

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0092

NPDES NO. CAS083526

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF MODESTO
STORM WATER DISCHARGE FROM
MUNICIPAL SEPARATE STORM SEWER SYSTEM
STANISLAUS COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Water Board) finds that:

1. The City of Modesto submitted a Report of Waste Discharge (ROWD) on 2 April 2007 and requested reissuance of Waste Discharge Requirements (WDR) under the National Pollutant Discharge Elimination System (NPDES) area-wide municipal separate storm sewer system (MS4) permit to discharge storm water runoff from storm drains and watercourses within the jurisdiction of the Discharger and to implement a Storm Water Management Plan (hereafter SWMP) for the City of Modesto.
2. Prior to issuance of this Order, the City of Modesto was covered under the NPDES area-wide MS4 permit, Order No. R5-2002-0182 (NPDES No. CA0083526) adopted on 1 October 2002.
3. The City of Modesto is located in Stanislaus County at the confluence of Dry Creek and the Tuolumne River (tributaries of the San Joaquin River). The City encompasses 36 square miles¹ with an average elevation of 91 feet above sea level. The average annual precipitation is approximately 12.2 inches.² The storm drain system has approximately 77 miles of storm drain lines and 20 pump stations within the City. Storm water discharges from the City drain to detention/retention basins (13 detention and 11 retention basins in the City), approximately 18 major outfalls to receiving waters (Tuolumne River or Dry Creek), Modesto Irrigation District (MID) laterals/drains, or rock wells (approximately 11,000). **Attachment A** shows a map of the City of Modesto and the service area covered under this permit.
4. Surface water discharges occur generally in the older areas of the City or those areas immediately adjacent to the Tuolumne River, Dry Creek or irrigation canals. Forty percent of storm water discharges to detention/retention basins, twenty percent to

¹ U.S. Census Bureau, 2000.

² Modesto Irrigation District, Water Years 2002-2007.

receiving waters (Tuolumne River or Dry Creek), ten percent direct to MID laterals/drains, and thirty percent to rock wells.³

5. The City of Modesto (hereafter referred to as the Discharger) is defined as a medium municipality (population greater than 100,000 but less than 250,000) in the Code of Federal Regulations (CFR) (40 CFR 122.26 (b)(7)). As such, the Discharger must obtain an NPDES municipal storm water permit.
6. The Discharger has jurisdiction over and/or maintenance responsibility for the MS4 that it owns and/or operates in Stanislaus County. The discharge consists of the surface runoff generated from various land uses in all the hydrologic sub-basins, which discharge into either storm drains or rock wells.
7. This Order and its requirements are not intended to restrict or control local land use decision-making authority. The Discharger retains authority to make the final land-use decisions and retain full statutory authority for deciding what land uses are appropriate at specific locations within its jurisdiction. The Regional Water Board recognizes that the Discharger's land use authority allows urban developments that may generate pollutants and runoff that could impact receiving water quality and adversely impact beneficial uses. The Discharger is therefore responsible for considering potential storm water impacts when making planning decisions in order to fulfill the Clean Water Act (CWA) requirement to reduce the discharge of pollutants in municipal storm water to the maximum extent practicable (MEP). This responsibility requires the Discharger to exercise its legal authority to ensure that any increased pollutant loads and flows do not affect the beneficial uses of the receiving water.
8. This Order is not intended to prohibit the inspection for or abatement of vectors by the State Department of Health Services or local vector agencies in accordance with Cal. Health and Safety Code § 2270 *et seq.* and §116110 *et seq.* Certain Treatment Control Best Management Practices (BMPs) if not properly designed, operated or maintained may create habitats for vectors (e.g. mosquito and rodents). This Order expects that the Discharger will closely cooperate and collaborate with local vector control agencies and the State Department of Health Services for the implementation, operation, and maintenance of Treatment Control BMPs in order to minimize the risk to public health from vector borne diseases.
9. There are portions of the City that are mainly agricultural, rural, and open space lands. It is not the intent of the federal storm water regulations to regulate storm water discharges from land uses of these types. Therefore, these areas are exempt from the requirements of this Order unless they discharge directly to the Discharger's conveyance system. Discharges from these sources may be subject to total maximum daily load (TMDL) allocations and control programs.

³ Source: Draft City of Modesto Storm Drainage Master Plan, October 2006.

10. When natural vegetated pervious ground cover is converted to impervious surfaces such as paved highways, streets, rooftops, and parking lots, the natural absorption and infiltration abilities of the land are lost. Therefore, runoff leaving a developed urban area is significantly greater in runoff volume, velocity, and peak flow rate than pre-development runoff from the same area. Runoff durations can also increase as a result of flood control and other efforts to control peak flow rates. Increased volume, velocity, rate, and duration of runoff greatly accelerate the erosion of downstream natural channels. Significant declines in the biological integrity and physical habitat of streams and other receiving waters have been found to occur with as little as a 10% conversion of a watershed from natural to impervious surfaces. The increased runoff characteristics from new development must be controlled to protect against increased erosion of channel beds and banks, sediment pollutant generation, or other impacts to beneficial uses and stream habitat due to increased erosive force.
11. Urban development creates new pollution sources as human population density increases and brings with it proportionately higher levels of car emissions, car maintenance wastes, municipal sewage, pesticides, household hazardous wastes, pet wastes, trash, etc. which can either be washed or directly dumped into the MS4. As a result, the runoff leaving the developed urban area may be greater in pollutant load than the pre-development runoff from the same area. These increased pollutant loads must be controlled to protect downstream receiving water quality.
12. Development and urbanization especially threaten environmentally sensitive areas (ESAs), such as water bodies supporting rare, threatened or endangered species and CWA 303(d) impaired water bodies. Such areas may have a lower capacity to withstand pollutant shocks than might be acceptable in the general circumstance. In essence, development that is ordinarily insignificant in its impact on the environment may become significant in a particular sensitive environment. Therefore, additional control to reduce pollutants from new and existing development may be necessary for areas adjacent to or discharging directly to an ESA.
13. Although dependent on several factors, the risks typically associated with properly managed infiltration of runoff (especially from residential land use areas) are not significant. The risks associated with infiltration can be managed by many techniques, including (1) designing landscape drainage features that promote infiltration of runoff, but do not "inject" runoff (injection bypasses the natural processes of filtering and transformation that occur in the soil); (2) taking reasonable steps to prevent the illegal disposal of wastes; (3) protecting footings and foundations; and (4) ensuring that each drainage feature is adequately maintained in perpetuity.

DISCHARGE CHARACTERISTICS

14. The quality and quantity of these discharges vary considerably because of the effects of hydrology, geology, land use, season, and sequence and duration of hydrologic events. Urban storm water runoff may contain pollutants that may lower the quality of receiving waters and adversely impact beneficial uses of the the Tuolumne River and Dry Creek.

Studies indicate there may be increases in pollutant levels and aquatic toxicity in receiving waters as a result of urban storm water discharges.

15. Pollutants that may be contained in storm water include, but are not limited to, certain heavy metals; sediments; petroleum hydrocarbons from sources such as used motor oil; microbial pathogens; pesticides; sources of acute and chronic aquatic toxicity; and nutrients that cause or contribute to the depletion of dissolved oxygen and/or toxic conditions in the receiving water. Excessive flow rates of storm water may cause or contribute to downstream erosion and/or excessive sediment discharge and deposition in stream channels. However, since the terrain in the Modesto Urbanized Area is relatively flat, receiving waters tend to exhibit low water velocities even during storm events. As a result it is unclear whether urban runoff from Modesto leads to downstream erosion and/or excessive sediment discharge and deposition in the stream channels.
16. Water quality assessments conducted by the Discharger and the Regional Water Board identified impairment, or threatened impairment, of beneficial uses of water bodies in the Modesto Region. The causes of impairments include pollutants of concern identified in municipal storm water discharges by the City of Modesto in the ROWD. Pollutants in storm water can have damaging effects on both human health and aquatic ecosystems.
17. The discharge of wash waters and polluted storm water from industries and businesses threaten water quality and can also adversely impact public health and safety. The pollutants of concern in such wash waters include food waste, oil and grease, and toxic chemicals. Other storm water/industrial waste programs in California have reported similar observations and have identified illicit discharges from automotive and food services facilities as a major cause of contamination and water quality problems.
18. Certain pollutants present in storm water and/or urban runoff may be derived from extraneous sources that the Discharger has no or limited jurisdiction over. Examples of such pollutants and their respective sources are: polynuclear aromatic hydrocarbons (PAHs) which are products of internal combustion engine operation, nitrates, bis (2-ethylhexyl) phthalate, metals, and mercury from wet and dry atmospheric deposition, historic uses of leaded fuels, copper from brake pad wear, zinc from tire wear, bacteria from natural sources including wildlife, dioxins as products of combustion, pesticides, and natural-occurring minerals from local geology. However, the implementation of the measures set forth in this Order is intended to reduce the entry of these pollutants into storm water and their discharge to receiving waters to the MEP.
19. Since receiving the second term permit in October 2002, the Discharger has conducted an Urban Discharge and Receiving Water Monitoring Plan, which includes urban discharge and receiving water monitoring for two wet weather and one dry weather events per year at four sites (upgradient and downgradient sites on the Tuolumne River and Dry Creek). In addition, water column toxicity testing, bioassessment monitoring, dry weather field screening (rock wells and outfalls >24"), and detention basin

monitoring has been conducted as part of the baseline monitoring. These data have been reported in the Discharger's annual reports.

20. During the previous permit term, the Discharger identified aluminum (total), copper (total), lead (total), iron (total), diazinon, Escherichia coli, fecal coliform, pH, total dissolved solids and turbidity as pollutants of concern (POCs) in receiving water and urban water discharges.
21. Based on the monitoring conducted during the previous permit term, the Discharger has now identified turbidity, total dissolved solids, fecal coliform, Escherichia coli, pH, copper, lead, iron, aluminum, and diazinon as POCs.

