Release database.

Attachments:

Appendix A: Chemical Spill/Release Notification Flow Chart

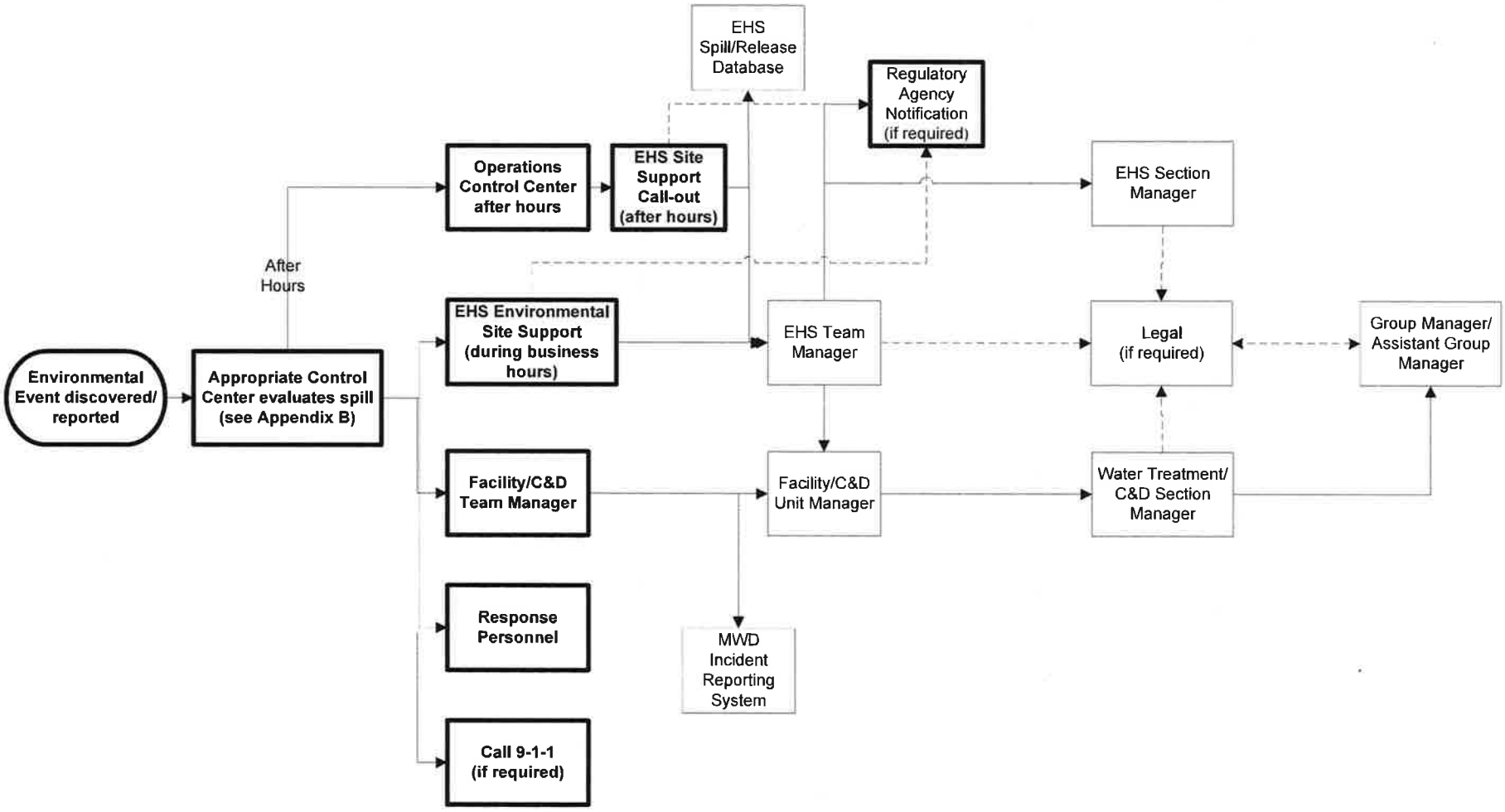
Appendix B: Chemical Spill/Release Reporting Thresholds – Internal

Appendix C: Chemical Spill/Release Reporting Thresholds – External (To Regulatory Agency)

Appendix D: MWD Bulk Chemicals Subject To Reportable Quantities (RQ's)

APPENDIX A

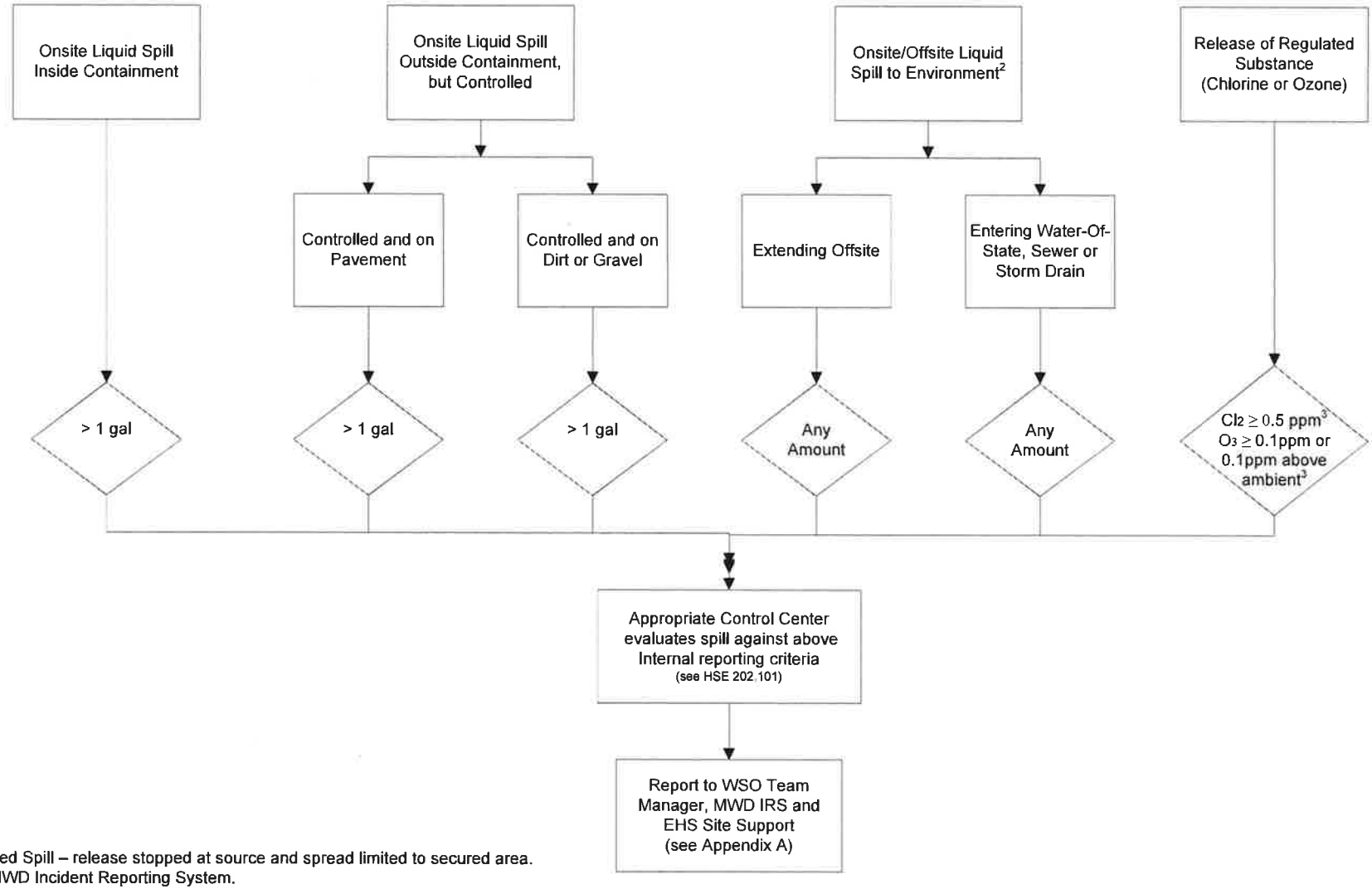
Chemical Spill/Release Notification Flow Chart



Note: **Bold indicates immediate action may be required**
C&D = Conveyance and Distribution
EHS = Environmental Health & Safety Section

APPENDIX B

Chemical Spill/Release Reporting Thresholds – Internal[1]

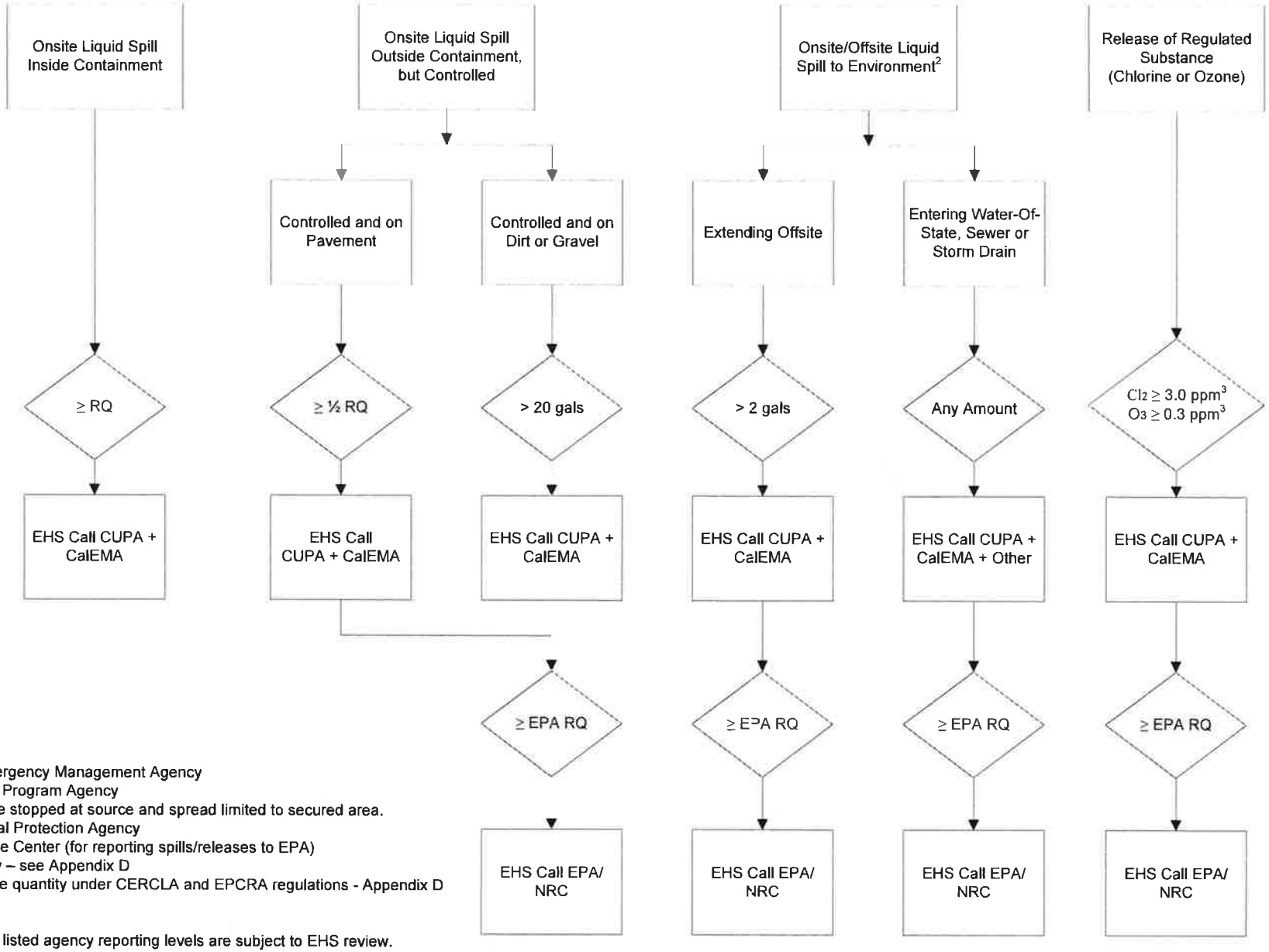


Key:
Controlled Spill – release stopped at source and spread limited to secured area.
IRS – MWD Incident Reporting System.
EHS – Environmental Health & Safety Section

Notes:
1. If spill/release causes injury or poses imminent threat to plant personnel or community, call 911 immediately
2. Includes other, non-hazmat releases (e.g. sludge, sewage, quaggas)
3. Cl2 and O3 ppm concentrations measured by a fixed detector in process areas.

APPENDIX C

Chemical Spill/Release Reporting Thresholds – External (To Regulatory Agency)[1]



Key:
CalEMA – California Emergency Management Agency
CUPA – Certified Unified Program Agency
Controlled Spill – Release stopped at source and spread limited to secured area.
EPA – U.S. Environmental Protection Agency
NRC – National Response Center (for reporting spills/releases to EPA)
RQ – Reportable quantity – see Appendix D
EPA RQ – EPA reportable quantity under CERCLA and EPCRA regulations - Appendix D

Notes:
1. All quantities less than listed agency reporting levels are subject to EHS review.
2. Includes other, non-hazmat releases (e.g. sludge, sewage)
3. Cl2 and O3 ppm concentrations measured by a fixed detector in process areas.

PGB – 1/4/11

Appendix D

Metropolitan Water District Bulk Chemicals Subject to Federal Reportable Quantities (RQs)[1]

Chemical Name	Conc. (%)	Designated RQ
Aluminum Sulfate (Alum)	48%	940 gals
Ammonium hydroxide (aqueous ammonia)	19%	675 gals
Chlorine	~100%	10 lbs
Copper Sulfate Pentahydrate	~99%	Call EHS Mgt
Ferric chloride	~39%	215 gals
Fluorosilicic Acid (FSA)	23%	44 gals
Hydrocarbon fuels and lubricants[3,4,5]	N/A	42 gals[2]
Hydrogen peroxide	35%	303 gals[2]
Quaggas	N/A	Call EHS Mgt
Mercury	~100%	1 lb.
Oxygen (liquid)	~99%	Call EHS Mgt
Ozone	~7%	100 lbs
Poly DADMAC (cationic polymer)	20%	Call EHS Mgt
Sewage[4]	N/A	1,000 gals[2]
Sodium bisulfite	38%	1170 gals
Sodium hydroxide (caustic)	25%	375 gals
	50%	155 gals
Sodium hypochlorite (bleach)	12.5%	80 gals
	5.25%	210 gals
Sulfuric Acid	93%	70 gals

Notes:

1. Call EHS for RQ of any hazardous substance not listed.
2. State-only reportable quantity (RQ).
3. Includes gasoline, diesel, lubricating oil, etc.
4. Any amount of this substance must be reported if spilled into a "water-of-the-state".
5. For UST-related leaks, you must follow UST Leak Response Plan.

Central Basin APAP
ATTACHMENT 3

Sodium Hypochlorite Chemical Label

SODIUM HYPOCHLORITE -12.5 BACTICIDE

ACTIVE INGREDIENT:	
Sodium Hypochlorite	**12.5%**
OTHER INGREDIENTS	**87.5%**
TOTAL	**100.0%**

Available Chlorine 11.9%

KEEP OUT OF REACH OF CHILDREN

DANGER

FIRST AID	
If in eyes:	• Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
If swallowed:	• Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled:	• Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. • Call a poison control center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. NOTE TO PHYSICIAN – Probable mucosal damage may contraindicate the use of gastric lavage.	
FOR ALL ACCIDENTS, CALL CHEMTREC AT 1-800-424-9300 (in USA), OR NEWALTA AT 1-800-567-7455 (in CANADA)	

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS:

HAZARDS TO HUMANS AND DOMESTIC ANIMALS: **DANGER. Corrosive.** Causes irreversible eye damage. Do not get in eyes, on skin, or on clothing. Wear safety glasses or goggles and rubber gloves when handling this product. Wash after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Avoid breathing vapors. Vacate poorly ventilated areas as soon as possible. Do not return until strong odors have dissipated. Remove and wash contaminated clothing before reuse.

[For drip irrigation and/or rice seed use:]

PERSONAL PROTECTIVE EQUIPMENT (PPE): Applicators and other handlers must wear:

A. Goggles or face shield B. Long-sleeved shirt and long pants C. Waterproof gloves D. Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

PHYSICAL OR CHEMICAL HAZARDS

Strong oxidizing agent. Mix only with water according to label directions. Mixing this product with chemicals (e.g. ammonia, acids, detergents, etc.) or organic matter (e.g. urine, feces, etc.) will release chlorine gas which is irritating to eyes, lungs and mucous membranes.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, ponds, streams, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

EPA Reg. No.: 72315-6
EPA Est. No.: 61667-NV-001

OLIN CHLOR ALKALI PRODUCTS
490 STUART ROAD N.E.
CLEVELAND, TN 37312

Net Contents: 4,500 Gallons

READ THE PRECAUTIONARY STATEMENTS BEFORE USE

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling. Note: This product degrades with age. Use a chlorine test kit and increase dosage, as necessary, to obtain the required level of available chlorine.

DISINFECTION OF DRINKING WATER – PUBLIC SYSTEMS: Mix a ratio of 1 oz. of this product to 100 gallons of water. Begin feeding this solution with a hypo-chlorinator until a free available chlorine residual of at least 0.2 ppm and no more than 0.6 ppm is attained throughout the distribution system. Check water frequently with a chlorine test kit. Bacteriological sampling must be conducted at a frequency no less than that prescribed by the National Primary Drinking Water Regulations. Contact your local health department for further details.

SEWAGE & WASTEWATER EFFLUENT TREATMENT: The disinfection of sewage effluent must be evaluated by determining the total number of coliform bacteria and/or fecal coliform bacteria, as determined by the Most Probable Number (MPN) procedure, to ensure that the chlorinated effluent has been reduced to or below the maximum permitted by the controlling regulatory jurisdiction. On the average, satisfactory disinfection of secondary wastewater effluent can be obtained when the chlorine residual is 0.5 ppm after 15 minutes contact. Although the chlorine residual is the critical factor in disinfection, the importance of correlating chlorine residual with bacterial kill must be emphasized. The MPN of the effluent, which is directly related to the water quality standards requirements, should be the final and primary standard and the chlorine residual should be considered an operating standard valid only to the extent verified by the coliform quality of the effluent.

The following are critical factors affecting wastewater disinfection.

1. **Mixing**: It is imperative that the product and the wastewater be instantaneously and completely flash mixed to assure reaction with every chemically active soluble and particulate component of the wastewater.

2. **Contacting:** Upon flash mixing, the flow through the system must be maintained.

3. **Dosage/Residual Control:** Successful disinfection is extremely dependent on response to fluctuating chlorine demand to maintain a predetermined, desirable chlorine level. Secondary effluent should contain 0.2 to 1.0 ppm chlorine residual after a 15 to 30 minute contact time. A reasonable average of residual chlorine is 0.5 ppm after 15 minutes contact time.

PULP AND PAPER MILL PROCESS WATER SYSTEMS:

CONTINUOUS FEED METHOD – Initial dose: When system is noticeably fouled, apply 52 to 104 oz. of this product per 10,000 gallons of water in the system to obtain 5 to 10 ppm available chlorine.

Subsequent Dose: Maintain this treatment level by starting a continuous feed of 1 oz. of this product per 1,000 gallons of water lost by blow down to maintain a 1 ppm residual. Badly fouled systems must be cleaned before treatment is begun.

DIRECTIONS FOR USE AS A MACROFOULANT CONTROL AGENT FOR INDUSTRIAL WATER SYSTEMS: Aquatic macrofouling organisms (i.e. Zebra Mussel *(Dreissena polymorpha)*, Quagga Mussels *(Dreissena bugensis)*, Blue Mussels *(Mytilus edulis)*, Asian Clam (*Corbicula fluminea*)) can detect chemical changes in their environment and close their shells for a period of weeks. The closure period may last 3 - 5 weeks. This condition will remain until those changes are no longer detected, or the organisms die through lack of respiration. Chemical treatment times and concentrations may vary, because of the organism's biological ability of detection; the extent of the macrofoulant contamination; and the design variations of the system.

Single Exposure - To control macrofoulants, add 100-200 oz. of this product per 10,000 gallons of water in the system to obtain a residual chlorine concentration of 10-20 ppm. For the best results treat during the breeding season and/or at the end of the season for at least 30 days. The release of zebra mussels for weeks after this method of treatment is not uncommon.

Semi-Continuous Exposure - To control macrofoulants, add 52-104 oz. of this product per 10,000 gallons of water in the system, 15 to 30 minutes a day, to obtain a residual chlorine concentration of 5-10 ppm. For the best results, initiate treatment during the breeding season (June to September).

Continuous Exposure - To control macrofoulants, add 52-104 oz. of this product per 10,000 gallons of water in the system to obtain a residual chlorine concentration of 5-10 ppm. For the best results, apply during the breeding season (June to September).

Treatment Method	Dosage 12.5% Sodium Hypochlorite
Single Dosage (10-20 ppm)	100-200 oz. / 10,000 gallons
Semi-continuous (5-10 ppm)	52-104 oz. / 10,000 gallons
Continuous (5-10 ppm)	52-104 oz. / 10,000 gallons

Alternatively, make a 1.5 wt. % available chlorine (AvCl) solution by adding 135 oz. of this solution per 10 gallons of water, and dose as follows:

Treatment Method	Dosage pump rate with 1.5 wt. % AvCl Solution
Single Dosage (10-20 ppm)	40-80 gph per 1,000 gpm of flowing water
Semi-continuous (5-10 ppm)	20-40 gph per 1,000 gpm of flowing water
Continuous (5-10 ppm)	20-40 gph per 1,000 gpm of flowing water

Note: *The dosages above are approximate. Always test for available chlorine to insure proper dosage rates are achieved. If treatment levels would exceed NPDES/SPDES permit limits, dechlorination must be performed prior to discharge of the treated effluent.*

CLEANING FORMULATIONS, BLEACHING, & NON-PESTICIDE CHEMICAL MANUFACTURING: This product may be used for cleaning formulations, bleaching and non-pesticidal chemical manufacturing. Only specifically designed handling and dispensing equipment should be used in accordance with manufacturer's instructions and according to operating instructions or product formulations defined by the use facility.

STORAGE AND DISPOSAL: Do not contaminate food or feed by storage, disposal or cleaning of equipment. **Pesticide Storage:** Store this product in a cool, dry area away from direct sunlight and heat to avoid deterioration. In case of spill, flood areas with large amounts of water. **Pesticide Disposal:** Product or rinsates that cannot be used should be diluted with water before disposal in a sanitary sewer or other approved disposal facility. **Container:** Tank Cars and Tank Trucks: Refill with bleach OR triple or pressure rinse empty tank car or tank truck to remove bleach residues before filling with other product. Drums, Totes, and Intermediate Bulk Containers (IBC): Refill with bleach only. Triple or pressure rinse nonrefillable or cracked refillable containers and offer for recycling, reconditioning or disposal. Dispose of residue rinsates in a sanitary sewer or other approved disposal facility.

(See booklet for additional use instructions)

Central Basin APAP
ATTACHMENT 4

Sodium Hypochlorite Safety Data Sheet

Olin
CHLOR ALKALI
PRODUCTS

SAFETY DATA SHEET

1. Identification

Product identifier **Sodium Hypochlorite, 5 - 17%**

Other means of identification

SDS number 10000022

Synonyms L.T. Sanitizer 5.25%, Hypo, Liquid Bleach, Bleach, Hypochlorite, Javel Water.

Recommended use Swimming pool chlorinator, hard surface cleaner, mildecide, Water treatment chemical, Biocides, bleach solutions and bleach fixer solutions

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company name Olin Chlor Alkali Products
Address 490 Stuart Road, NE
Cleveland, TN 37312

Company name Pioneer Americas, LLC (d/b/a Olin Chlor Alkali Products)
Address 490 Stuart Road, NE
Cleveland, TN 37312

Company name Olin Canada ULC (d/b/a Olin Chlor Alkali Products)
Address 2020 University, Suite 2190
Montreal, Quebec H3A 2A5

General Information

Telephone (888) 658-6SDS (737)
Website olinchloralkali.com
Contact person ORC SDS Control Group
Emergency phone number CHEMTREC
US: 1-800-424-9300 Canada: 1-800-567-7455

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Skin corrosion/irritation	Category 1
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 2

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation. Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe mist or vapor. Use only outdoors or in a well-ventilated area. Wash thoroughly after handling. Keep only in original container. Avoid release to the environment.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. Wash contaminated clothing before reuse. Absorb spillage to prevent material damage. Collect spillage.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

Supplemental information

Contact with acids liberates toxic gas.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Sodium hypochlorite	7681-52-9	5-17
Sodium hydroxide	1310-73-2	0.10-4.25

4. First-aid measures

Inhalation	Move to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Take off immediately all contaminated clothing. Wash off IMMEDIATELY with plenty of water for at least 15-20 minutes. Get medical attention immediately. Wash contaminated clothing before reuse. Call a physician or poison control center immediately.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. With eye exposure, continue flushing during transport to hospital.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire. Do not use dry extinguishing media that contains ammonium compounds.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials.
General fire hazards	No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Absorb spillage to prevent material damage. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see Section 8 of the SDS.
Methods and materials for containment and cleaning up	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. For waste disposal, see Section 13 of the SDS.
Environmental precautions	Do not discharge into drains, water courses or onto the ground. Environmental manager must be informed of all major releases.

7. Handling and storage

Precautions for safe handling	Wear appropriate personal protective equipment. Do not get in eyes, on skin, on clothing. Use with adequate ventilation. Observe good industrial hygiene practices. Do not apply heat or direct sunlight. Temperature and product concentration affect product quality and decomposition rates.

Conditions for safe storage, including any incompatibilities	Keep container tightly closed. Store in a cool and well-ventilated place. Store in a corrosive resistant container. Consult container manufacturer for additional guidance. Store away from and do not mix with incompatible materials such as acids, oxidizers, organics, reducing agents, and all metals except titanium.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	PEL	2 mg/m3

US. ACGIH Threshold Limit Values

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Sodium hydroxide (CAS 1310-73-2)	Ceiling	2 mg/m3

US. Workplace Environmental Exposure Level (WEEL) Guides

Components	Type	Value
Sodium hypochlorite (CAS 7681-52-9)	STEL	2 mg/m3

Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, if needed.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Reports indicate that sodium hypochlorite can react with various fabrics usually increasing with concentration. Reactions vary significantly depending on strength of chemical, material, fabric treatment and color of dyes. FRC treated cotton has a stronger response than plain cotton. Poly blend fabrics and meta aramid fabric have a weaker response than natural fibers. Contact the Personal Protective Equipment manufacturer for specific information about their products.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Not available.
Odor	Pungent.
Odor threshold	0.9 mg/m³
pH	12 - 14 (25 °C/77 °F)
Melting point/freezing point	-4 °F (-20 °C) (7% solution)
Initial boiling point and boiling range	Not available.
Flash point	Not applicable

Evaporation rate	No data available
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not applicable
Flammability limit - upper (%)	Not applicable
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	12 mm Hg (20°C/68°F)
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Completely miscible
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Bulk density	Not applicable
Molecular formula	NaOCl
Molecular weight	74.5 g/mol

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Contact with incompatible materials. Avoid ultraviolet (UV) light sources. Excessive heat. Reacts violently with strong acids. Acid contact will produce chlorine gas. Amine contact will produce chloramines.
Incompatible materials	Strong oxidizing agents. Acids. Metals. Organic compounds. Ammonia.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract.
Inhalation	Vapors and spray mist may irritate throat and respiratory system and cause coughing.
Skin contact	Causes skin burns.
Eye contact	Causes eye burns.
Symptoms related to the physical, chemical and toxicological characteristics	Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Information on toxicological effects

Acute toxicity Occupational exposure to the substance or mixture may cause adverse effects.