STORM WATER DISCHARGE TO SHALLOW GROUNDWATER

22. The Discharger uses approximately 11,000 wells, which drain approximately thirty percent of the city, to dispose of storm water. These disposal wells are lined with rock for structural safety and additional treatment. The wells are known as "rock wells."
23. The rock wells pose a potential threat to the shallow groundwater. The Discharger was required by its previous permit to address this threat through a monitoring program, new development program, public education and outreach program and through the illicit discharges program element. An Assessment Plan was submitted in February 2003 to address the rock well assessment. Monitoring of the groundwater and vadose zone was conducted to evaluate the effectiveness of BMPs and the impact of the discharge on shallow groundwater. The assessment program is complex and additional investigation is necessary to address pollution concerns. These Waste Discharge Requirements address this threat by requiring the Discharger to continue to implement rock well monitoring and shallow groundwater monitoring as outlined in the attached Provisions and Monitoring and Reporting Program.
24. The MRP describes monitoring which is required to evaluate the effectiveness of BMPs and the impact of the discharge on shallow groundwater. Modesto has been coordinating their efforts with the US Geological Survey (USGS) to conduct groundwater monitoring. Additional efforts to expedite the process are necessary and required by provisions in these Waste Discharge Requirements.
25. The USGS under the National Water Quality Assessment Program has been developing a comprehensive plan for groundwater monitoring (including shallow groundwater) in the City of Modesto. USGS has implemented a groundwater monitoring program that will take several years to reach any conclusions. Based on current information the USGS assessment program will need to be supplemented by additional work to determine if the Modesto rock wells have any adverse impact to groundwaters.
26. Storm water runoff may contain wastes. These wastes may be in the form of suspended particles of soil or dissolved pollutants derived from concrete washout, fertilizers, pesticides, metals or any other pollutants from construction, commercial,

municipal, or industrial activities. Any person discharging waste or proposing to discharge waste that could affect the quality of the waters of the state must file a ROWD (California Water Code (CWC) § 13260(a)(1).). Any person operating an injection well must file a ROWD. (CWC § 13260(a)(3).). The Regional Water Board shall prescribe requirements that implement the Basin Plan, take into consideration the beneficial uses to be protected and the water quality reasonably required for that purpose (CWC § 13263).

27. The Discharger's publicly-owned rock wells are Class 5 injection wells under the U.S. EPA's Underground Injection Control program. The U.S. EPA does not provide regulation of these wells beyond registration.
28. Due to the discharge of storm water to shallow groundwater through rock wells and the large number of these wells operated by the City of Modesto, this discharge represents a potential threat to groundwater quality. It is the intent of these requirements to quantify the magnitude of this threat, determine if historic discharge to groundwater has impacted groundwater and to minimize the discharge of pollutants to groundwater. Privately-owned rock wells (a.k.a. spin-out or backhole wells) within the Modesto urbanized area are not regulated as storm water discharges as part of this Order, because they are not part of the MS4 regulated by this Order. However, if the groundwater assessment determines that other rock wells (including individual rock wells, or rock well systems smaller than the Discharger's 11,000 wells) pose a threat to groundwater, such wells will be subject to requirements for the protection of shallow groundwater.

STATUTORY AND REGULATORY CONSIDERATIONS

29. The CWA authorizes the U.S. EPA to permit a state to serve as the NPDES permitting authority in lieu of the U.S. EPA. The State of California has in-lieu authority for an NPDES program. The Porter-Cologne Water Quality Control Act authorizes the State Water Resource Control Board (State Water Board), through the Regional Water Boards, to regulate and control the discharge of pollutants into waters of the State. The State Water Board entered into a Memorandum of Agreement with the U.S. EPA, on September 22, 1989, to administer the NPDES Program governing discharges to waters of the United States.
30. This Order does not constitute an unfunded local government mandate subject to subvention under Article XIII B, Section (6) of the California Constitution for several reasons, including, but not limited to, the following. First, this Order implements federally mandated requirements under federal Clean Water Act section 402, subdivision (p)(3)(B). (33 U.S.C. § 1342(p)(3)(B).) This includes federal requirements to effectively prohibit non-storm water discharges, to reduce the discharge of pollutants to the maximum extent practicable, and to include such other provisions as the Administrator or the State determines appropriate for the control of such pollutants. Federal cases have held these provisions require the development of permits and permit provisions on a case-by-case basis to satisfy federal requirements. (*Natural Resources Defense*

Council, Inc. v. U.S. E.P.A. (9th Cir. 1992) 966 F.2d 1292, 1308, fn. 17.) The authority exercised under this Order is not reserved state authority under the Clean Water Act's savings clause (*cf. Burbank v. State Water Resources Control Bd.* (2005) 35 Cal.4th 613, 627-628 [relying on 33 U.S.C. § 1370, which allows a state to develop requirements which are not "less stringent" than federal requirements]), but instead, is part of a federal mandate to develop pollutant reduction requirements for municipal separate storm sewer systems. To this extent, it is entirely federal authority that forms the legal basis to establish the permit provisions. (See, *City of Rancho Cucamonga v. Regional Water Quality Control Bd.-Santa Ana Region* (2006) 135 Cal.App.4th 1377, 1389; *Building Industry Ass'n of San Diego County v. State Water Resources Control Bd.* (2004) 124 Cal.App.4th 866, 882-883.)

Likewise, the provisions of this Order to implement total maximum daily loads (TMDLs) are federal mandates. The federal Clean Water Act requires TMDLs to be developed for water bodies that do not meet federal water quality standards. (33 U.S.C. § 1313(d).) Once the U.S. Environmental Protection Agency or a state develops a TMDL, federal law requires that permits must contain effluent limitations consistent with the assumptions of any applicable wasteload allocation. (40 C.F.R. § 122.44(d)(1)(vii)(B).)]

Second, the local agency Discharger's obligations under this Order are similar to, and in many respects less stringent than, the obligations of non-governmental dischargers who are issued NPDES permits for storm water discharges or waste discharge requirements for discharges to underground injection wells. With a few inapplicable exceptions, the Clean Water Act regulates the discharge of pollutants from point sources (33 U.S.C. § 1342) and the Porter-Cologne regulates the discharge of waste (Wat. Code, §§ 13260, 13263), both without regard to the source of the pollutant or waste. As a result, the "costs incurred by local agencies" to protect water quality reflect an overarching regulatory scheme that places similar requirements on governmental and nongovernmental dischargers. (See *County of Los Angeles v. State of California* (1987) 43 Cal.3d 46, 57-58 [finding comprehensive workers compensation scheme did not create a cost for local agencies that was subject to state subvention].) As noted above, private dischargers to underground injection wells who cause similar threats to groundwater would be subject to similar regulation.

The Clean Water Act and the Porter-Cologne Water Quality Control Act largely regulate storm water with an even hand, but to the extent there is any relaxation of this even-handed regulation, it is in favor of the local agencies. Except for municipal separate storm sewer systems, the Clean Water Act requires point source dischargers, including discharges of storm water associated with industrial or construction activity, to comply strictly with water quality standards. (33 U.S.C. § 1311(b)(1)(C), *Defenders of Wildlife v. Browner* (1999) 191 F.3d 1159, 1164-1165 [noting that industrial storm water discharges must strictly comply with water quality standards].) As discussed in prior State Water Board decisions, this Order does not require strict compliance with water quality standards. (SWRCB Order No. WQ 2001-15, p. 7.) The Order, therefore, regulates the discharge of waste in municipal storm water more leniently than the discharge of waste from non-governmental sources.

Third, the local agency Discharger has the authority to levy service charges, fees, or assessments sufficient to pay for compliance with this Order. The fact sheet demonstrates that numerous activities contribute to the pollutant loading in the municipal separate storm sewer system. Local agencies can levy service charges, fees, or assessments on these activities, independent of real property ownership. (See, e.g., *Apartment Ass'n of Los Angeles County, Inc. v. City of Los Angeles* (2001) 24 Cal.4th 830, 842 [upholding inspection fees associated with renting property].) The ability of a local agency to defray the cost of a program without raising taxes indicates that a program does not entail a cost subject to subvention. (*County of Fresno v. State of California* (1991) 53 Cal.3d 482, 487-488).

Fourth, the Discharger has requested permit coverage in lieu of compliance with the complete prohibition against the discharge of pollutants contained in federal Clean Water Act section 301, subdivision (a) (33 U.S.C. § 1311(a)) and in lieu of numeric restrictions on their discharges. To the extent, the local agencies have voluntarily availed themselves of the permit, the program is not a state mandate. (Accord *County of San Diego v. State of California* (1997) 15 Cal.4th 68, 107-108.) Likewise, the Discharger has voluntarily sought a program-based municipal storm water permit in lieu of a numeric limits approach. (See *City of Abilene v. U.S. E.P.A.* (5th Cir. 2003) 325 F.3d 657, 662-663 [noting that municipalities can choose between a management permit or a permit with numeric limits].) The local agency's voluntary decision to file a report of waste discharge proposing a program-based permit is a voluntary decision not subject to subvention. (See *Environmental Defense Center v. USEPA* (9th Cir. 2003) 344 F.3d 832, 845-848.)

Fifth, the local agency's responsibility for preventing discharges of waste that can create conditions of pollution or nuisance from conveyances that are within their ownership or control under state law predates the enactment of Article XIII B, Section (6) of the California Constitution.

31. The Water Quality Act of 1987 added Section 402(p) to the CWA (33 U.S.C. § 1251-1387). This section requires the U.S. EPA to establish regulations setting forth NPDES requirements for storm water discharges in two phases:
 - a. The U.S. EPA Phase I storm water regulations were directed at MS4s serving a population of 100,000 or more, including interconnected systems and storm water discharges associated with industrial activities, including construction activities. The Phase I Final Rule was published on November 16, 1990 (55 *Fed. Reg.* 47990).
 - b. The U.S. EPA Phase II storm water regulations are directed at storm water discharges not covered in Phase I, including small MS4s (serving a population of less than 100,000), small construction projects (one to five acres), municipal facilities with delayed coverage under the Intermodal Surface Transportation Efficiency Act of 1991, and other discharges for which the U.S. EPA Administrator or the State determines that the storm water discharge contributes

to a violation of a water quality standard, or is a significant contributor of pollutants to waters of the United States. The Phase II Final Rule was published on December 8, 1999 (64 *Fed. Reg.* 68722).

32. This Order specifies requirements necessary for the Discharger to reduce the discharge of pollutants in urban runoff to MEP.⁴ The State Board's Office of Chief Counsel (OCC) has issued a memorandum interpreting the meaning of MEP to include technical feasibility, cost, and benefit derived with the burden being on the municipality to demonstrate compliance with MEP by showing that a BMP is not technically feasible in the locality or that BMP costs would exceed any benefit to be derived (dated February 11, 1993). However, since MEP is a dynamic performance standard which evolves over time as urban runoff management knowledge increases, the Discharger's storm water programs must continually be assessed and modified to incorporate improved programs, control measures, BMPs, etc. in order to achieve the evolving MEP standard. MEP is a technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) that operators of MS4s must meet. Technology-based standards establish the level of pollutant reductions that dischargers must achieve. Factors that must be considered when defining MEP include, but are not limited to; effectiveness, regulatory compliance, public acceptance, cost and technical feasibility. This continual assessment, revision, and improvement of storm water management program implementation is expected to ultimately achieve compliance with water quality standards.
33. This permit is intended to develop, achieve, and implement a timely, comprehensive, cost-effective storm water pollution control program to reduce the discharge of pollutants in storm water to the MEP from the permitted areas in the City of Modesto to the waters of the United States.
34. Section 402(p)(3)(B)(ii) of the CWA requires NPDES permits to effectively prohibit non-storm water discharges into MS4s. Federal Regulations [40 CFR 122.26(d)(2)(iv)(B)(1)] require control programs to prevent illicit discharges to the MS4s. Certain categories of non-storm water discharges or flows are allowed to enter the MS4s provided that the Discharger has not identified such categories as significant sources of pollutants to waters of the United States.
35. The City of Modesto has adopted their own storm water ordinance. The ordinance provides the Discharger the authority to protect and enhance the water quality of watercourses, water bodies, and wetlands in the Modesto Urbanized area in a manner pursuant to and consistent with the CWA and the Porter-Cologne Water Quality Control Act.
36. The State Water Board has issued two statewide general NPDES permits for storm water discharges: one for storm water from industrial sites [NPDES No. CAS000001, General Industrial Activity Storm Water Permit (GIASP)] and the other for storm water

⁴ A definition of MEP may be found in Appendix B.

from construction sites [NPDES No. CAS000002, General Construction Activity Storm Water Permit (GCASP)]. The GIASP was reissued on April 17, 1997. The GCASP was reissued on August 19, 1999. In addition, the Regional Water Board has issued General Permit Order No. 5-00-175 for dewatering and other low threat discharges, which authorizes such discharges to the MS4s owned and operated by the Discharger. This Order requires the Discharger to conduct local inspections at industries or construction sites which discharge to its MS4 to assess compliance with City ordinances. Many of these sites are currently covered under State NPDES General Permits. The Discharger, through inspections of these facilities, can bring problems to the attention of Regional Water Board staff who can work cooperatively with the Discharger to implement an effective storm water regulatory program.

37. Federal regulations at 40 CFR 122.26(d)(2)(iv)(A) and 40 CFR 122.26(d)(2)(iv)(C) require that MS4 Dischargers implement a program to monitor and control pollutants in discharges to the municipal system from industrial and commercial facilities that contribute a substantial pollutant load to the MS4. These regulations require that the Discharger establish priorities and procedures for inspection of industrial facilities and priority commercial establishments. This permit, consistent with the U.S. EPA policy, incorporates a cooperative partnership, including the specifications of minimum expectations, between the Regional Water Board and the Discharger for the inspection of industrial facilities and priority commercial establishments to control pollutants in storm water discharges (58 *Fed. Reg.* 61157).
38. When industrial or construction site discharges occur in violation of local permits and ordinances, the Regional Water Board refers first to the municipality where the discharge occurs for appropriate actions. If the municipality has demonstrated a good faith effort to educate and enforce but remains unsuccessful, the Regional Water Board may then step in to enforce the applicable statewide General Permit. If the municipality has been negligent in its enforcement efforts in compliance with this order, the Regional Water Board may initiate enforcement action against both the industrial or construction discharger (under the statewide General Permits), as well as against the Discharger for violations of this Order. The Discharger must also provide the first level of enforcement against illegal discharges from other land uses it has authorized, such as commercial and residential developments.
39. This Order shall protect the beneficial uses of receiving waters and ensure compliance with water quality standards. This Order, therefore, includes requirements to the effect that discharges shall not cause or contribute to violations of water quality standards that would cause or create a condition of nuisance, pollution, or water quality impairment in receiving waters. Accordingly, the Regional Water Board is requiring that these requirements must be addressed through the effective implementation of BMPs to reduce pollutants in storm water.
40. Regulations in 40 CFR 122.26(d)(2)(iv) require that the Storm Water Management Plan (SWMP) be implemented during the entire duration of the permit, which is five years. The Discharger shall demonstrate substantial compliance with the SWMP and this

Order through the information and data supplied in the Annual Report. The SWMP shall remain in effect as an integral and enforceable part of this Order until revised and approved by the Regional Water Board. If there are conflicts between the SWMP and this Order, then the Order supercedes the SWMP.

41. Federal, State, regional or local entities within the Discharger's boundaries, not currently named in this Order, operate storm drain facilities and/or discharge storm water to the storm drains and watercourses covered by this Order. The Discharger may lack legal jurisdiction over these entities under the state and federal authorities. Consequently, the Regional Water Board recognizes that the Discharger should not be held responsible for such facilities and/or discharges. Caltrans is a state agency that is currently designated as one of these entities. On 15 July 1999, the State Board issued a separate NPDES storm water permit to Caltrans, NPDES No. CAS000003 (Order No. 99-06-DWQ). The State Board may consider issuing separate NPDES storm water permits to other federal, state or regional entities operating within the Discharger's jurisdictional boundaries that may not be subject to direct regulation by the Discharger. Federal agencies are not subject to municipal storm water requirements although they may be permitted as industrial dischargers.
42. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies to achieve water quality objectives for all waters of the Basin. This Order implements the Basin Plan.
43. The City of Modesto discharges storm water into the Tuolumne River and Dry Creek which are tributaries of the San Joaquin River and Delta. The beneficial uses of the Tuolumne River downstream of storm water discharges as identified in Table II-1 of the Basin Plan are municipal, domestic, and agricultural supply; water contact and non-contact recreation; aesthetic enjoyment; and preservation and enhancement of fish, wildlife and other aquatic resources. Dry Creek is a tributary to the Tuolumne River. The Basin Plan does not specifically identify beneficial uses of Dry Creek. However the Plan states; the beneficial uses of any specifically identified water body apply to its tributary streams. Upon review of the flow conditions, habitat values, and beneficial uses of Dry Creek, the Regional Water Board finds that the beneficial uses identified in the Basin Plan for the Tuolumne River are applicable to Dry Creek.
44. The beneficial uses of the underlying ground water beneath the City of Modesto, as identified in the Basin Plan, are municipal and domestic water supply, industrial service, industrial process, and agricultural supply.
45. Congress has determined that it is not feasible at this time to establish numeric effluent limits for pollutants in storm water discharges from MS4s [Clean Water Act (CWA)]⁵

⁵ The U.S. Environmental Protection Agency (EPA) published the regulation entitled "National Pollutant Discharge Elimination System - Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges" (Federal Register, Volume 64, Number 235, pages 68722-68852) on December 8, 1999 as required by Section 402(p) of the Clean Water Act (CWA).

Section 402(p)(3)(B)(iii)⁶. In addition, the California Superior Court ruled; “*Water quality-based effluent limitations are not required for municipal Stormwater discharges [33 USC §1342(p)(3)(B)] and [40 CFR §122.44(k)(3)]. For municipal stormwater discharges, the Permits must contain best management practices (BMPs), which reduce pollutants to the maximum extent practicable [33 USC §1342(p)(3)(B)]. These Permits do contain these through the Stormwater Management Plan which is incorporated into the Permits by reference.*” (*San Francisco Baykeeper vs. Regional Water Quality Control Board, San Francisco Bay Region, Case No. 500527, 14 November 2003*). Therefore, the effluent limitations in this Order are narrative, and include the requirement to reduce pollutants in storm water discharges to the MEP. In lieu of numeric effluent limitations, this Order requires the implementation of BMPs identified in the Discharger’s SWMP to control and abate the discharge of pollutants in storm water discharges. Implementation of BMPs, compliance with long-term performance standards in accordance with the Discharger’s SWMP and its schedules, an established maintenance program with enforcement procedures, constitutes compliance with the MEP standard.