Product	Species	Test Results
Sodium Hypochlorite, 5 - 17% (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 2 g/kg
Oral		
LD50	Rat	3 - 5 g/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes severe skin burns and eye damage.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory or skin sensitization	
Respiratory sensitization	No data available.
Skin sensitization	No data available.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Sodium hypochlorite (CAS 7681-52-9)	3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity	No data available.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	No data available.
Aspiration hazard	Not classified, however droplets of the product may be aspirated into the lungs through ingestion or vomiting and may cause a serious chemical pneumonia.
Chronic effects	Prolonged or repeated overexposure causes lung damage.
Further information	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Very toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Product		Species	Test Results
Sodium Hypochlorite, 5 - 17% (CAS Mixture)			
Aquatic			
Crustacea	LC50	Daphnia	1 mg/l
Fish	LC50	Bluegill (Lepomis macrochirus)	0.6 mg/l, 48 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available for this product.
Mobility in soil	Not available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1791
UN proper shipping name	Hypochlorite solutions
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	IB3, N34, T4, TP2, TP24

Packaging exceptions	154
Packaging non bulk	203
Packaging bulk	241

IATA

UN number	UN1791
UN proper shipping name	Hypochlorite solution
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Environmental hazards	Yes
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1791
UN proper shipping name	HYPOCHLORITE SOLUTION
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Packing group	III
Environmental hazards	
Marine pollutant	Yes
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sodium hydroxide (CAS 1310-73-2)	LISTED
Sodium hypochlorite (CAS 7681-52-9)	LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - Yes
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. New Jersey Worker and Community Right-to-Know Act

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. Rhode Island RTK

Sodium hydroxide (CAS 1310-73-2)
Sodium hypochlorite (CAS 7681-52-9)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Not listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

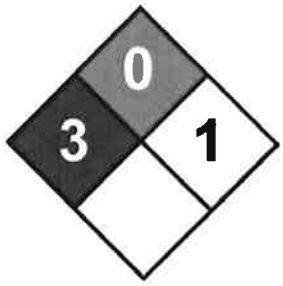
16. Other information, including date of preparation or last revision

Issue date 27-February-2014

Revision date 15-April-2014

Version # 04

NFPA Ratings



List of abbreviations

LD50: Lethal Dose, 50%.
LC50: Lethal Concentration, 50%.
EC50: Effective concentration, 50%.
TWA: Time weighted average.

References

EPA: AQUIRE database
HSDB® - Hazardous Substances Data Bank
US. IARC Monographs on Occupational Exposures to Chemical Agents
IARC Monographs. Overall Evaluation of Carcinogenicity
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices

Disclaimer

This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.

Central Basin APAP
ATTACHMENT 5

Mobile Bleach Unit Training Manual

Mobile Bleach Unit

Training

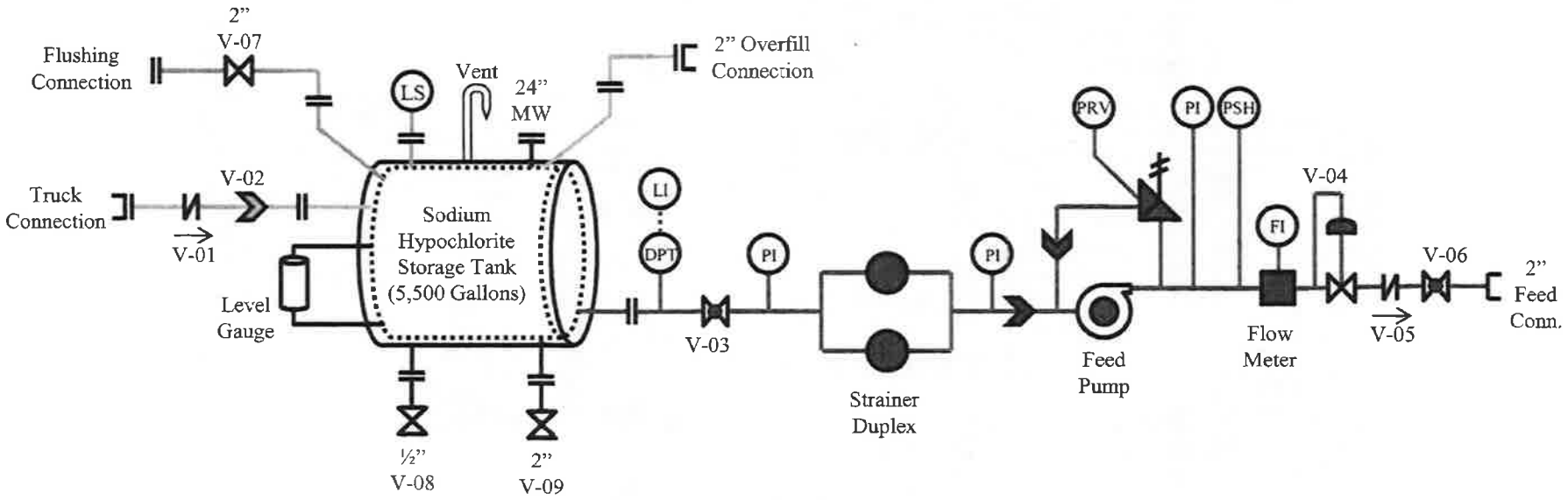
Dec. 14, 2010

Mobile Bleach Unit

Mobile Bleach Unit

Mobile Bleach Unit

Storage and Feed system



Mobile Beach Unit

Components

Double Walled FRP Storage Tank

5,500 gallons

Valve types

- Manual ball valves
- Manual back pressure regulator (set @ 20 psig)
- Check valves
- Pressure relief valves (set @ 50 psig)

Pipe Service

- CPVC

Mobile Bleach Unit
Components

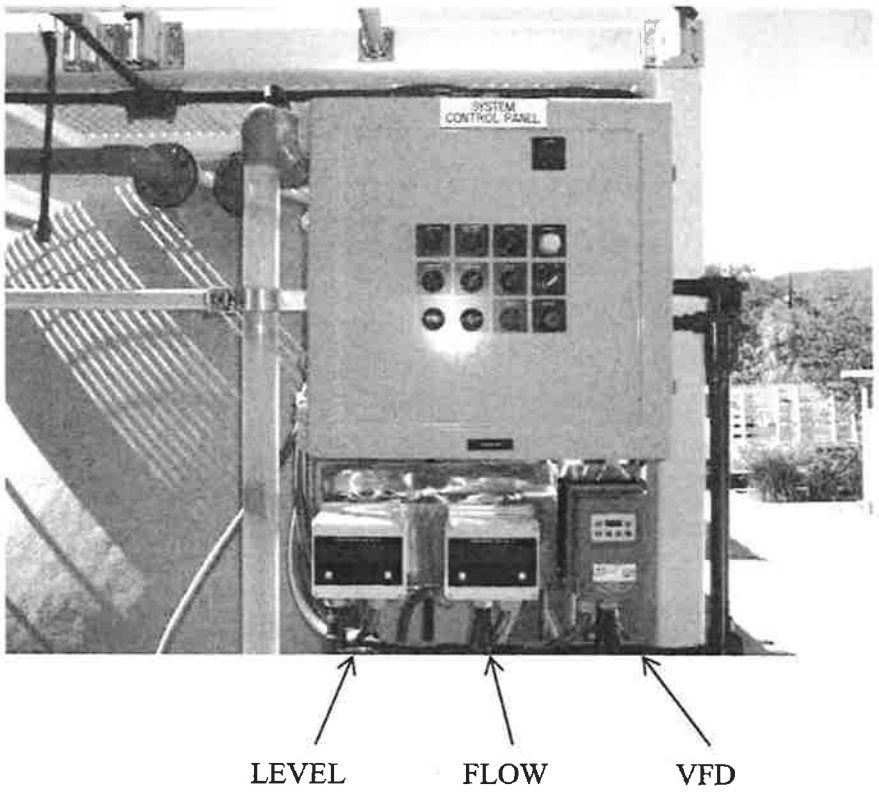
Instrumentation

- Tank Levels
  - High Level (90%) –Alarm light and horn
  - Low Level (25%) – Alarm light and horn
  - Low low level (10%) – Alarm light and horn & Stops feed pump
- Tank Leak - Alarm light and horn
- Containment Level (2") - Alarm light and horn
- Feed Pump High Pressure - Alarm light and horn

Mobile Bleach Unit
Components

Control Panels

- System Panel
  - Power
  - Alarms
  - E-Stop
- Tank Level Indication
- Pump Flow Indication
- Feed Pump VFD

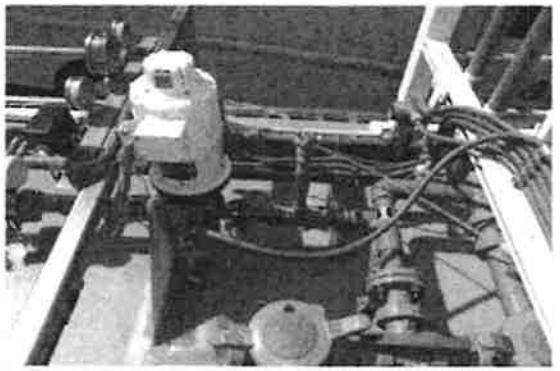


Mobile Bleach Unit

Components

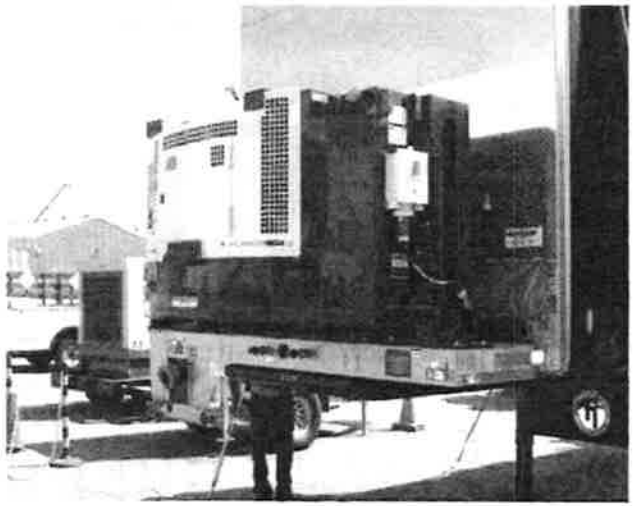
Pumps

1. Variable Frequency Feed Pump Controller
2. Un-mounted spare
3. 0 to 12 gpm



Diesel Generator

1. 32 HP Engine
2. 15 KW Generator
3. 130 gals fuel tank
4. 460V / 3Ø / 60Hz



Mobile Bleach Unit

Safety Features

1. Pipe Leak Containment – Alarm light and horn
2. Pump Over-Pressure – Alarm light and horn
3. Tank Level
   - High-High: Overflow discharge
   - High (90%): Alarm light and horn
   - Low (25%): Alarm light and horn
   - Low-Low (10%): Alarm light and horn and stops pump
4. E-STOP – Alarm light and horn and stops pump
5. Safety Shower
6. Safety Rails
7. Lights

Mobile Bleach Unit

Operational Modes

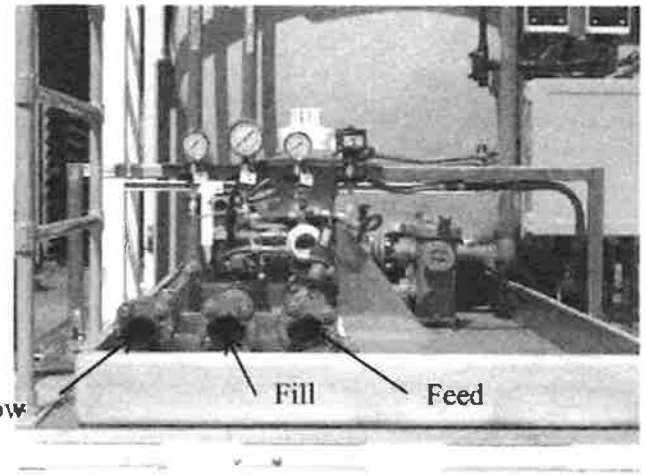
Manual Operational Modes

1. Filling Tank
2. Injecting Chemical
3. Flushing Tank
4. Drying Tank
5. Transporting

Mobile Bleach Unit

Tank Filling

1. Setup trailer – level trailer with outriggers
2. Start generator
3. Power-up System Control Panel – Switch to "ON" position
4. Check level of tank to be filled
5. Install unloading spool
6. Install overfill hose
7. Have truck driver make connection to the unloading spool
8. Open isolation valve (V-02)
9. When transfer is complete, close isolation valve (V-02)
10. The trailer is ready for disconnect from chemical truck



Mobile Bleach Unit
Tank Level/Volume Chart

Level in Feet	Capacity in Gallons	% Capacity	
6.0	6,345	100%	Overflow
5.5	6,093	96%	
5.0	5,650	89%	High Alarm Level (90%)
4.5	5,105	80%	
4.0	4,494	71%	
3.5	3,843	61%	
3.0	3,175	50%	
2.5	2,503	39%	
2.0	1,852	29%	Low Alarm Level (25%)
1.5	1,240	20	
1.0	695	11%	Low-Low Alarm Level (10%) Auto Pump shutoff
.5	252	4%	

Mobile Bleach Unit

Injecting Chemical

1. Connect feed hose to end connections
2. Activate System Control Panel
   - Switch to "ON" position
2. Determine Feed Rate
   - Determine CRA flow (Number of CRA Pumps)
   - Determine Dosage (mg/l)
   - Determine Feed Rate From Chart
3. Open isolation valves, V-03 and V-06
4. Press "START" pushbutton to active Pump VFD
5. Adjust Pump VFD to desired flow rate
   - Flow Reading at Flow Indication Panel

Feed Rate Chart

	Chlorine Feed Rate (gpm)						
	Number of CRA Pumps**						
Chlorine Dose (mg/L)	1	2	3	4	5	6	7
1.00	0.8	1.6	2.4	3.2	4.0	4.9	5.7
1.25	1.0	2.0	3.0	4.0	5.1	6.1	7.1
1.50	1.2	2.4	3.6	4.9	6.1	7.3	8.5
1.75	1.4	2.8	4.2	5.7	7.1	8.5	9.9
2.00	1.6	3.2	4.9	6.5	8.1	9.7	11.3
2.25	1.8	3.6	5.5	7.3	9.1	10.9	12.7
2.50	2.0	4.0	6.1	8.1	10.1	12.1	14.1
2.75	2.2	4.4	6.7	8.9	11.1	13.3	15.6
3.00	2.4	4.9	7.3	9.7	12.1	14.6	17.0
3.25	2.6	5.3	7.9	10.5	13.1	15.8	18.4
3.50	2.8	5.7	8.5	11.3	14.1	17.0	19.8
3.75	3.0	6.1	9.1	12.1	15.2	18.2	21.2
4.00	3.2	6.5	9.7	12.9	16.2	19.4	22.6

	Trailer Feed Duration* (hrs to deliver 5,000 gal)						
	Number of CRA Pumps						
Chlorine Dose (mg/L)	1	2	3	4	5	6	7
1.00	103	51	34	25	20	17	14
1.25	82	41	27	20	16	13	11
1.50	68	34	22	17	13	11	9
1.75	58	29	19	14	11	9	8
2.00	51	25	17	12	10	8	7
2.25	45	22	15	11	9	7	6
2.50	41	20	13	10	8	6	
2.75	37	18	12	9	7	6	
3.00	34	17	11	8	6		
3.25	31	15	10	7	6		
3.50	29	14	9	7			
3.75	27	13	9	6			
4.00	25	12	8	6			

*Rounded down to the nearest hour

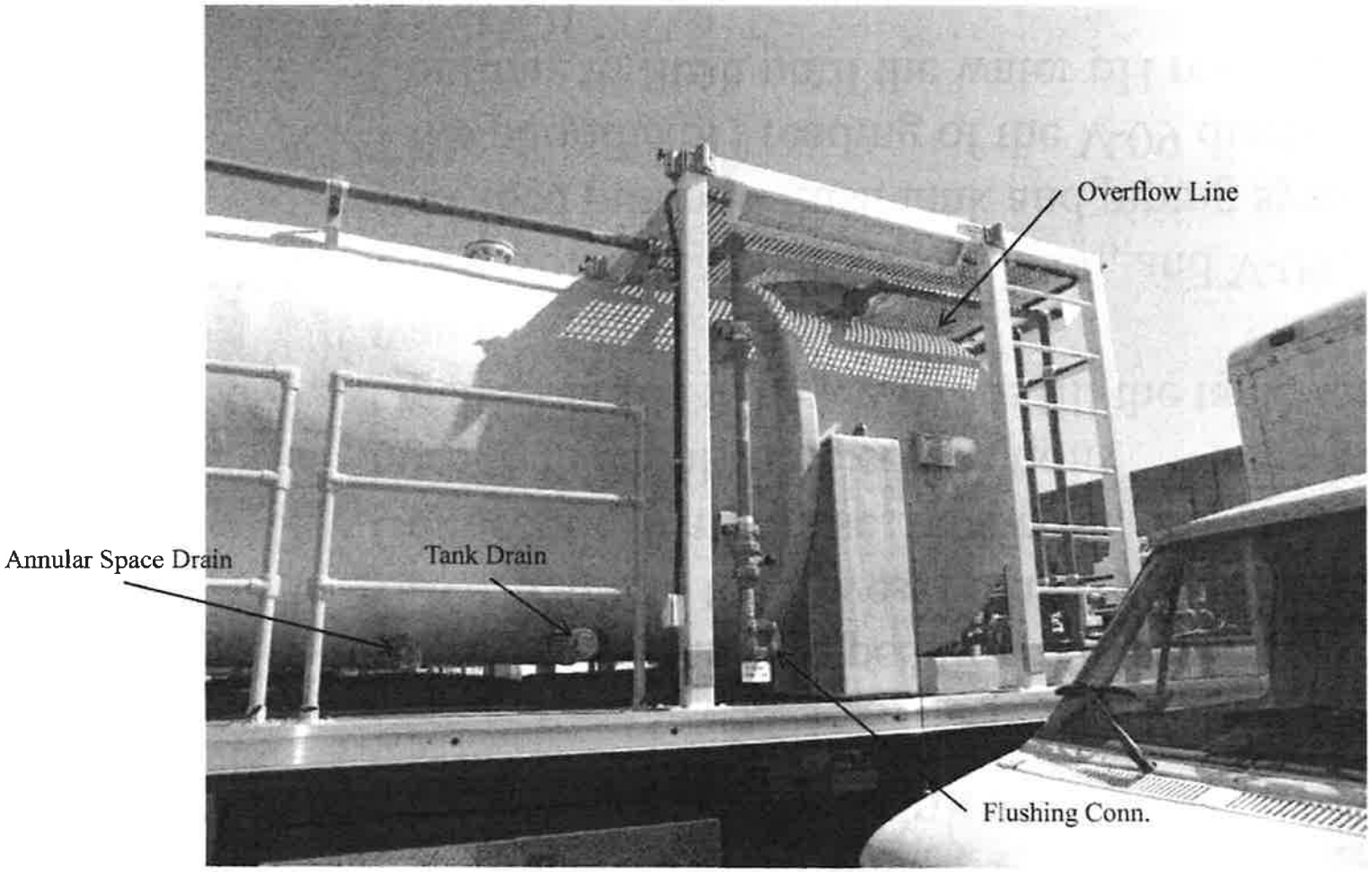
** Flow per CRA pump = 225 cfs

Mobile Bleach Unit

Flushing Tank

1. Re-level the trailer to position the tank drain valve, V-09, to the lowest point
2. Connect the water hose, feed hose, and overfill hose to the applicable connections
3. Open isolation valve, V-07, to fill the tank with water.
4. Open isolation valves, V-03, V-06, and V-09, and start feed pump to flush tank and piping system
5. Take periodic pH reading of the V-09 discharge
6. Continue to flush until the water pH reading is 7.0 to 8.0.

Mobile Bleach Unit



Mobile Bleach Unit

Drying Tank

1. Connect compression air hose to flushing connection
2. Open isolation valves, V-07, V-09, V-03, and V-06
3. Plug the tank vent
4. Supply compressed air to dry tank and piping system until all discharges are free of water.

Mobile Bleach Unit

Transporting Tank

TANK AND PIPING SYSTEM MUST BE
EMPTY AND FREE OF MOISTURE
DURING TRANSPORT

END

DOT Hazmat Employee & MWD Chemical Delivery/ Security Protocol Training

- For C&D Staff -

Presented by:

EHS Program Support

PGB 12/6/10

Why Are We Here?!

- **Regulatory requirement for DOT training**
  - **Hazmat Employee training** (49 CFR Subpart H)
- **Required frequency for DOT training**
  - **At least once every three (3) years** (49 CFR 172.704 (c)(2))
- **WSO policy**
  - **Water Treatment Chemical Delivery/Security Protocols** (Jim Green memo of 6/23/06)

DOT Hazmat Employee Training Requirement

DOT Training Components (49 CFR 172.704)

1. General awareness/familiarization (49 CFR 172.704 (a) (1))
2. Security training (49 CFR 172.704 (a) (4) and (5))
3. Function-specific training (49 CFR 172.704 (a) (2))
4. Safety training (49 CFR 172.704 (a) (3))

Part I

DOT HAZMAT EMPLOYEE GENERAL AWARENESS/ FAMILIARIZATION TRAINING

(49 CFR 172.704 (A) (1))

General Awareness/ Familiarization

- Hazardous Materials Table
- Hazard Classes
- Packaging
- Marking, Labeling, and Placarding
- Shipping Papers
- Incident Reporting

Hazardous Materials Table
(49 CFR 172.101)

- **Table contains ten (10) columns**
  - **Columns 2 – 5 give the shipping description of a hazardous material, which is required on a shipping paper (§ 172.202)**
- **Proper shipping names (PSN) (§172.101(c))**
- **Hazard class (§172.101(d))**
- **UN specification requirements (§172.101(e))**
- **Assignment of Packing Groups (PG) (§172.101(f))**

Hazmat Table
- MWD Treatment/C&D Chemicals

§ 172.101 HAZARDOUS MATERIALS TABLE

49 CFR Ch. I (10–1–07 Edition)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			(9)		(10)	
Symbols	Hazardous Materials Descriptions and Proper Shipping Name	Hazard Class or Division	Identification Numbers	Packaging Group	Label Codes	Special Provisions (§ 172.102)	Packaging (§ 173.***)			Quantity Limitations (see §173.27 and 175.75)		Vessel Stowage	
							Exceptions	Non-bulk	Bulk	Passenger Aircraft/Rail	Cargo Air Only	Location	Other
							(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Aqueous Ammonia (19%)												
	Ammonia solution, relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia.	8	UN2672	III	8	IB3, IP8, T7, TP1	154	203	241	5L	60L	A	40, 52, 85
	Bleach (12.5%)												
	Hypochlorite solutions	8	UN1971	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1L	30L	B	26
	Caustic (25-50%)												
	Sodium hydroxide solution	8	UN1824	II	8	B2, IB2, N34, T7, TP2	154	202	242	1L	30L	A	52
	Chlorine												
	Chlorine	2.3	UN1017		2.3, 8	2, B9, B14, N86, T50, TP19	None	304	314, 315	Forbidden	Forbidden	D	40, 51, 55, 57, 68, 89, 90
	Ferric Chloride (~39%)												
	Ferric chloride, solution	8	UN2582	III	8	B15, IB3, T4, TP1	154	203	241	5L	60L	A	-----
	FSA (23%)												
	Fluorosilicic acid	8	UN1778	II	8	A6, A7, B2, B15, IB2, IB3, N34, T8, TP2, TP12	None	202	242	1L	30L	A	-----
	Hydrogen Peroxide (35%)												
	Hydrogen peroxide, aqueous solutions with not less than 20 percent, but not more than 40 percent hydrogen peroxide (stabilized as necessary).	5.1	UN2014	II	5.1, 8	A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24, TP37	None	202	243	1L	5L	D	25, 66, 75
	LOX												
	Oxygen, refrigerated liquid (cryogenic liquid).	2.2	UN1073		2.2, 5.1	T75, TP5, TP22	320	316	318	Forbidden	Forbidden	D	

Hazard Classes
(49 CFR 172.101(d) & 173.2)

- Class 1 – Explosives (49 CFR 173.50)
- Class 2 – Compressed Gases (49 CFR 173.115)
- Class 3 – Flammable and Combustible Liquids (49 CFR 173.120)
- Class 4 – Flammable Solids (49 CFR 173.124)
- Class 5 – Oxidizers and Organic Peroxides (49 CFR 173.127 and 173.128)
- Class 6 – Poisonous/Toxic Materials (other than gases) + Infectious Substances (49 CFR 173.132 and 173.134)
- Class 7 – Radioactive Materials
- Class 8 – Corrosive Materials (49 CFR 173.136)
- Class 9 – Miscellaneous Hazardous Materials (49 CFR 173.140)

C&D Key Hazard Class
(49 CFR 172.101(d) & 173.2)

- **Class 8 – Corrosive Materials**
  - Corrosive materials are liquids or solids that cause full thickness destruction of human skin at the site of contact within a specified period of time; or a liquid that has a severe corrosion rate on steel or aluminum based on criteria in §173.137(c)(2). A liquid is considered to have a severe corrosion rate if it corrodes steel (SAE 1020) or aluminum (non-clad 7075-T6) faster than 6.25 mm (0.246 in.) a year at a temperature of 55° C (131° F).
    - Corrosive materials may be acid or alkaline, organic or inorganic.

What is a package/packaging?
(49 CFR Part 171.8)

What is a packaging group?
(49 CFR Part 171.8)

- **What is packaging group?**
  - ***Packaging group*** **means a grouping according to degree of danger presented by hazardous materials.**
    - **Packaging Group I = great danger**
    - **Packaging Group II = medium danger**
    - **Packaging Group III = minor danger**

Empty Packagings
(§173.29)

- **An empty packaging *containing only the residue of a hazardous material* shall be offered for transportation and transported in the same manner as when it previously contained a greater quantity of that hazardous material.** (§173.29 (a))

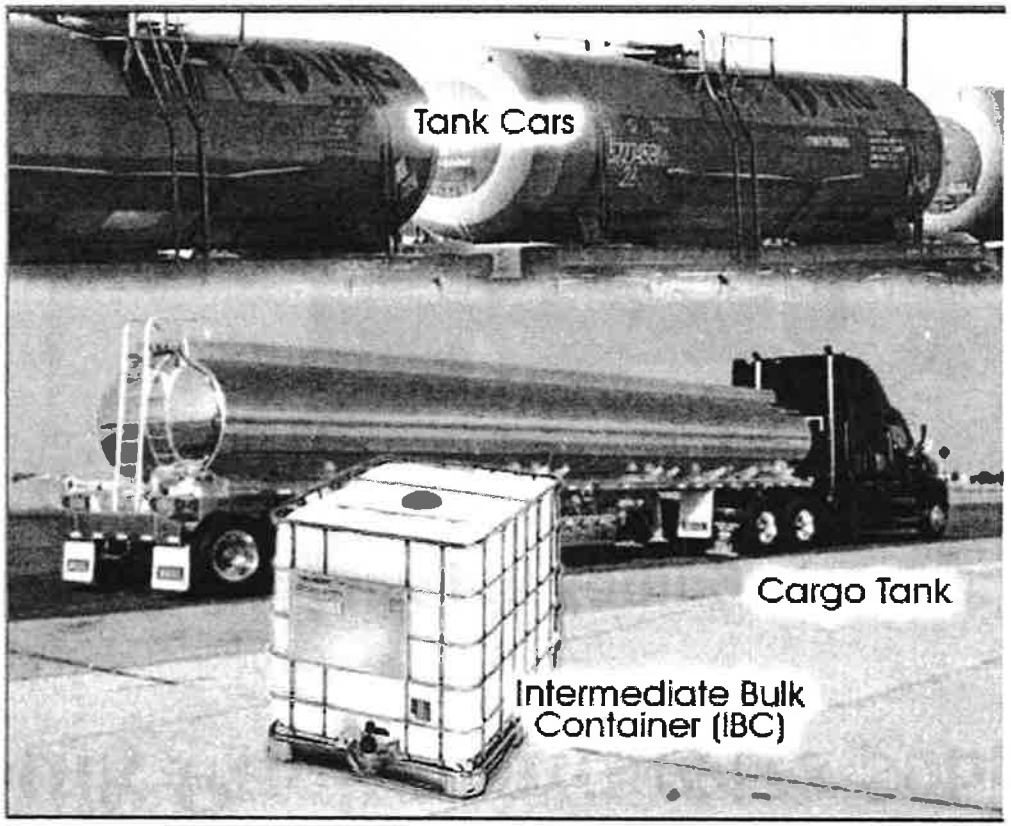
- **An empty packaging is not subject to any other requirements of this subchapter if it conforms to the following provisions** (§173.29 (b)(2)) :
  - **The packaging …**
    - i. **Is unused;**
    - ii. **Is sufficiently cleaned of residue and purged of vapors to remove any potential hazard; or**
    - iii. **Is refilled with a material which is not hazardous to such an extent that any residue remaining in the packaging no longer poses a hazard**

Non-Bulk Packaging (§173 Subpart E)

- **Examples of non-bulk packaging include:**
  - **drums; cylinders; fiberboard boxes; and jerricans.**

Bulk Packaging (§173 Subpart F)

- **Examples of bulk packaging include:**
  - **Cargo tanks; railcars; stationary tanks; totes and IBCs**



Locating Specific Packaging Requirements in the HMT

- **The Hazardous Materials Table (HMT) must be used when determining the authorized packaging for a specific hazardous material.**
  - **Columns 5, 7, and 8 are used in selecting the appropriate packaging**

§ 172.101 HAZARDOUS MATERIALS TABLE

49 CFR Ch. I (10–1–07 Edition)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			(9)		(10)	
Symbols	Hazardous Materials Descriptions and Proper Shipping Name	Hazard Class or Division	Identification Numbers	Packaging Group	Label Codes	Special Provisions (§ 172.102)	Packaging (§ 173.***)			Quantity Limitations (see §173.27 and 175.75)		Vessel Storage	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger Aircraft/Rail (9A)	Cargo Air Only (9B)	Location (10A)	Other (10B)
	Bleach (12.5%) Hypochlorite solutions	8	UN1971	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1L	30L	B	26

Marking, Labeling & Placarding
(49 CFR 172 Subpart D-F)

- DOT regulations require the use of identification tools known as markings, labels and placards, which allow responders to detect the presence of a hazardous material from a safe distance.