46. The State Water Board convened a Storm Water Panel (Panel) of experts to address the issue of numeric effluent limits⁷. The Panel concluded that it is not feasible at this time to set enforceable numeric effluent criteria for storm water and non-storm water discharges from MS4s.
47. The U.S. EPA published an ‘Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits’ on August 26, 1996 (61 *Fed. Reg.* 43761). This policy discusses the appropriate kinds of water quality-based effluent limitations to be included in NPDES storm water permits to provide for the attainment of water quality standards.
48. On 12 March 2001, the U.S. Court of Appeals ruled that it is necessary to obtain an NPDES permit for application of aquatic pesticides to waterways [*Headwaters, Inc. vs. Talent Irrigation District, 243 F.3d. 526 (Ninth Cir., 2001)*]. The U.S. EPA issued a Final Rule on 17 October 2006, that exempts the application of a pesticide to or over, including near, waters of the United States if conducted consistent with all relevant requirements under the Federal Insecticide and Fungicide Rodenticide Act (FIFRA), from an NPDES permit under the Clean Water Act in the following two circumstances: (a) the application of pesticides directly to waters of the United States in order to control pests,⁸ and (b) The application of pesticides to control pests that are present over

⁶ CWA Section 402(p)(3)(B)(iii): “...controls to reduce pollutants to the maximum extent practicable, including management practices, control techniques, and system, design and engineering methods, and such other provisions as the Administrator or the State determines appropriate for the control of such pollutants.”

⁷ Recommendations of the Blue Ribbon Panel were finalized as *The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities*, dated 19 June 2006.

⁸ Water Quality Order No. 2004-0008-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for Discharges of Aquatic Pesticides to Surface Waters of the United States for Vector Control, General Permit No. CAG990004

waters of the United States, including near such waters,⁹ that results in a portion of the pesticides being deposited to waters of the United States (40 CFR 122.3(h)).

49. On 17 June 1999, the State Water Board adopted Order No. WQ 99-05, a precedent setting-decision, which identifies acceptable receiving water limitations language to be included in municipal storm water permits issued by the State and Regional Water Boards. The receiving water limitations included herein are consistent with the State Board Order, U.S. EPA policy, and the U.S. Court of Appeals decision in, *Defenders of Wildlife v. Browner* (Ninth Cir, 1999). The State Board's OCC has determined that the federal court decision did not conflict with SBO 99-05 (memorandum dated October 14, 1999).
50. Federal regulations in 40 CFR 122.42(c)(7) require the Discharger to submit an annual report that identifies water quality improvements or degradation.
51. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (Public Resources Code Section 21000 et seq.) in accordance with Section 13389 of the California Water Code and CEQA Guideline 15301 (14 Cal. Code of Regs. § 15301).
52. This Order serves as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect fifty days from the date of hearing, provided U.S. EPA has no objections.
53. This Order does not authorize any take of endangered species. To ensure that endangered species issues have been raised to the responsible agencies, the Regional Water Board notified the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the California Department of Fish and Game of Regional Water Board consideration of this Order.

STORM WATER MANAGEMENT PROGRAM

54. The overall goals of a SWMP are to:
 - a. Identify and control those pollutants in urban runoff that pose significant threats to the waters of the State and waters of the U.S. and their beneficial uses;
 - b. Comply with the federal regulations to eliminate or control, to the MEP (as defined in Finding 32 of this Order), the discharge of pollutants from urban runoff associated with the storm drain system;
 - c. Achieve compliance with water quality standards;
 - d. Develop a cost-effective program which focuses on pollution prevention of urban storm water;

⁹Water Quality Order No. 2004-0008-DWQ, Statewide General National Pollutant Discharge Elimination System Permit for Discharges of Aquatic Pesticides for Aquatic Weed Control in Waters of the United States, General Permit No. CAG990005

- e. Seek cost effective alternative solutions where prevention is not a practical solution for a significant problem; and
 - f. Coordinate implementation of control measures with other agencies.
55. Federal regulation 40 CFR 122.26(d)(2)(iv) requires the Discharger to submit a SWMP to reduce the discharge of pollutants in storm water to the MEP, and to effectively prohibit non-storm water discharges into municipal storm drain systems within the Discharger's jurisdiction during the five-year duration of the permit. During the third term permit period, the Discharger shall continue to demonstrate substantial compliance with their respective SWMP and this Order through the information and data supplied in the Annual Reports. The SWMP shall remain in effect, as an enforceable component of this Order, until revised and approved by the Regional Water Board. If there are conflicts between the SWMP and this Order, then the Order supercedes the SWMP.
56. This Order requires evaluation of existing water quality impacts from urban storm water discharges, and the implementation and evaluation of the SWMP to reduce the discharge of pollutants in storm water runoff to the MEP and to improve water quality and protect beneficial uses. This Order requires implementation of the SWMP and its components to reduce pollutant loads from industrial and construction sites, new developments and existing urbanized areas. Additionally, this Order requires evaluation of the effectiveness of the SWMP in reducing the discharge of pollutants, improving water quality and protecting beneficial uses.
57. In compliance with the second term Permit, the Discharger submitted a Report of Waste Discharge (ROWD) on 2 April 2007, as required by the previous Order. The ROWD provides the framework for the SWMP. The objectives of the SWMP are to:
1) effectively eliminate illicit discharges to the storm drain system; 2) reduce the discharge of pollutants in storm water discharges to the MEP; and 3) protect groundwater and surface water resources.
58. This Order requires the Discharger to submit a revised SWMP by **12 December 2008** (or 6 months after the adoption of this permit, whichever is later). The SWMP fulfills the Regional Water Board's permit application requirements subject to the condition that it will be improved and revised in accordance with the provisions of this Order. The SWMP describes the framework for management of storm water discharges during the term of this Order. The SWMP also describes the goals and objectives; legal authorities; source identification process; funding sources; fiscal analysis; assessment controls; BMP evaluation and improvement process effectiveness assessment strategy, details pertaining to water quality based programs (e.g., pesticides), sediment toxicity and bioassessment; and monitoring plan of the Discharger's storm water management program. The SWMP includes program elements and control measures that the Discharger will implement to reduce the discharge of pollutants in storm water to the MEP, and to effectively prohibit non-storm water discharges into MS4s and watercourses within the Discharger's jurisdiction. The Discharger's SWMP is a site-specific modification of the existing Storm Water Management Program required under the previous MS4 permit Order No. R5-2002-0182. The various components of the

SWMP, taken as a whole rather than individually, are expected to reduce pollutants in storm water and urban runoff to the MEP.

59. The SWMP outlined in the ROWD and the additional and/or revised provisions contained in this Order emphasize pollution prevention through the following program elements:

- a. Program Management
 - Legal Authority
 - Fiscal Resources
- b. Program Elements
 - Construction Program
 - Industrial and Commercial Businesses Program
 - Municipal Operations Program
 - Illicit Discharges and Illegal Connections Program
 - Public Education and Public Outreach Program
 - Planning and Land Development Program
- c. Baseline Monitoring
 - Urban Discharge Monitoring
 - Receiving Water Monitoring
 - Urban and Water Column Toxicity Monitoring
 - Dry Weather Characterization
- d. Water Quality Based Programs
 - Pesticide Plan
- e. Sediment Toxicity and Bioassessment Monitoring
- f. Special Studies
 - Targeted Pollutant Reduction Program
 - Detention Basin Monitoring
 - Rock Well and Groundwater Monitoring
 - Peak Impact Discharge Study
 - Treatment Feasibility Study
 - BMP Effectiveness Studies
- g. Program Effectiveness Assessment and Reporting

The SWMP defines the scope of each element, identifies responsible City of Modesto staff and estimates costs, on an annual basis, for the five-year period from 2008 to 2013.

60. This Order includes a Monitoring Program that incorporates analytical Minimum Levels (MLs) established under the State Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP)*. The SIP's MLs represent the lowest quantifiable concentration for priority toxic pollutants that is measurable with the use of proper method-based analytical procedures and factoring out matrix interference. The SIP's MLs therefore represent the best available science for determining MLs and are appropriate for a storm water monitoring program. The use of MLs allows the detection of toxic priority pollutants at concentrations of concern using recent advances in chemical analytical methods.
61. The Discharger's proposed SWMP identifies several Program Elements, which contain control measures that identify the specific BMPs that the Discharger will implement to reduce the discharge of pollutants from its MS4 to the MEP. The SWMP also includes performance standards for each Control Measure to establish the level of effort required to comply with this Order and the federal MEP standard and an implementation schedule to identify when certain activities must be completed. Each Program Element also identifies how effectiveness assessments will be utilized to ensure that the program is resulting in the desired outcomes and that the resources that are expended are providing commensurate benefit and are protective of water quality.
62. Antidegradation Policy: Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 is consistent with the federal antidegradation policy, where the federal policy applies under federal law. Resolution 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail in the Fact Sheet, the discharge is consistent with the antidegradation provision of 40 CFR section 131.12 and State Water Board Resolution 68-16. Resolution 68-16 requires in part:
 - 1) High quality waters be maintained until it has been demonstrated that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies; and
 - 2) Any activity, which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

The proposed increase in discharge as a result of continued urban development will result in some minimal degradation of waters of the State and navigable waters of the

United States, but in this case, such degradation is consistent with the maximum benefit to the people of the state. Limited degradation that does not cause exceedance of water quality objectives is warranted to allow for the economic benefit stemming from local growth. There is a need in Modesto to accommodate growth. The Regional Water Board does not have the jurisdiction to control growth in the City of Modesto, but is required to assure that the receiving waters are adequately protected as a result of urban discharges. This Order allows the service necessary to accommodate housing and economic expansion in the area and is considered to be a benefit to the people of the State. The Fact Sheet contains additional information regarding the antidegradation analysis and constituents of concern in the waste discharge. The effluent concentrations for all constituents are based on water quality objectives and an increase in mass for some constituents, if any, will be insignificant. The accommodation of the development justifies lowering of receiving water quality. In this case, however, the proposed Order would authorize, very minimal, if any lowering of receiving water quality given the requirement to meet MEP by this Order.