Marking, Labeling & Placarding
(continued)

- ***Markings***: Information required to be placed on the outside of any hazmat package
  - May include one or more of: proper shipping name; identification number; UN standard packaging marks; instructions-cautions.

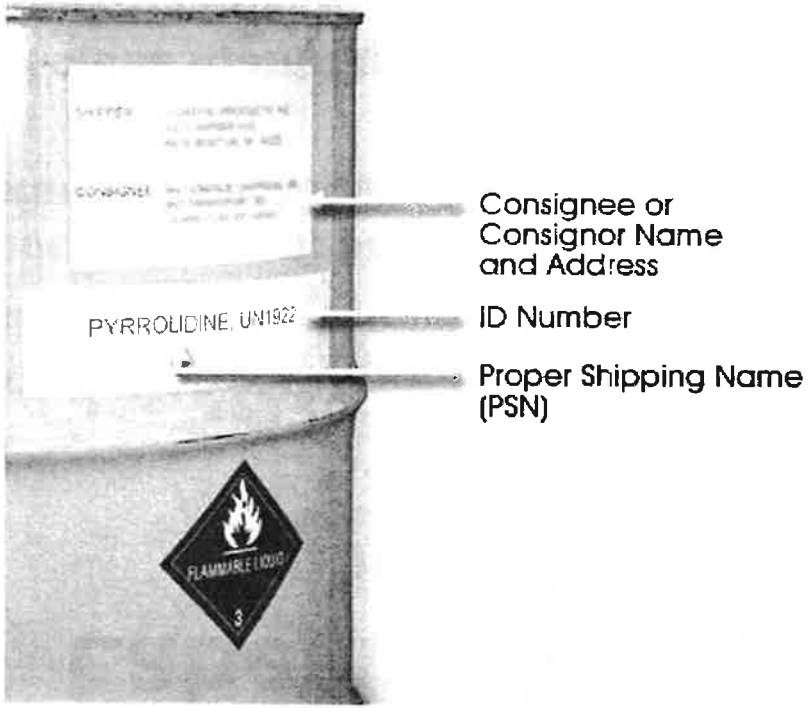
- ***Labels***: Hazard class identifiers generally applied to smaller individual, non-bulk hazmat packages, such as drums, cartons, crates, pails and small compressed gas cylinders.

- ***Placards***: Hazard class identifiers generally applied to freight containers, bulk packaging, transport vehicles (such as pickups, vans, cargo trailers) and railcars.
  - Placards may also be used on certain large individual packages, such as large portable tanks.

Marking for Non-Bulk Packaging

(49 CFR 172 Subpart D)

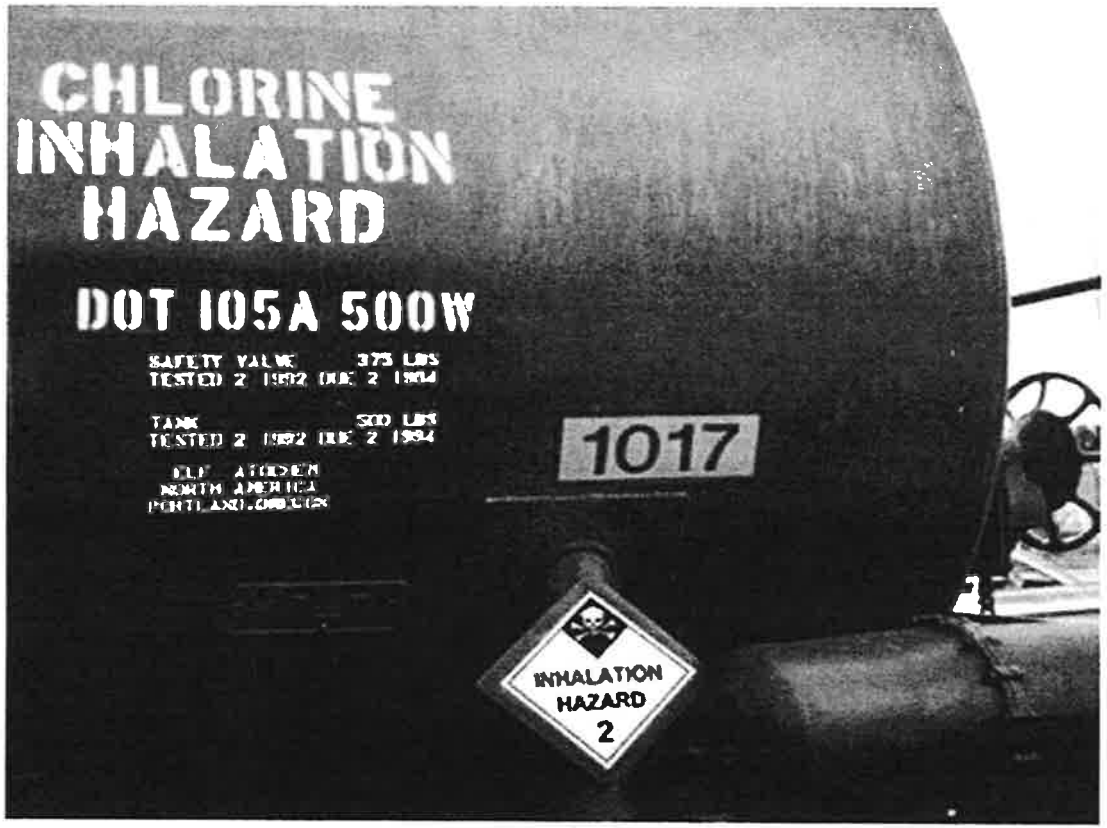
- **At a minimum, all non-bulk packaging must contain the following markings: Proper shipping name (PSN); ID No. (HMT column 4); and consignee or consignor name and address.**



Marking for Bulk Packaging

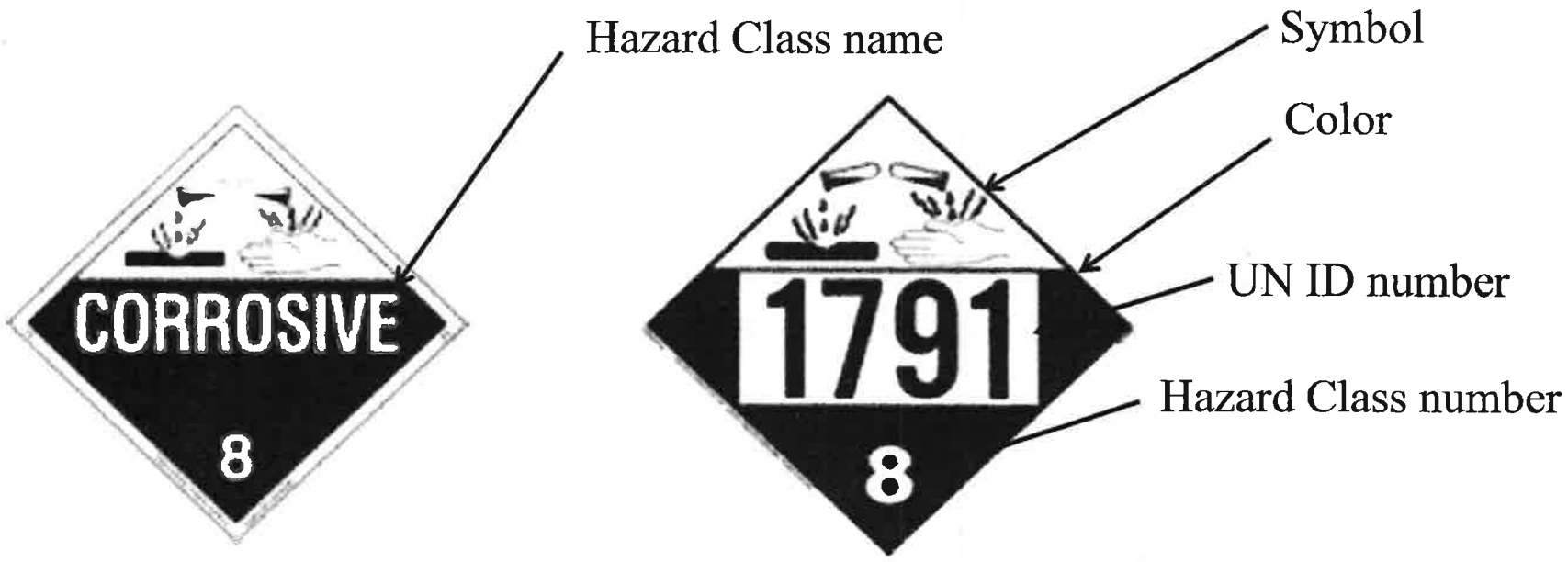
(49 CFR 172 Subpart D)

- At a minimum, all bulk packaging must contain the following markings: Proper shipping name (PSN); and ID No. (HMT column 4).



General Labeling Requirements
(49 CFR 172 Subpart E)

- **Non-bulk packages and portable tanks of hazardous materials must be labeled with the appropriate hazard warning labels. These labels convey information about the hazardous material by use of:**
  - **Color; symbol; UN ID number or hazard class name; and hazard class number or division number**



General Labeling Requirements
(49 CFR 172 Subpart E)

Label Code

§ 172.101 HAZARDOUS MATERIALS TABLE

49 CFR Ch. I (10–1–07 Edition)

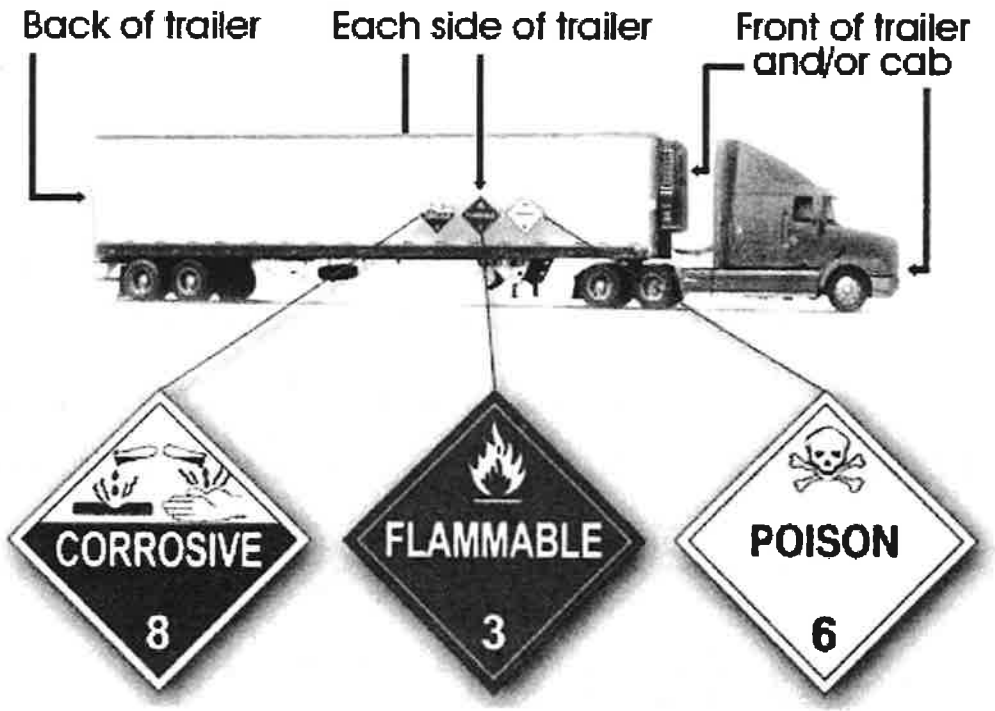
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			(9)		(10)	
Symbols	Hazardous Materials Descriptions and Proper Shipping Name	Hazard Class or Division	Identification Numbers	Packaging Group	Label Codes	Special Provisions (§ 172.102)	Packaging (§ 173.***)			Quantity Limitations (see §173.27 and 175.75)		Vessel Stowage	
							Exceptions (8A)	Non-bulk (8B)	Bulk (8C)	Passenger Aircraft/Rail (9A)	Cargo Air Only (9B)	Location (10A)	Other (10B)
	Bleach (12.5%) Hypochlorite solutions	8	UN1971	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1L	30L	B	26

General Placarding Requirements
(49 CFR 172 Subpart F)

- As with labels, placards convey information about the hazardous material for bulk packaging, freight containers, transport vehicles and railcars by use of:
  - Color; symbol; hazard class name; and hazard class number or division number
- Placards may also display the UN ID# of the hazardous material instead of the hazard class name (§ 172.332(c))

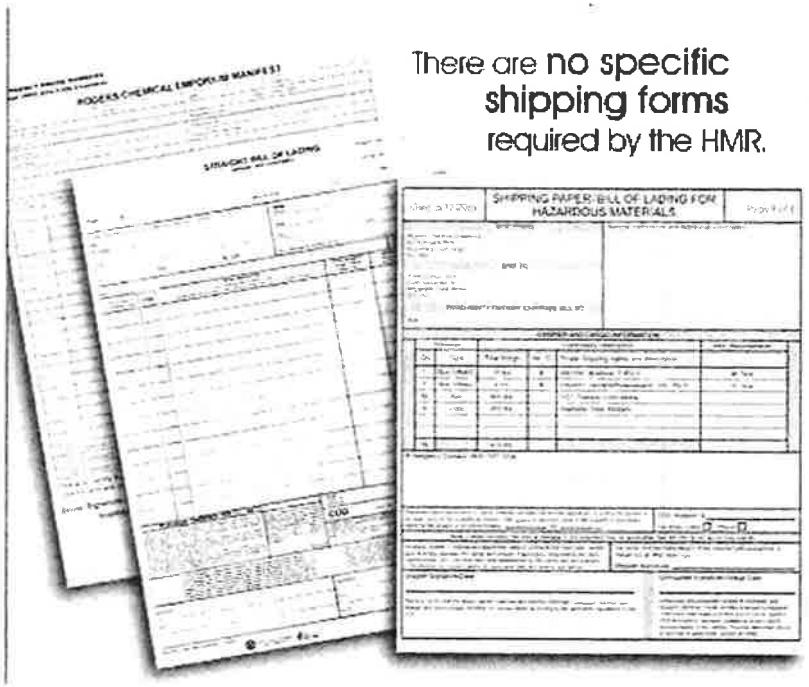
Placement of Placards
(49 CFR 172.504)