These requirements to implement best management practices and reduce pollutants to the MEP will assure that a pollution or nuisance will not occur and that the highest water quality consistent with maximum benefit to the people of the State will be maintained. Due to the high level of source and treatment control measures to prevent and reduce discharges to surface waters, the proposed order will result in maintenance of existing in-stream uses.

63. The SWMP and modifications or revisions to the SWMP that are approved pursuant to this Order, are an integral and enforceable component of this Order.

DEVELOPMENT STANDARDS

64. Performance standards include implementation of recommended BMPs (source and treatment controls) for new development and redevelopment projects as required by local development standards and included in applicable standard specifications, design and procedures, and guidance documents (hereafter collectively referred to as Development Standards). The Discharger's Development Standards will be revised in accordance with the requirements of this Order.
65. On 5 October 2000 the State Water Board adopted Order WQ 2000-11, a precedent setting decision concerning the use of Standard Urban Storm Water Mitigation Plans, hereafter Development Standards, in municipal storm water permits for new developments and redevelopments by the private sector. The State Board recognized that the decision includes significant legal or policy determinations that are likely to recur. (Gov. Code § 11425.60.) The State Water Board's Order requires that the Regional Water Board's MS4 permits must be consistent with applicable portions of the State Water Board's decision and include Development Standards.
66. Federal Regulations 40 CFR 131.10(a) prohibit states from designating waste transport or waste assimilation as a use for any water of the United States. Authorizing the

construction of a storm water/ urban runoff treatment facility in a jurisdictional water body would be tantamount to accepting waste assimilation as an appropriate use for that water body. Furthermore, the construction and operation of a pollution control facility in a water body can impact the physical, chemical, and biological integrity as well as the beneficial uses of the water body. Therefore, storm water treatment and/or mitigation in accordance with Development Standards and any other requirements of this Order must occur prior to the discharge of storm water into a water of the United States.

67. Low Impact Development (LID) is a storm water management strategy concerned with maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives and fulfill environmental regulatory requirements. LID employs a variety of natural and built features that reduce the rate of runoff, filter out its pollutants, and facilitate the infiltration of water into the ground. By reducing water pollution and increasing groundwater recharge, LID helps to improve the quality of receiving surface waters and stabilize the flow rates of nearby streams. Therefore, LID design concepts will be addressed in the revised Development Standards for new developments and significant redevelopments.
68. Hydromodification is the alteration of the natural flow of water, and often takes the form of channelizing former stream or riverbeds. When development projects that modify hydrology are carried out without protecting soil and water resources, a variety of problems can result, including: excess sediment flowing into our watersheds; downstream erosion; disruption of natural drainage; irregular stream flows; and elevated water temperatures. Therefore, hydromodification design concepts must be addressed in the revised Development Standards for new developments and significant redevelopments.
69. Studies indicate that facilities with paved surfaces subject to frequent motor vehicle traffic (such as parking lots and fast food restaurants), or facilities that perform vehicle repair, maintenance, or fueling (automotive service facilities) are potential sources of pollutants of concern in storm water [References: Pitt *et al.*, *Urban Storm Water Toxic Pollutants: Assessment, Sources, and Treatability*, Water Environment Res., 67, 260 (1995); *Results of Retail Gas Outlet and Commercial Parking Lot Storm Water Runoff Study*, Western States Petroleum Association and American Petroleum Institute, (1994); *Action Plan Demonstration Project, Demonstration of Gasoline Fueling Station Best Management Practices*, Final Report, County of Sacramento (1993); *Source Characterization*, R. Pitt, In *Innovative Urban Wet-Weather Flow Management Systems* (2000) Technomic Press, Field, R *et al.* editors; *Characteristics of Parking Lot Runoff Produced by Simulated Rainfall*, L.L. Tiefenthaler *et al.* Technical Report 343, Southern California Coastal Water Research Project (2001)].
70. Retail Gasoline Outlets (RGOs) are significant sources of pollutants in urban runoff. RGOs are points of convergence for motor vehicles for automotive related services such as repair, refueling, tire inflation, and radiator fill-up and consequently produce significantly higher loadings of hydrocarbons and trace metals (including copper and

zinc) than other urban areas. To meet MEP, source control, and treatment control BMPs are needed at RGOs that meet the following criteria: (a) 5,000 square feet or more of impervious area, or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. These are appropriate thresholds since vehicular development size and volume of traffic are good indicators of potential impacts of urban runoff from RGOs on receiving waters.

71. The Los Angeles and San Diego Regional Water Quality Control Boards have jointly prepared a Technical Report on the applicability of new development BMP design criteria for RGOs, [*Retail Gasoline Outlets: New Development Design Standards for Mitigation of Storm Water Impacts*, (June 2001)]. RGOs in Washington, Oregon, and other parts of the United States are already subject to numerical BMP design criteria under the MS4 program.
72. In March 1997, the California Storm Water Quality Task Force (SWQTF) published *Best Management Practice Guide – Retail Gasoline Outlets*.
73. State Water Board Order WQ 2000-11 directed the Los Angeles Regional Water Quality Control Board to mandate that RGOs employ the BMPs listed in SWQTF's March 1997 RGO BMP publication. Due to the potential threat to storm water quality from RGOs, Development Standards for RGOs are included in this Order.
74. The Discharger is responsible for adopting and enforcing local ordinances necessary to implement effective BMPs to prevent or reduce pollutants in storm water, and for providing funds for capital, operation, and maintenance expenditures necessary to implement such BMPs for the storm drain system that it owns and/or operates.

IMPAIRED WATER BODIES

75. Section 303(d)(1)(A) of the CWA requires that "Each state shall identify those waters within its boundaries for which the effluent limitations...are not stringent enough to implement any water quality standard (WQS) applicable to such waters." The CWA also requires states to establish a priority ranking of impaired waterbodies known as Water Quality Limited Segments and to establish Total Maximum Daily Loads (TMDLs) for such waters. This priority list of impaired waterbodies is called the Section 303(d) List.
76. CWA Section 303(d) and 40 CFR 130.7 require states to list water quality-impaired water bodies and pollutants of concern, and develop Total Maximum Daily Loads (TMDLs). A TMDL is a quantitative assessment of the total pollutant load that can be discharged from all sources each day while still meeting water quality objectives. The Regional Water Board is currently in the process of developing TMDLs for listed water bodies within the Region. Prior to TMDL's being adopted and approved, Dischargers must implement actions and/or assessments to address their contribution to the water quality impairments. Once the Regional Water Board and U.S. EPA approve TMDLs, this Order may be reopened to incorporate provisions consistent with waste load allocations established under the TMDLs.

77. The Regional Water Board considers storm water discharges from the Modesto urbanized area to be significant sources of pollutants. The CWA Section 303(d) Listed Waterbodies in the Modesto urbanized area include the following. These impairments are based on identified exceedances of water quality standards.

Waterbody	Reach	Estimated Size affected	Pollutant/Stressor(s)
San Joaquin River	Tuolumne River to Stanislaus River	8.4 miles	Boron DDT Electrical Conductivity Group A Pesticides Mercury Diazinon Chlorpyrifos Selenium Unknown Toxicity
San Joaquin River	Stanislaus River to Delta Boundary	3 miles	Boron DDT Electrical Conductivity Group A Pesticides Mercury Diazinon Chlorpyrifos Selenium Toxaphene Unknown Toxicity
Tuolumne River, Lower	Don Pedro Reservoir to San Joaquin River	60 miles	Diazinon Group A Pesticides Unknown Toxicity

The Basin Plan includes control programs for boron, electrical conductivity, chlorpyrifos, diazinon and selenium in the San Joaquin River. These control programs include the TMDL waste load allocations applicable to this discharger. This Order is consistent with the Basin Plan.

78. The Basin Plan includes TMDL waste load allocations and an implementation program to address the diazinon and chlorpyrifos impairment in the San Joaquin River Basin. This Order includes provisions consistent with the TMDL waste load allocations and the Basin Plan implementation program.
- a. Dischargers of diazinon and chlorpyrifos to the San Joaquin River are required to submit a management plan (Pesticide Plan) that describes actions that will be taken to reduce diazinon and chlorpyrifos discharges and meet the applicable allocations. Dischargers must ensure that measures that are implemented to reduce discharges of diazinon and chlorpyrifos do not lead to an increase in the discharge of other pesticides to levels that cause or contribute to violations of applicable water quality objectives.