- **The basic rule for placarding states that each applicable packaging containing any quantity of a hazardous material must be placarded on each side and each end :**



Shipping Papers
(49 CFR Subpart C)

- **Hazardous materials transported in commerce must be described on a shipping paper.**
  - **A shipping paper can be: a shipping order; bill of lading; manifest; or other shipping document serving a similar purpose which contains the required information.**

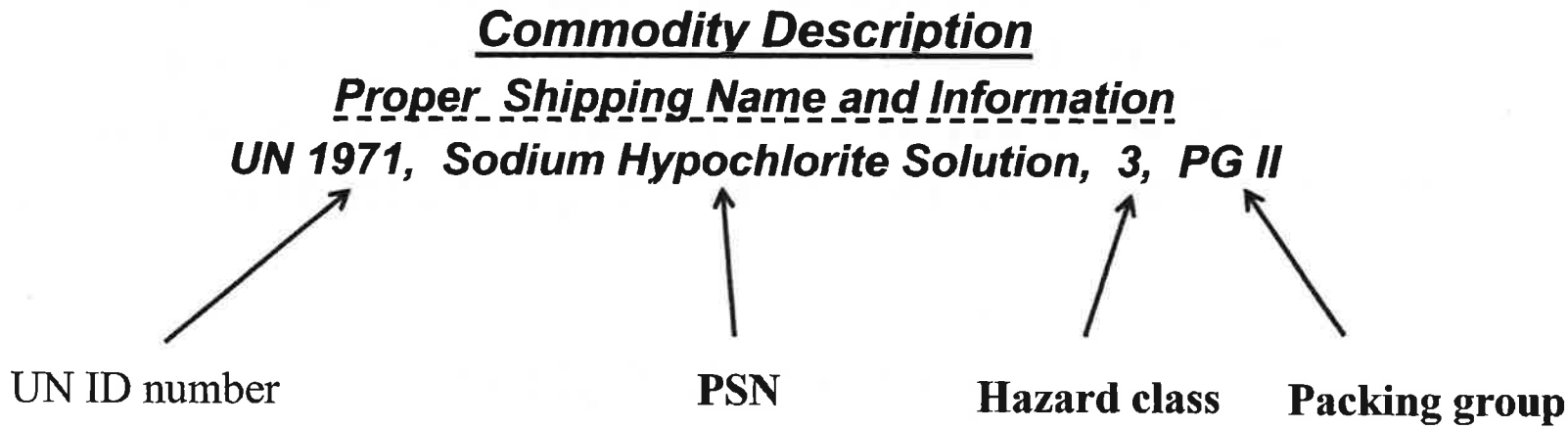


Shipping Papers
(49 CFR Subpart C)

- **The purpose of the shipping paper is to communicate the hazards of the materials being transported.**
  - The shipping paper provides the hazardous material's basic description and may contain detailed emergency response information.
- **Each person offering a hazardous material for transportation shall certify on the shipping paper that the material is offered in accordance with the HMR.**
  - The statement must include a printed and legible signature of a responsible person.
- **Shipping papers must be retained by the:**
  - Shipper for two years from date presented to the initial carrier; and
  - Carrier for one year from the date received from the shipper.

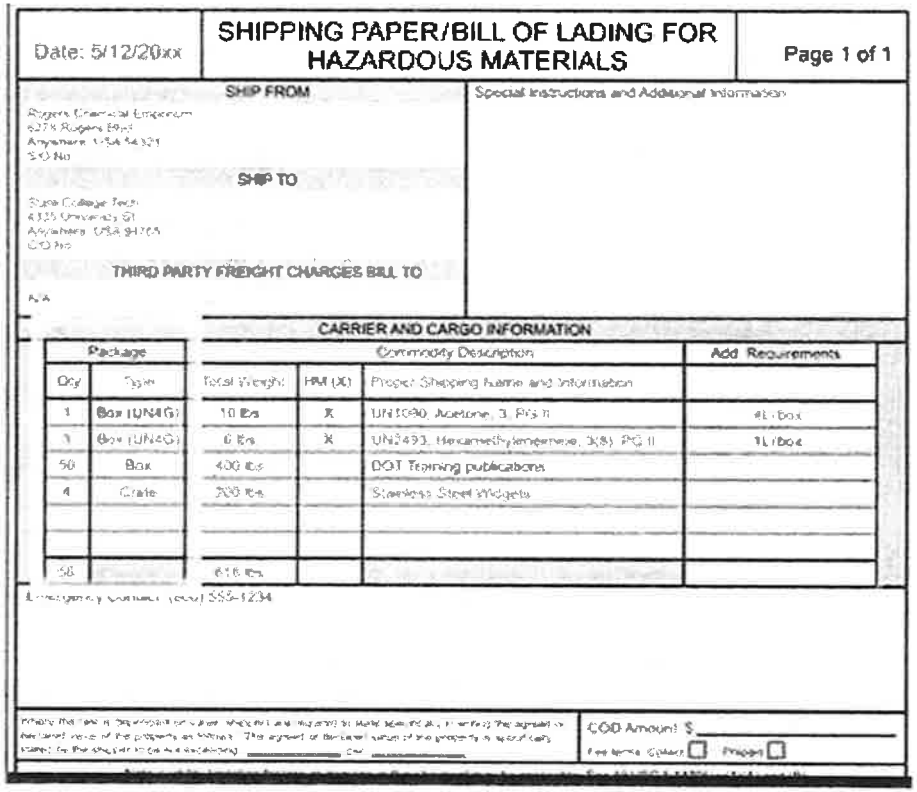
Basic Description of Materials
(49 CFR 172.202)

- **Regardless of the form used, all shipping papers must provide the same basic descriptive information, which must appear in the proper sequence:**
  - **ID number; proper shipping name (PSN); hazard class/division number; packing group**



Other Descriptive Information
(49 CFR 172.202)

- **The shipping paper must also include the following information:**
  - **Total quantity of hazardous materials indicated by weight or volume, along with a unit of measurement (500 gal.); and number and type of packages (10 drums).**



Date: 5/12/20xx	SHIPPING PAPER/BILL OF LADING FOR HAZARDOUS MATERIALS	Page 1 of 1

SHIP FROM

Rogers Chemical Emporium
6278 Rogers Blvd
Anywhere, USA 54321
SO No

SHIP TO

State College Tech
4335 University St
Anywhere, USA 94705
CO No

THIRD PARTY FREIGHT CHARGES BILL TO

N/A

Special Instructions and Additional Information

CARRIER AND CARGO INFORMATION

Package		Commodity Description			Add. Requirements
Qty	Type	Total Weight	HM (X)	Proper Shipping Name and Information	
1	Box (UN4G)	10 lbs	X	UN1090, Acetone, 3, PG II	4L/box
1	Box (UN4G)	6 lbs	X	UN2493, Hexamethylenamine, 3(8), PG II	1L/box
50	Box	400 lbs		DOT Training publications	
4	Crate	200 lbs		Stainless Steel Widgets	
56		616 lbs			

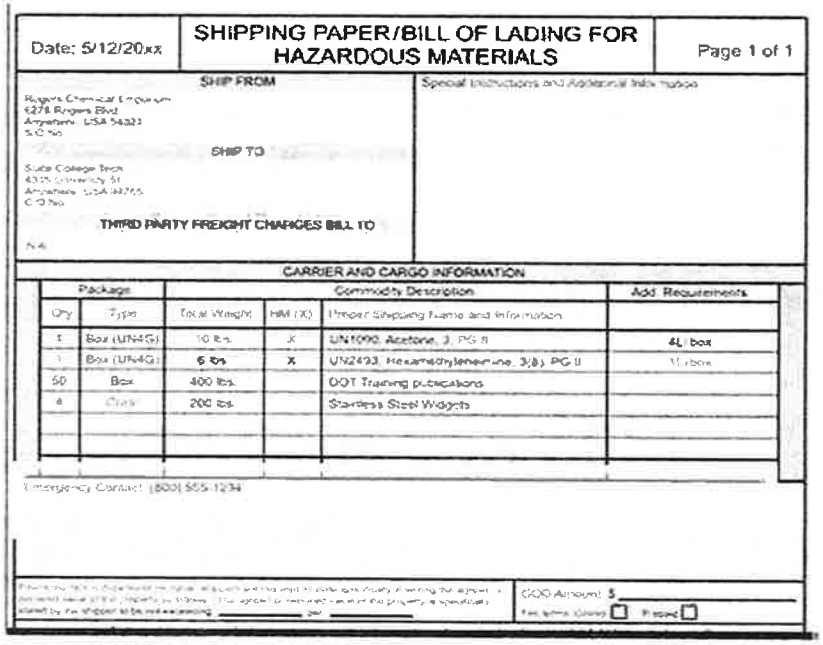
Emergency Contact: (800) 555-1234

COD Amount: $_____

Fee terms: (Collect) ☐ Prepaid ☐

Emergency Response Information
(49 CFR 172.201, 172.602 and 172.604)

- **The shipping paper must include an emergency response telephone number:**
  - **ER number must be staffed 24/7 by a person capable of providing detailed information concerning the hazardous material.**
- **Information for mitigation of a hazardous material incident, such as an MSDS, must be available from both the carrier and facility of origin or destination.**



Date: 5/12/20xx

SHIPPING PAPER/BILL OF LADING FOR HAZARDOUS MATERIALS

Page 1 of 1

SHIP FROM

Rogers Chemical Emporium
6278 Rogers Blvd
Anywhere, USA 54321
C.O. No.

SHIP TO

State College Tech
4335 University St
Anywhere, USA 98765
C.O. No.

THIRD PARTY FREIGHT CHARGES BILL TO

N.A.

Special Instructions and Additional Information

CARRIER AND CARGO INFORMATION

Package		Commodity Description			Add. Requirements
Qty.	Type	Total Weight	HM (X)	Proper Shipping Name and Information	
1	Box (UN4G)	10 lbs.	X	UN1090, Acetone, 3, PG II	4L / box
1	Box (UN4G)	6 lbs	X	UN2493, Hexamethylenemine, 3(8), PG II	1L / box
50	Box	400 lbs.		DOT Training publications	
8	Crate	200 lbs.		Stainless Steel Widgets	

Emergency Contact (800) 555-1234

COD Amount: $

Fee terms (Circle): Collect / Prepaid

Incident Reporting
(49 CFR 171.15 and 171.16)

- **Follow Metropolitan's spill reporting guidelines (HSE 202.000) for any incidents involving delivery of hazardous materials to or from our facilities or during unloading.**
  - **See Intramet, Safety and Environment page, EHS Programs and Procedures section, Health, Safety and Environmental (HSE):**

  http://intramet/Resources/Safety/SafeManual/index.asp#env

- **See also discussion at the end of the Chemical Protocol session.**

Part II

DOT SECURITY TRAINING

(49 CFR 172.704 (A) (4))

Security Training

- **Security awareness training** (49 CFR 172.704 (a) (4))
  - Each hazmat employee must receive training that provides an awareness of security risks associated with hazardous materials transportation and methods designed to enhance transportation security.
  - This training must also include a component covering how to recognize and respond to possible security threats.
  - *This segment will be covered in the "DOT Function-specific/ Chemical Delivery-Security Protocol" section of this training.*

Part III

DOT FUNCTION-SPECIFIC TRAINING

(49 CFR 172.704 (A) (2))

&

MWD CHEMICAL DELIVERY/ SECURITY PROTOCOL

Overview

- Chemical Delivery Information
- Chemical Arrival – Security, Leak Check
  - Delivery confirmation, ID check, leak check, escort
- Rejection Criteria
- Unloading Protocol

Chemical Delivery Information

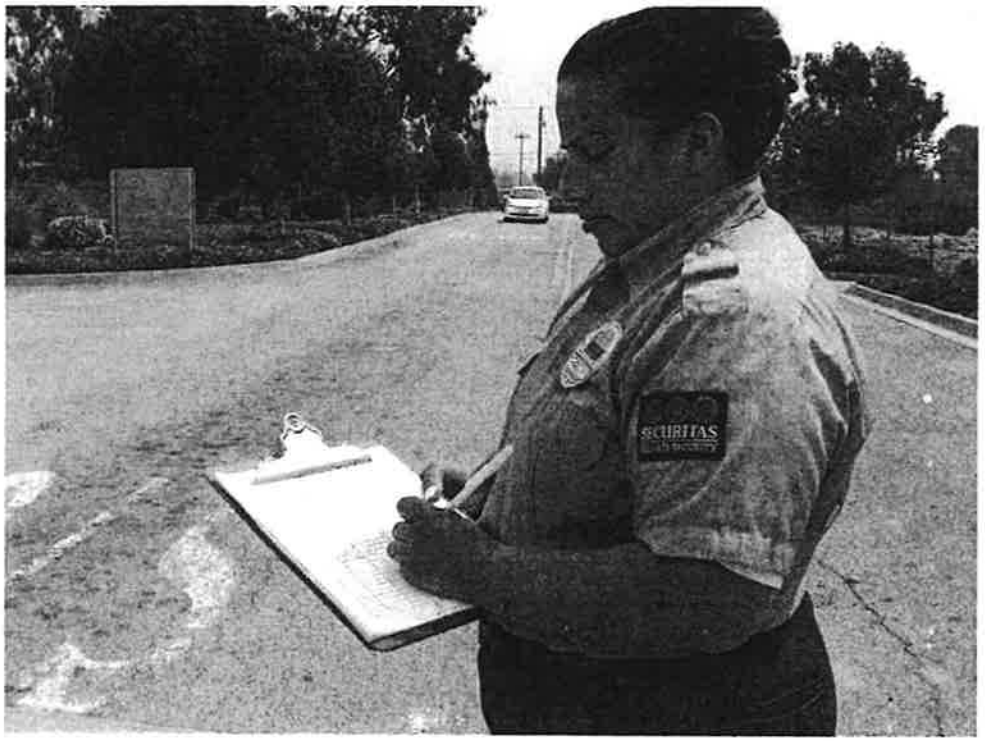
- Truck driver identification
- Quantity and quality of chemical ordered
  - See Intramet for specification details: Facilities and Systems; 5.0 Treatment Plants; 5.12 Water Treatment Chemicals

http://intramet/Resources/FacilityRefMan/FiltrationPlants/5.12WaterTreatmentChemicals/index.asp