- b. The approved Pesticide Plan and any modifications to it, as proposed in the SWMP, meet the requirements for a management plan as described in the Basin Plan.
 - c. The phase out of the sale of diazinon and chlorpyrifos for most residential and commercial uses should significantly reduce or eliminate, over time, the contribution of the City's discharge to the non-attainment of water quality standards in the 303(d) listed waters.
 - d. The continued monitoring of diazinon and chlorpyrifos and any replacement products is needed to determine the significance of the Discharger's contribution of pesticide levels in 303(d) listed waters. Monitoring is also needed to determine the effectiveness of the phase-out of urban uses of diazinon and chlorpyrifos and to assess whether water quality objectives are met.
 - e. This Order includes Provisions consistent with the TMDL waste load allocations and the Basin Plan implementation program. This Order specifies monitoring and assessment requirements to implement these Provisions.
79. Ambient water and sediment quality monitoring by the Surface Water Ambient Monitoring Program (SWAMP - Sacramento Basin) identified a high incidence of sediment toxicity in several urban creeks that drain the suburbs of Roseville (Weston et al., 2005).¹⁰ Nearly all creek sediments sampled caused toxicity to the resident aquatic amphipod *Hyaella azteca*, and about half the samples (10 of 21) caused nearly complete mortality (>90%). Another study by the Sacramento River Watershed Program (SRWP) observed sediment toxicity in almost every Sacramento area urban creek that was tested (Amweg et al., 2006).¹¹ Several pyrethroid pesticides were present in sediment samples from both studies at acutely toxic concentrations. Pyrethroid pesticides are persistent, hydrophobic, and rapidly sorb to sediments in aquatic environments. The sediment toxicity observed was localized to within tens to hundreds of meters downstream of storm water outfalls draining residential areas.
- The phase-out of the sale of diazinon and chlorpyrifos for most residential and commercial uses resulted in an increase in the use of pyrethroid pesticide use in urban and residential areas. Monitoring of sediment quality (sediment toxicity testing) and urban runoff/discharges is needed to characterize sediment/water quality conditions, determine the significance of the increase in urban pyrethroid usage, and assess management practice effectiveness.
80. Monitoring and Reporting Program Order No. R5-2002-0182 required the Discharger to perform bioassessment at selected sites upstream and downstream of major discharge points from 2003 through 2007. The purpose of the bioassessment requirement was to

¹⁰ Weston, D.P., R.W. Holmes, J. You, and M.J. Lydy. 2005. Aquatic toxicity due to residential use of pyrethroid insecticides. *Environ. Sci. & Technol.* 39: 9778-9784.

¹¹ Amweg, E.L., D.P. Weston, J. You, and M.J. Lydy. 2006. Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee. *Environ. Sci. & Technol.* Published on web 1/31/2006.

assess the biological integrity of receiving waters, detect biological responses to pollution, identify probable causes of impairment not detected by chemical and physical water quality analysis, and provide a more holistic approach to evaluating processes of the waterways for designing effective BMPs. Collected data has not been fully evaluated to provide an assessment of overall biological response. Additional time is needed in order to fully evaluate biological information collected to date so that future monitoring can be adapted to continue assessment of biological integrity of receiving water, while linking more directly with the statewide Surface Water Ambient Monitoring Program's (SWAMP's), long term goal of utilizing bioassessment to develop biocriteria for a variety of eco-regions and land-use dominated areas in California.

81. The California Water Code allows the Regional Water Board to require dischargers submit technical and monitoring reports where the burden of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. The Regional Water Board may require the monitoring and technical reports that are identified as necessary in the Findings above specifically in this Order or in a separate Order under authority of the California Water Code.

PUBLIC PROCESS

82. The Regional Water Board has notified the Discharger and interested parties of its intent to prescribe waste discharge requirements for this discharge. These parties have been given an opportunity to address the Regional Water Board at a public hearing and an opportunity to submit their written views and recommendations to the Regional Water Board.
83. The Regional Water Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order.
84. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that Order No. R5-2002-0182 is rescinded, and that the Discharger, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions – Storm Water Discharges

1. Discharges from MS4s in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance (as defined in California Water Code § 13050), in waters of the state are prohibited.

2. Discharges from MS4s that cause or contribute to exceedances of receiving water quality standards for waters of the State are prohibited.
3. Discharges from the MS4s containing pollutants that have not been reduced to the MEP are prohibited.

B. Discharge Prohibitions – Non-Storm Water Discharges

1. The Discharger shall effectively prohibit non-storm water discharges into its MS4 unless such discharges are either authorized by a separate NPDES permit; or not prohibited in accordance with this Order.
2. Pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1), the following categories of non-storm water discharges need only be prohibited from entering an MS4 if such categories of discharges are identified by the Discharger or Regional Water Board as a significant source of pollutants to waters of the United States:
 - a. Diverted stream flows;
 - b. Rising ground waters;
 - c. Uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)];
 - d. Uncontaminated pumped ground water;
 - e. Foundation drains;
 - f. Springs;
 - g. Water from crawl space pumps;
 - h. Footing drains;
 - i. Air conditioning condensation;
 - j. Flows from riparian habitats and wetlands;
 - k. Water line and hydrant flushing;
 - l. Landscape irrigation;
 - m. Planned and unplanned discharges from potable water sources;
 - n. Irrigation water;
 - o. Individual residential car washing;
 - p. De-chlorinated swimming pool discharges;
 - q. Street wash water; and
 - r. Lawn watering.
3. When a discharge category above is identified as a significant source of pollutants to waters of the United States, the Discharger shall either:
 - a. Prohibit the discharge category from entering its MS4; or
 - b. Not prohibit the discharge category and implement, or require the responsible party (ies) to implement BMPs which will reduce pollutants to the MEP; and

- c. Submit the following information to the Regional Water Board as part of the Annual Report:
 - i. The non-storm water discharge category listed above which the Discharger elects not to prohibit; and
 - ii. The BMP(s) for each discharge category listed above which the Discharger will implement, or require the responsible party (ies) to implement, to prevent or reduce pollutants to the MEP.

In addition, the Storm Water Management Plan (SWMP) should be updated to identify the non-storm water discharge as a pollutant and address the actions taken to prevent or reduce the pollutant from entering the MS4 to the MEP.

4. Emergency fire fighting flows (i.e., flows necessary for the protection of life or property) do not require immediate implementation of BMPs and are not prohibited. However, the Discharger should coordinate with other agencies and develop a response plan to minimize impacts of non-emergency fire fighting flows to the environment. BMPs must be implemented to reduce pollutants from non-emergency fire fighting flows (i.e., flows from controlled or practice blazes) identified by the Discharger to be significant sources of pollutants to waters of the United States. The response plan and BMPs shall be updated as needed and incorporated into the SWMP.
5. The Discharger shall examine all dry weather analytical monitoring results collected in accordance with the Monitoring Program of this Order to identify water quality problems that may be the result of any non-storm water discharge, including any non-prohibited discharge category (ies). Follow-up investigations shall be conducted as necessary to identify and control any non-storm water discharges that are the source of pollutants. Non-prohibited discharges listed above containing significant quantities of pollutants that cannot be reduced to the MEP by the implementation of BMPs shall be prohibited on a categorical or case-by-case basis.

C. Receiving Water Limitations

1. Receiving water limitations are site-specific interpretations of water quality standards from applicable water quality control plans. As such they are required as part of the permit. However, a receiving water condition not in conformance with these limitations is not necessarily a violation of this Order. The Regional Water Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred. The discharge shall not cause the following in the receiving water:

- a. Concentrations of dissolved oxygen to fall below 6.0 mg/l from 1 September through 30 November and 5.0 mg/l the remainder of the year.
- b. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
- c. Oils, greases, wax, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.
- d. Chlorine to be detected in the receiving water in concentrations equal or greater than 0.01 mg/l.
- e. Aesthetically undesirable discoloration.
- f. Fungi, slimes, or other objectionable growths.
- g. The 30-day average for turbidity to increase as follows:
 - i. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.
 - ii. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
 - iii. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.
 - iv. More than 10 percent where natural turbidity is greater than 100 NTUs.
- h. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units.
- i. Deposition of material that causes nuisance or adversely affects beneficial uses.
- j. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.
- k. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

Water Quality Exceedances (RWQE) to the Executive Officer that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of WQSs. The Reports of Water Quality Exceedance shall be incorporated in the Annual Report. The RWQE shall include proposed revisions to the SWMP and an implementation schedule containing milestones and performance standards for new or improved BMPs, if applicable. The RWQE shall also include a monitoring program and the rationale for new or improved BMPs, including a discussion of expected pollutant reductions and how implementation of additional BMPs will prevent future exceedance of WQSs. The Executive Officer may require modifications to the RWQE.

- b. Within **30 days** following approval of the RWQE by the Executive Officer, the Discharger shall revise the SWMP and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, implementation schedule, and any additional monitoring required; and
- c. The Discharger shall implement the revised SWMP and monitoring program in accordance with the approved schedule after Regional Water Board adoption or Executive Officer approval of the revised SWMP.

So long as the Discharger has complied with the procedures set forth above and is implementing the revised SWMP, the Discharger does not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the Executive Officer to develop additional BMPs.

D. Provisions

1. Within its geographic jurisdiction, the Discharger shall:
 - a. Comply with the requirements of this Order, the SWMP, and any modifications to the SWMP;
 - b. Coordinate among its internal departments and agencies, as appropriate, to facilitate the implementation of the requirements of the SWMP applicable to such Discharger in an efficient and cost-effective manner;
 - c. Participate in intra-agency coordination (e.g. Fire Department, Building and Safety, Code Enforcement, Public Health, etc.) necessary to successfully implement the provisions of this Order and the SWMP.
 - d. Prepare an annual fiscal analysis identifying the expenditures for the storm water management program. This summary shall identify the storm

water budget for the following year, using estimated percentages and written explanations where necessary, for the specific categories noted below:

- i. Program Management
 - a) Administrative Costs
- ii. Program Implementation – Where information is available, provide an estimated percent breakdown of expenditure for the following categories:
 - a) Illicit Discharges and Illegal Connections
 - b) Public Outreach and Public Education
 - c) Construction (including inspections activities)
 - d) Industrial and Commercial Businesses (including inspection activities)
 - e) Planning and Land Development
 - f) Municipal Operations
 - i. Maintenance of Structural BMPs and Treatment Control BMPs
 - ii. Maintenance of drain system
 - iii. Catch basin cleanup
 - iv. Trash collection and street cleaning
 - v. Corporation yard
 - g) Capital costs
- iii. Water Quality-based Program
- iv. Monitoring Program
- v. Miscellaneous Expenditures
- vi. In addition to the Budget Summary, the Discharger shall report any supplemental dedicated budgets for the same categories.