- Invoice, Shipping Papers/Bill of Lading, Affidavit of Compliance
- Security seal numbers

Truck Arrival/Escort Procedures Guards

- Call C&D staff to verify delivery/announce arrival
- Initiate Chemical Delivery form
- Check driver ID & verify driver is on approved list



MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Chemical Delivery Form

Facility: _____

Cargo trailers only

Arrival Date/Time: _____ Name of Security Officer: _____

Trucking Firm: _____ Driver's Name: _____

Company ID Provided ☐ Yes ☐ No Current License Provided ☐ Yes ☐ No

Is driver's name on approved list? ☐ Yes, call plant operator for an escort
☐ No, notify plant operator that driver is not cleared

To be filled out by Security Guard/Reservoir personnel
To be filled out by Operator/Reservoir Personnel

Cargo Trailers and Non-Chlorine Railcars

Chemical Name: _____ MWD Release Number: _____

Railcar deliveries: Railcar #_____ Railcar Arrival Date/Time: _____

Check boxes as each item is verified

Prior to Unloading

Cargo Trailer/Railcar inspected for leaks upon arrival	☐
Invoice supplied	☐
Affidavit of Compliance supplied	☐
Weight Ticket supplied (trucks)	☐
Security seals intact	☐
Security seal numbers match invoice	☐
Sample collected and approved	☐

After Unloading

Cargo trailer/railcar inspected for leaks	☐
Area inspected for spills	☐
Hoses are capped/blind flanged and all valves and physical connections are in proper positions	☐

Cargo trailer/railcar has been cleared to leave by: _____
Signature

Truck Arrival/Escort Procedures Guards cont'd

- Direct truck to staging area, log arrival, notify other guards
- If there are discrepancies notify C&D staff
- For major security issues notify Special Agent on Duty at Security Watch Center (800-555-5911)

Truck Arrival/Escort Procedures C&D Staff

- Collect Chemical Delivery form from Guard & fill in remainder
- Inspect visible portions of vehicle to ensure no leaks, check easily accessible seals
- Check truck placards
- Check driver paperwork
- Escort vehicle to tank

- **Check truck placards**

SODIUM HYPOCHLORITE

CORROSIVE

- **Escort vehicle to unloading pad and direct to appropriate tank.**

Rejection of Loads

- Wrong chemical
- Vehicle leaking
- Driver ID missing or not on approved list
- Missing or wrong paperwork

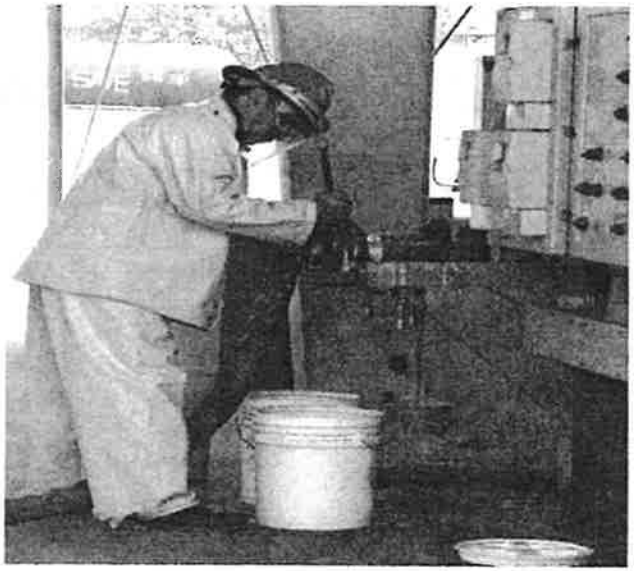
Rejection of Loads
(cont'd)

- Security seals missing, broken or don't match paperwork
- Chemical doesn't meet spec
- Suspicious/unusual driver behavior
  - For such security issues notify Control Room and Special Agent on Duty at Security Watch Center (800-555-5911)

Chemical Unloading

- **Metropolitan personnel must be familiar with chemical, unloading operation, have appropriate safety training and PPE**
- **Prior to unloading, ensure:**
  - **All parties wear appropriate PPE**
    - **see HSE 115:**

http://intramet/Resources/Safety/SafeManual/115PPEProgram.pdf



Chemical Unloading cont'd

- **Prior to unloading, ensure/check/verify:**
  - Security seals and numbers
  - Correct tank and valving
  - Vendor equipment is within contained area
  - Correct unloading procedures followed, especially proper hookup and disconnect
- **After unloading, ensure:**
  - Valves & truck have no leaks, hoses are plugged or capped, blind flanges replaced, spill buckets emptied
  - Chemical Delivery form is completed and signed

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Chemical Delivery Form

Facility: _____

Cargo trailers only

Arrival Date/Time: _____ Name of Security Officer: _____

Trucking Firm: _____ Driver's Name: _____

Company ID Provided ☐ Yes ☐ No Current License Provided ☐ Yes ☐ No

Is driver's name on approved list? ☐ Yes, call plant operator for an escort
☐ No, notify plant operator that driver is not cleared

To be filled out by Security Guard/Reservoir personnel
To be filled out by Operator/Reservoir Personnel

Cargo Trailers and Non-Chlorine Railcars

Chemical Name: _____ MWD Release Number: _____

Railcar deliveries: Railcar #_____ Railcar Arrival Date/Time: _____

Check boxes as each item is verified

Prior to Unloading

Cargo Trailer/Railcar inspected for leaks upon arrival	☐
Invoice supplied	☐
Affidavit of Compliance supplied	☐
Weight Ticket supplied (trucks)	☐
Security seals intact	☐
Security seal numbers match invoice	☐
Sample collected and approved	☐

After Unloading

Cargo trailer/railcar inspected for leaks	☐
Area inspected for spills	☐
Hoses are capped/blind flanged and all valves and physical connections are in proper positions	☐

Cargo trailer/railcar has been cleared to leave by: _____
Signature

- **C&D staff complete and sign Chemical Delivery form**

Chemical Unloading
(cont'd)

- C&D staff clear vendor to leave, Guards log driver out
- C&D keeps Chemical Delivery Forms on file

Part IV

DOT SAFETY TRAINING

(49 CFR 172.704 (A) (3))

Safety Training

(49 CFR 172.704 (a) (3))

Each hazmat employee shall receive safety training concerning:

1. **Measures to protect the employee from exposure to hazardous materials in the work place;**

2. **Methods and procedures for avoiding accidents, such as the proper procedures for handling packages containing hazardous materials;**

3. **Emergency response information.**

Sodium Hypochlorite (NaOCl)

- **Physical & Chemical Properties**
  - Yellow to yellowish green liquid
  - Pungent, "chlorine-like" odor
  - Water soluble
  - pH 11-13 "Corrosive"
  - May develop chlorine gas if mixed with acids
  - AVOID SKIN AND EYE CONTACT

Routes of Exposure

- Skin Absorption
- Eye Contact
- Ingestion
- Inhalation

NaOCl – Health Effects - Eyes

- **Eye Contact may cause:**
  - Serious eye irritation.
  - Blurred vision
  - Impairment of vision and corneal damage
- **First Aid for Eye Contact:**
  - Immediately flush eyes with running water for at least 20 minutes
  - Hold eyelids open during flushing
  - If irritation persists, repeat flushing
  - Obtain medical attention immediately

NaOCl – Health Effects - Skin

- **Skin Contact:**
  - Mist and solutions can cause skin irritation and/or dermatitis
  - Prolonged skin exposure may cause destruction of the dermis with impairment of the skin to regenerate at site of contact.
- **First Aid for Skin Contact:**
  - Under running water, immediately remove contaminated clothing, jewelry, shoes, etc.
  - Flush skin for at least 20 min
  - Obtain medical attention

NaOCl – Health Effects - Lungs

- **Inhalation**
  - Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough.
  - Inhalation of aerosol may cause irritation to the upper respiratory tract.
  - Higher, prolonged exposure may cause pulmonary edema, circulatory collapse and unconsciousness.
  - If mixed with acids, hypochlorite solutions release chlorine gas.
    - Exposures to high levels of chlorine gas may result in severe lung damage, pulmonary edema and death.

NaOCl – Health Effects – Lungs (cont'd)

- **First Aid for Inhalation Exposure**
  - Move victim to fresh air
  - If victim is conscious, and breathing is labored (Administer Oxygen)
  - If victim is unconscious, call 9-911 for medical assistance
  - Provide artificial respiration ONLY if breathing has stopped (Use a Barrier Mask or One Way Valve)
  - Do not administer mouth to mouth if victim has (Ingested or Inhaled the substance)
  - Give CPR only if there is no pulse and no breathing
  - Obtain medical attention immediately

NaOCl – Health Effects - Ingestion

- **Ingestion**
  - May cause irritation, pain and inflammation of the mouth and stomach, vomiting, shock, confusion, delirium, coma and in severe cases death.
- **First Aid for Ingestion Exposure**
  - Do not induce vomiting.

    If victim is alert and not convulsing, rinse mouth and give water to dilute
  - Immediately transport victim to emergency facility

PPE Requirements
(Shift Check, Alarm Response)

HSE 115, Appendix F

- **Safety glasses with side shield**

Remember Prevent Skin and Eye Contact by Wearing your PPE!

PPE Requirements
(Valving, Feed Change)

HSE 115, Appendix F

- **Goggles or Face Shield**

Remember Prevent Skin and Eye Contact by Wearing your PPE!

PPE Requirements
(Connect/Disconnect, Spill Response)

HSE 115, Appendix F

- **Goggles and Face Shield**
- **Nitrile Gloves**
- **Tyvek, non-permeable**
- **Chemical Boots**

Remember Prevent Skin and Eye Contact by Wearing your PPE!

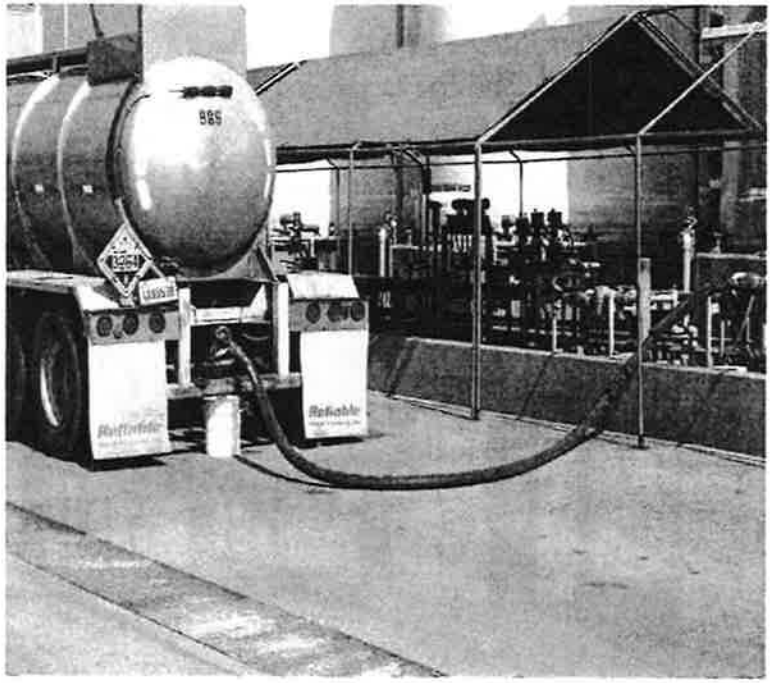
HAZARD AREAS

- Unloading area
- Tank farm/storage
- Containment
- Process/injection area

Safe Work Practices for Monitoring Delivery

- Stand-back approach
  - Driver making/breaking
- Keep out of hazard area
  - 20 feet upwind
- Use physical barrier
  - Truck, office, etc.
- Wear proper PPE
  - See HSE 115

http://intramet/Resources/Safety/SafeManual/115PPEProgram.pdf



Spills and Releases

- **Spill Response and Spill Reporting**

  Scenarios:

  - **In Transit – Entering/Leaving Facility**
    - **On Facility Property**
    - **Off Facility Property**
  - **During/After Unloading**

Spill Response

- **In Transit – Entering/Leaving Facility**
  - **On Facility Property**
    - **Contact Environmental Site Support for cleanup**
  - **Off Facility Property**
    - **Vendor responsibility**
    - **Inform local fire department for response**

Spill Response (cont'd)

- **During/After Unloading**
  - Contact Environmental Site Support for cleanup

Spill Reporting

- **In Transit – Entering/Leaving Facility**
  - **Follow Spill/Release Reporting Procedure (HSE 202.100)**
    - **Vendor has primary responsibility**
- **During/After Unloading**
  - **Follow Spill/Release Reporting Procedure (HSE 202.100)**

Emergency Safety Equipment

- MERV or Bleach Truck (CRA)
- Eye wash/body spray station(s)
  - Identify location(s)
  - Check function prior to truck unloading
- Fire Extinguisher
- First Aid Kit
- Telephone & Radios
- Spill cleanup materials & haz waste drums

General Safety Information

- For emergency assistance, Dial 9-911
  - Notify Supervisor + Eagle Rock or DOCC
- Review location of medical facilities listed in training manual
- Be familiar with hazmat spill reporting procedure
  - See HSE 202.100
- Know location of onsite emergency and spill cleanup equipment
- Report all exposures to supervisor
- No smoking on containment pad
- Non-essential personnel should not be in area

§ 172.101 HAZARDOUS MATERIALS TABLE

49 CFR Ch. I (10–1–07 Edition)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			(9)		(10)	
Symbols	Hazardous Materials Descriptions and Proper Shipping Name	Hazard Class or Division	Identification Numbers	Packaging Group	Label Codes	Special Provisions (§ 172.102)	Packaging (§ 173.***)			Quantitiy Limitations (see §173.27 and 175.75)		Vessel Stowage	
							Exceptions	Non-bulk	Bulk	Passenger Aircraft/Rail	Cargo Air Only	Location	Other
							(8A)	(8B)	(8C)	(9A)	(9B)	(10A)	(10B)
	Aqueous Ammonia (19%)												
	Ammonia solution, relative density between 0.880 and 0.957 at 15 degrees C in water, with more than 10 percent but not more than 35 percent ammonia.	8	UN2672	III	8	IB3, IP8, T7, TP1	154	203	241	5L	60L	A	40, 52, 85
	Bleach (12.5%)												
	Hypochlorite solutions	8	UN1971	II	8	A7, B2, B15, IB2, IP5, N34, T7, TP2, TP24	154	202	242	1L	30L	B	26
	Caustic (25-50%)												
	Sodium hydroxide solution	8	UN1824	II	8	B2, IB2, N34, T7, TP2	154	202	242	1L	30L	A	52
	Chlorine												
	Chlorine	2.3	UN1017		2.3, 8	2, B9, B14, N86, T50, TP19	None	304	314, 315	Forbiden	Forbiden	D	40, 51, 55, 62, 68, 89, 90
	Ferric Chloride (~39%)												
	Ferric chloride, solution	8	UN2582	III	8	315, IB3, T4, TP1	154	203	241	5L	60L	A	.....
	FSA (23%)												
	Fluorosilicic acid	8	UN1778	II	8	A6, A7, B2, B15, IB2, N3, N34, T8, TP2, TP12	None	202	242	1L	30L	A	.....
	Hydrogen Peroxide (35%)												
	Hydrogen peroxide, aqueous solutions with not less than 20 percent, but not more than 40 percent hydrogen peroxide (stabilized as necessary).	5.1	UN2014	II	5.1, 8	A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24, TP37	None	202	243	1L	5L	D	25, 66, 75
	LOX												

	Oxygen, refrigerated liquid (cryogenic liquid).	2.2	UN1073		2.2, 5.1	T75, TP5, TP22	320	316	318	Forbiden	Forbiden	D	
	Sulfuric Acid (93%)												
	Sulfuric acid with more than 51 percent acid.	8	UN1830	II	8	A3, A7, B3, B83, B84, IB2, N34, T8, TP2, TP12	154	202	242	1L	30L	C	14

Central Basin APAP
ATTACHMENT 6

Aquatic Pesticide Application Log

Aquatic Invasive Species Control Application Log

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

****IMPORTANT** To Be Completed EVERY TIME an Aquatic Invasive Species Control Application is Made**

Application Start: Time _____ Date _____

Application End: Time _____ Date _____

Location of Application: _____

Name of Waterbody Being Treated: _____

Name of Applicator: _____

Air Temperature (F°) _____ Wind Speed (mph) n/a Target Invasive Species Quagga Mussels

Treatment Area Size (choose one): _____

Acres _____ Linear Feet _____ _____

Sodium Hypochlorite Concentration:

Rate/Target Concentration: _____

Total Amount Applied:

Method of Application _____ Application Made (Circle One) **With** water flow / **Against** water flow / **Not Applicable**

Waterbody Type (Circle One) Lined Canal / Unlined Canal / Creek / Drain / Ditch / Basin / Reservoir / Lake / Pond or Other: _____

Water Flow (ft/sec, cfs) _____ Water Depth (ft) _____ Water Temperature (F°) _____

Is weed or algae present (%) _____ Water Sheen (Circle One) yes / no

Water Color (Circle One) none / clear / blue / green / brown Water Clarity (Circle One) poor / fair / good

Please enter any other information regarding the aquatic invasive species control application in the space provided below:

I (sign name)_____certify that the APAP has been followed.

Central Basin APAP
ATTACHMENT 7

Background Sampling Form

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

QUAGGA MUSSEL CONTROL APPLICATION

BACKGROUND SAMPLING LOG

The Background sampling data must be collected in the treatment area within 24-hours before start of application

MWD must inform the SWRCB & appropriate RWQCB 24 hrs. (or the earliest feasible time) before start of application.

Date / Time of Notification:_____Method of Notification:_____Who provided Notification:_____

Provide below the justification for the selection of the representative monitoring locations and identify which areas are to be considered representative (to be considered "representative," at a minimum, a location must be similar in hydrology, pesticide use, and other factors that affect the discharge of residual pesticides to surface waters as a result of application in the environmental setting).

_____

_____

Date:_____ **Time**:_____

Name of Sampler:_____

Location of Quagga Mussel Control Application:_____

Control Application That Will Be Applied (sodium hypochlorite):_____

Waterbody Name:_____

GPS Coordinates:_____

Weather Conditions (rain, fog, wind, etc.):_____ **Air Temperature**(°F):_____

BACKGROUND SAMPLING DATA (Field Tests from Grap Samples)

Sample must be collected at 3 ft. below the surface, or mid-depth if water is less than six ft. deep.

Water Temperature (°F):_____ **pH** (pH Units):_____

Turbidity (NTU):_____ **Electrical Conductivity** @25°C (µmhos/cm):_____

Total Chlorine Residual (Field test, mg/L):_____ **Dissolved Oxygen** (mg/L):_____

VISUAL OBSERVATIONS OF WATERBODY

Description of Waterbody Type (***Circle One***): Lined Channel / Unlined Channel / Creek / Drain / Ditch / Basin / Reservoir / Lake / Pond / or Other (describe):_____

Description of Application Area:_____

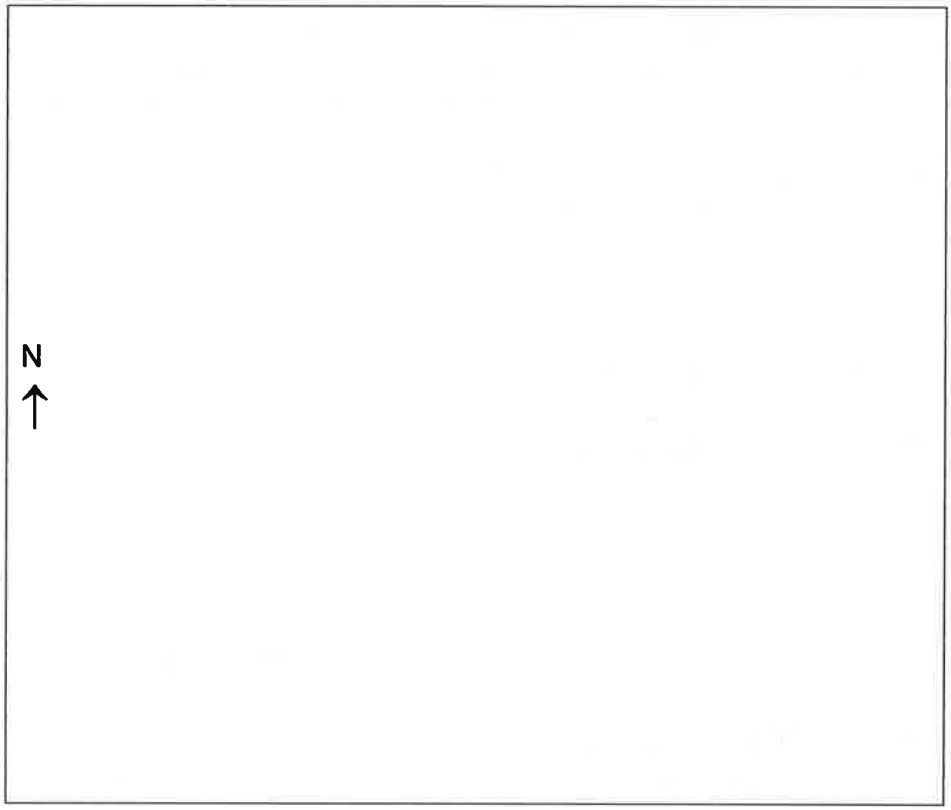
Appearance of Waterbody (color, clarity, sheen, etc.):_____

Identify Presence or Absence of:	Yes	No	Unknown	If Yes, describe observations
Floating or Suspended Matter				
Discoloration				
Bottom Deposits				
Aquatic Life				
Visible Films, Sheens, or Coatings				
Fungi, Slimes, or Objectionable Growth				
Potential Nuisance Conditions				

BACKGROUND SAMPLING LOCATION:

The Background sampling location must be in the treatment area within 24-hours before start of the application.

Draw Background Sample Location and include identifiable points of reference



Central Basin APAP
ATTACHMENT 8

Event Sampling Form

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

QUAGGA MUSSEL CONTROL APPLICATION

EVENT SAMPLING LOG

Sample Location 7

The Event sampling data must be collected downstream of the application area or the target area immediately after the application event - but must not exceed 24 hours after the application event.

Provide below the justification for the selection of the representative monitoring locations and identify which areas are to be considered representative (to be considered "representative," at a minimum, a location must be similar in hydrology, pesticide use, and other factors that affect the discharge of residual pesticides to surface waters as a result of application in the environmental setting).

_____

_____

Date:_____ **Time:**_____

Name of Sampler:_____

Location of Quagga Mussel Control Application:_____

Control Application That Will Be Applied (sodium hypochlorite):_____

Waterbody Name:_____

GPS Coordinates:_____

Weather Conditions (rain, fog, wind, etc.):_____ **Air Temperature**(°F):_____

EVENT SAMPLING DATA (Field Tests from Grap Samples)

Sample must be collected at 3 ft. below the surface, or mid-depth if water is less than six ft. deep.

Water Temperature (°F):_____ **pH** (pH Units):_____

Turbidity (NTU):_____ **Electrical Conductivity** @25°C (µmhos/cm):_____

Total Chlorine Residual (Field test, mg/L):_____ **Dissolved Oxygen** (mg/L):_____

VISUAL OBSERVATIONS OF WATERBODY

Description of Waterbody Type (***Circle One***): Lined Channel / Unlined Channel / Creek / Drain / Ditch / Basin / Reservoir / Lake / Pond / or Other (describe):_____

Description of Application Area:_____

Appearance of Waterbody (color, clarity, sheen, etc.):_____

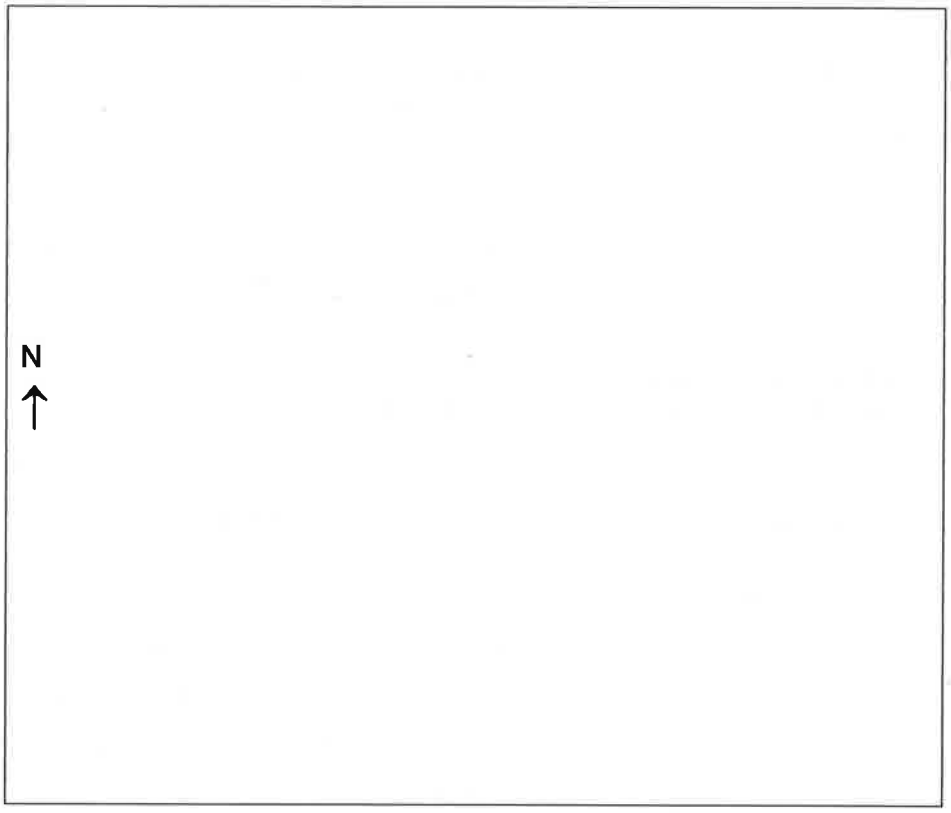
Identify Presence or Absence of:	Yes	No	Unknown	If Yes, describe observations
Floating or Suspended Matter				
Discoloration				
Bottom Deposits				
Aquatic Life				
Visible Films, Sheens, or Coatings				
Fungi, Slimes, or Objectionable Growth				
Potential Nuisance Conditions				

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

EVENT SAMPLING LOCATION:

The Event sampling location must be downstream of the application area or the target area immediately after the application event - but must not exceed 24 hours after the application event.

Draw Event Sample Location and include identifiable points of reference



Central Basin APAP
ATTACHMENT 9

Post-Event Sampling Form

METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

QUAGGA MUSSEL CONTROL APPLICATION

POST-EVENT SAMPLING LOG

The Post-Event sample data must be collected within the application area within 7 days after the project is deemed complete by MWD.

Provide below the justification for the selection of the representative monitoring locations and identify which areas are to be considered representative (to be considered "representative," at a minimum, a location must be similar in hydrology, pesticide use, and other factors that affect the discharge of residual pesticides to surface waters as a result of application in the environmental setting).

_____

_____

Date:_____ **Time:**_____

Name of Sampler:_____

Location of Quagga Mussel Control Application:_____

Control Application That Will Be Applied (sodium hypochlorite):_____

Waterbody Name:_____

GPS Coordinates:_____

Weather Conditions (rain, fog, wind, etc.):_____ **Air Temperature**(°F):_____

POST-EVENT SAMPLING DATA (Field Tests from Grap Samples)

Sample must be collected at 3 ft. below the surface, or mid-depth if water is less than six ft. deep.

Water Temperature (°F):_____ **pH** (pH Units):_____

Turbidity (NTU):_____ **Electrical Conductivity** @25°C (µmhos/cm):_____

Total Chlorine Residual (Field test, mg/L):_____ **Dissolved Oxygen** (mg/L):_____

VISUAL OBSERVATIONS OF WATERBODY

Description of Waterbody Type (***Circle One***): Lined Channel / Unlined Channel / Creek / Drain / Ditch / Basin / Reservoir / Lake / Pond / or Other (describe):_____

Description of Application Area:_____

Appearance of Waterbody (color, clarity, sheen, etc.):_____

Identify Presence or Absence of:	Yes	No	Unknown	If Yes, describe observations
Floating or Suspended Matter				
Discoloration				
Bottom Deposits				
Aquatic Life				
Visible Films, Sheens, or Coatings				
Fungi, Slimes, or Objectionable Growth				
Potential Nuisance Conditions				

POST-EVENT SAMPLING LOCATION:

The Post-Event sampling location must be within the application area within 7 days after the project is deemed complete by MWD.

Draw Post-Event Sample Location and include identifiable points of reference