STORM WATER MANAGEMENT PROGRAM

2. Upon adoption of this Order, the discharger shall modify its SWMP to address the requirements of this Order and submit the revised SWMP by **12 December 2008** (or within six months after the Order is adopted, whichever is later) for public review, comment and Regional Water Board's approval. The Discharger shall address these comments and modify, if necessary, the SWMP for submittal to the Regional Water Board for final approval.

The SWMP shall include a description of new or revised BMPs that address the requirements of this Order. The SWMP shall also include performance standards or other assessment tools for verifying that the MEP standard has been achieved.

The discharger shall incorporate newly developed or updated BMPs and assessment tools/Performance Standards acceptable to the Executive Officer, into revisions to the SWMP and adhere to implementation of the new/revised BMPs. The approved SWMP shall serve as the framework for identification, assignment, and implementation of BMPs. The Discharger shall develop and implement a SWMP that contains the following elements:

- a. Program Management
 - i. Legal Authority
 - ii. Fiscal Resources

- b. Program Elements
 - i. Construction
 - ii. Industrial and Commercial Businesses
 - iii. Municipal Operations
 - iv. Illicit Discharges and Illegal Connections
 - v. Public Outreach and Public Education
 - vi. Planning and Land Development (Development Standards)
 - vii. Monitoring Program
 - viii. Water Quality Based Program
 - ix. Program Effectiveness Assessment and Reporting

PROGRAM MANAGEMENT

3. **Program Management:** Program management involves ensuring that all elements of the SWMP are implemented on schedule and all requirements of this order are complied with.
 - a. **Annual Work Plan:** The Discharger shall submit an Annual Work Plan by **1 April** of each year starting April 2009. The Annual Work Plan shall provide the Discharger's proposed activities and any proposed modifications to the SWMP for the upcoming year beginning 1 July of current year and ending 30 June the following year. The work plan must specifically identify any recommended changes to the program from the previous year's work plan.

 - b. **Annual Report:** The Discharger shall submit an Annual Report by **1 September** of each year. The Annual Report shall document the status of the SWMP and the activities during the previous fiscal year, including the results of a qualitative and quantitative field level assessment of activities implemented by the Discharger, and the performance of tasks contained in the SWMP. The Annual Report shall include a compilation of deliverables and milestones completed during the previous 12-month period, as described in the SWMP and Work Plan. The Annual Report shall include a program effectiveness assessment and recommended modifications for each Program Element/Control Measure. Each Annual

Report shall build upon the previous year's efforts. In each Annual Report, the Discharger may propose pertinent updates, improvements, or revisions to the SWMP, which shall be complied with under this Order unless disapproved by the Executive Officer or acted upon in accordance with this Order. Annual Reports, including appendices and monitoring results, shall be made available to the public upon request.

- c. **SWMP Implementation:** The Discharger shall continue implementation of their current SWMP until such time that the SWMP has been modified to be consistent with this Order and approved by the Regional Water Board. Once approved, the Discharger shall implement the modified SWMP consistent with the schedule specified within this Order. The SWMP, with modifications, revisions, or amendments as may be approved by the Executive Officer or Regional Water Board, is an enforceable component of this Order.
- d. **SWMP Modification:** The Discharger's SWMP may need to be modified, revised, or amended from time to time to respond to a change in conditions and to incorporate more effective approaches to pollutant control. Provisions of this Order require review and revision of the certain components of the Discharger's SWMP. Proposed SWMP revisions will be part of the annual review process and incorporated in the Annual Report. In addition, the Discharger shall revise its SWMP to comply with regional or watershed specific requirements, and/or waste load allocations developed and approved pursuant to the process for the degradation and implementation of TMDLs for impaired water bodies and/or amendments to the Basin Plan when the amendments become effective. A thirty-day public notice and comment period shall apply to all proposed significant revisions to the SWMP. Significant SWMP revisions shall be brought before the Regional Water Board for review and approval. Minor SWMP revisions may be approved by the Executive Officer.
- e. **Departmental Coordination:** Individual departments/divisions within the Discharger's organization that participates in storm water pollution prevention related activities shall collaborate with the storm water compliance department/division. The Discharger shall specifically identify all departments within the Discharger's jurisdiction that conduct storm water pollution prevention related activities and their roles and responsibilities under this Order. The annual report shall include an up-to-date organizational chart specifying these departments and key personnel responsible for issuance of enforcement actions.

4. **Legal Authority:** Discharger shall review, revise, maintain, and enforce adequate legal authority to control pollutant discharges from its MS4 through ordinance, statute, permit, contract or similar means. This legal authority must, at a minimum, authorize the discharger to:
 - a. Control the contribution of pollutants in discharges of runoff associated with industrial and construction activity to its MS4. This requirement applies both to industrial and construction sites, which have coverage under the statewide general industrial or construction storm water permits, as well as to those sites that do not require permit coverage.
 - b. Effectively prohibit identified illegal discharges (e.g., discharges of wash water from gas stations, mobile businesses, parking lots, storage areas containing equipment, discharges of pool water containing chlorine or bromine, discharges of sediment, pet waste, vegetation, food related wastes, toxic materials, pesticides, construction debris, etc.).
 - c. Prohibit and eliminate illicit connections to the MS4;
 - d. Control the discharge of spills, dumping, or disposal of materials other than storm water to its MS4;
 - e. Use enforcement mechanisms to require compliance with storm water ordinances, permits, contracts, or orders;
 - f. Control the contribution of pollutants from one portion of the MS4 to another portion of the MS4 through interagency agreements among the Discharger and other public entities discharging to the MS4 such as Caltrans;
 - g. Carry out all inspections, surveillance, and monitoring necessary to determine compliance and noncompliance with local ordinances and permits, including the prohibition of illicit discharges to the MS4;
 - h. Require the use of BMPs to prevent or reduce the discharge of pollutants from the MS4 to the MEP; and
 - i. Require that Treatment Control BMPs be properly operated and maintained to prevent the breeding of vectors.
5. The Discharger shall amend within **one year** after adoption of the SWMP, a specific storm water and urban runoff ordinance to enforce all requirements of this Order.

6. The Discharger shall provide to the Regional Water Board a statement certified by its chief legal counsel that the discharger has adequate legal authority to implement and enforce each of the requirements contained in 40 CFR 122.26(d)(2)(i)(A-F) and this Order, including any modifications thereto in effect when the certified statement is provided. This statement shall be included in the revised SWMP, which shall describe the following:
 - a. Citation of urban-runoff-related ordinances and the reasons they are enforceable;
 - b. Progressive Enforcement Policy and how it will be effectively implemented;
 - c. Identification of the local administrative and legal procedures available to mandate compliance with urban runoff related ordinances and therefore with the conditions of this Order;
 - d. Description of how these ordinances are implemented and how enforcement actions under these ordinances may be appealed; and
 - e. Description of whether the municipality can issue administrative orders and injunctions or if it must go through the court system for enforcement actions.

7. **Fiscal Analysis:** The Discharger shall **secure the resources** necessary to meet the requirements of this Order and shall prepare an annual fiscal summary as part of the SWMP Annual Report. This summary shall, for each fiscal year covered by this Order, evaluate the expenditures (such as capital, operation and maintenance, education, and administrative expenditures) necessary to accomplish the activities outlined in SWMP. Such analysis shall include a description of the source(s) of funds that are proposed to meet the necessary expenditures, including legal restrictions on the use of such funds.

PROGRAM ELEMENTS

8. **Construction Program**
 - a. The objectives of the Construction Program are to:
 - i. Provide adequate legal authority to control pollutants from construction sites with land disturbance greater than or equal to one acre in size;
 - ii. Review construction plans and issue grading permits consistent with Discharger requirements;

- iii. Require BMPs to control sediment and pollutants from construction sites;
 - iv. Maintain a tracking systems (inventory) of active construction sites;
 - v. Inspect construction sites to ensure proper BMP implementation and compliance with local requirements [and applicable Provisions of this Order;
 - vi. Pursue enforcement actions for sites in violation of Permittee requirements and advise the Regional Water Board of potential violations of Construction General Permit requirements;
 - vii. Provide regular internal and external training on applicable components of the SWMP and related Permits; and
 - viii. Conduct an assessment as a part of the annual reporting process, determine the effectiveness of the Program Element and identify any necessary modifications.
 - ix. Implement SWPPPs that requires an effective combination of erosion and sediment control BMPs to reduce pollutants from City-owned construction projects.
- b. The Discharger shall update and continue to implement the Construction Component of its SWMP to reduce pollutants in runoff from construction sites during all construction phases to the MEP. At a minimum the Construction Program shall address the objectives listed above and include the following control measures:
- i. Construction Program Legal Authority
 - ii. Plan Review and Approval Process
 - iii. Construction Projects Database
 - iv. Pollution Prevention at Capital Improvement Projects
 - v. Construction Site BMP Implementation and Inspections
 - vi. Enforcement Action for Construction Sites
 - vii. Training Focused on Construction Activities
 - viii. New Development and Construction Requirements for Municipal Capital Improvement Projects
 - ix. Effectiveness Assessment Strategy
- c. The Discharger shall continue to implement and enforce a program to control runoff from all construction sites subject to the NPDES General Construction Permit. The program shall ensure the following minimum requirements are effectively implemented at all of these construction sites:

- i. Sediments generated on the project site shall be retained using adequate Source Control or Structural BMPs;
- ii. Construction related materials, wastes, spills, or residues shall be retained at the project site to avoid discharge to streets, drainage facilities, receiving waters, or adjacent properties by wind or runoff;
- iii. Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site;
- iv. Erosion from slopes and channels shall be controlled by implementing an effective combination of BMPs such as limiting grading during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slopes; and covering erosion susceptible slopes.
- v. Prior to issuing a grading permit for all projects, require (1) proof that a Waste Discharger Identification (WDID) Number has been obtained due to the filing of a Notice of Intent (NOI) for General Construction Storm Water permit coverage, and (2) submittal of a Storm Water Pollution Prevention Plan (SWPPP) to the permitting agency that contains, at a minimum, the following:
 - a) A vicinity map showing nearby roadways, the construction site perimeter, and the geographic features and general topography surrounding the site;
 - b) The project architect, engineer of record, or authorized qualified designee, must sign the following statement on the SWPPP stating “appropriate BMPs have been selected and that the project owner and contractor are aware that the selected BMPs must be installed, monitored, and maintained to ensure their effectiveness; site map showing the construction project in detail, including the existing and planned paved areas and buildings; general topography both before and after construction; drainage patterns across the project area; and anticipated storm water discharge locations (i.e., the receiving water, a conduit to receiving water, and/or drain inlets)”;
 - c) A description of BMPs to address contractor activities that generate pollutants including, at a minimum, vehicle washing, equipment maintenance, and waste handling;
 - d) A detailed, site-specific listing of the potential sources of storm water pollution;

- e) A description of the type and location of erosion and sediment control BMPs, including, but not limited to, limited grading during the wet season, and planting and maintenance of vegetation on slopes, to be employed at the site; and source and/or treatment control BMPs to be employed at the site; and
- f) The name and telephone number of the qualified person responsible for implementing the SWPPP.

d. Inspections

The Discharger shall include the inspection frequency for each construction site for compliance with local ordinances in the SWMP and shall continue to inspect each site until the Regional Water Board issues a notice of termination for coverage under the General Construction Permit. The inspections shall occur at a frequency determined to be effective by the Discharger and shall include a higher inspection frequency during the winter months (wet season) than during the summer months (dry season).

The Discharger shall inspect these sites for compliance with the local ordinances and the SWPPP components described above and as prescribed in the SWMP. In addition, if the Discharger observes chronic violations of their respective storm water ordinances at a given construction site, the Discharger shall notify the Regional Water Board. The Discharger shall use its legal authority to promptly and effectively enforce its storm water ordinance to correct any violations observed during inspections.

9. **Industrial/Commercial Business Program:**

- a. The objectives of the Industrial/Commercial Business Program are to:
 - i. Provide adequate legal authority to control pollutants from industrial and commercial facilities;
 - ii. Develop and maintain an inventory of industrial and commercial facilities within the Discharger's jurisdiction;
 - iii. Prioritize the industrial and commercial facilities within the inventory based on their threat to water quality;
 - iv. Conduct inspections of the industrial and commercial facilities that pose a significant threat to water quality with an inspection frequency based on the prioritization of the facility. Conduct follow-

up inspections to bring the facility into compliance with local ordinances;

- v. Implement a progressive enforcement policy to ensure that adequate enforcement is conducted and coordinate with the Regional Water Board regarding referrals of potential non-filers and inspections;
 - vi. Provide regular internal and external training on components of the SWMP and related Permits; and
 - vii. Conduct an assessment as a part of the annual reporting process, determine the effectiveness of the Program Element and identify any necessary modifications.
- b. The Discharger shall update and continue to implement the Industrial/Commercial Component of its SWMP to reduce pollutants in runoff from industrial/commercial sites to the MEP. At a minimum, the Industrial/Commercial Program shall address the objectives listed above, as well as the following control measures:
- i. Facility Inventory
 - ii. Prioritization and Inspection
 - iii. Industrial/Commercial Outreach
 - iv. Enforcement
 - v. Training
 - vi. Effectiveness Assessment
- c. The Discharger shall require implementation of pollutant reduction and control measures at industrial and commercial facilities, with the objective of effectively prohibiting non-storm water runoff and reducing pollutants in storm water runoff. Except as specified in other sections of this Order, pollutant reduction and control measures can be used alone or in combination, and can include Source and Treatment Control BMPs, which can be applied before, during, and/or after pollution generating activities.

10. **Municipal Operations Program**

- a. The objectives of the Municipal Program are to:
 - i. Prevent sanitary sewer overflows (SSO) or spills from entering the storm drain system and respond quickly and appropriately if an SSO or spill does enter the storm drain system;
 - ii. Implement Development Standards that require source and

- treatment control BMPs to reduce pollutants from City-owned construction sites;
- iii. Implement pollution prevention BMPs for public facilities (e.g., corporation yards) and Facility Pollution Prevention Plans (FPPPs) for public facilities to minimize or eliminate pollutant discharges to the storm drain system;
 - iv. Implement a standard protocol for storage, usage, and disposal of pesticides, herbicides (including pre-emergents), and fertilizers on Discharger-owned property such as park sites, landscaped medians, and golf courses;
 - v. Promote the use of Integrated Pest Management (IPM) methods and less toxic alternatives;
 - vi. Clean and maintain catch basin inlets to prevent debris accumulation and flooding;
 - vii. Ensure that catch basin inlets are properly stenciled, are permanently imprinted, or have legible curb markers to discourage illicit discharges into the storm drain system;
 - viii. Promote the use of the 24-hour public reporting hotline number;
 - ix. Maintain and inspect retention/detention basins and pump stations;
 - x. Conduct street sweeping activities;
 - xi. Clean and inspect Discharger-owned parking facilities to minimize the build-up and discharge of pollutants to the storm drain system;
 - xii. Provide regular internal training on applicable components of the SWMP; and
 - xiii. Conduct an assessment as a part of the annual reporting process, determine the effectiveness of the Program Element and identify any necessary modifications.
 - xiv. Implement plan to minimize environmental damage during emergency situations.
- b. The Discharger shall update and continue to implement a Municipal Program in its SWMP to effectively prohibit non-storm water discharges and prevent or reduce pollutants in runoff from all municipal land use areas, facilities, and activities to the MEP. At a minimum, the Municipal

Program shall address the objectives listed above and include the following control measures:

- i. Sanitary Sewer Overflow and Spill Response
- ii. Pollution Prevention at Discharger Facilities
- iii. Landscape and Pest Management
- iv. Storm Drain System Maintenance (including rock wells)
- v. Street Cleaning and Maintenance
- vi. Parking Facilities Maintenance
- vii. Detention Basin Maintenance
- viii. Emergency Procedures
- ix. Non-emergency Fire Fighting Flows
- x. Training
- xi. Effectiveness Assessment

11. Illicit Discharge Detection and Elimination Program

- a. The objectives of the Illicit Discharge Detection and Elimination Program are to:
 - i. Provide adequate legal authority to control and/or prohibit pollutants from being discharged to the municipal storm drain system;
 - ii. Proactively detect illicit discharges and illegal connections through a variety of mechanisms including, but not limited to, public reporting, dry weather exceedance of action levels identified in the SWMP and field crew inspections;
 - iii. Upon identification of an illegal connection, investigate and eliminate the connection through a variety of mechanisms including, but not limited to, permitting or plugging the connection;
 - iv. Upon identification of an illicit discharge, investigate the discharge and conduct any necessary follow up actions to mitigate the impacts of the discharge;
 - v. Conduct an assessment as a part of the annual reporting process; determine the effectiveness of the Program Element and identify any necessary modifications.
- b. The Discharger shall update and continue to implement an Illicit Discharge Detection and Elimination Program component of the SWMP to actively seek and eliminate illicit discharges and connections. At a minimum, the Illicit Discharge Detection and Elimination Component shall address the objectives listed above and include the following control measures:
 - i. Detection of Illicit Discharges and Illegal Connections

- ii. Illegal Connection Identification and Elimination
- iii. Investigation/Inspection and Follow-up
- iv. Enforcement of Local Codes and Ordinances
- v. Training
- vi. Effectiveness Assessment

12. **Public Outreach and Public Education Program (Collectively Public Outreach Program):**

- a. The Discharger shall implement a Public Outreach Program using all media as appropriate to (1) measurably increase the knowledge of target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience; and (2) to change the behavior of target communities and thereby reduce pollutant releases to MS4s and the environment. To accomplish these goals, the following objectives are to be addressed:
 - i. Encourage the public to actively participate in the implementation of the storm water program as well as the various outreach events;
 - ii. Promote the use of the 24-hour public reporting hotline;
 - iii. Implement a public education strategy for the overall program that includes developing and distributing materials, conducting a mixed media campaign, participating in community outreach events, and conducting public opinion surveys to gauge the level of awareness and behavior change within a community and/or target audience;
 - iv. Evaluate the ability to interface and coordinate with school education programs on a state, regional or local level;
 - v. Implement a business outreach program; and
 - vi. Conduct an assessment as a part of the annual reporting process, determine the effectiveness of the Program Element and identify any necessary modifications.

- b. The Discharger shall update and continue to implement the Public Outreach Component of its SWMP to educate the public and encourage their participation in the implementation of the SWMP. At a minimum, the Public Outreach Program shall address the objectives listed above and include the following control measures:
 - i. Public Participation
 - ii. 24-Hour Hotline
 - iii. Public Outreach Implementation
 - iv. Public School Education

- v. Business Outreach
 - vi. Construction Outreach
 - vii. Effectiveness Assessment
- c. The Discharger shall incorporate a mechanism for **public participation** in the implementation of the SWMP (i.e., programs that engage the public in cleaning up creeks, removal of litter in river embankments, stenciling of storm drains, etc.).

PLANNING AND LAND DEVELOPMENT PROGRAM

13. The objectives of the Planning and Land Development Program are as follows:
- a. Incorporate water quality and watershed protection principles into the Discharger's policies and planning procedures;
 - b. Ensure that selected post-construction storm water controls will remain effective upon project completion by requiring a maintenance agreement and transfer or establishing a maintenance district zone for all priority development projects;
 - c. Provide a comprehensive review of development plans to ensure that storm water quality controls are properly selected to minimize storm water quality impacts;
 - d. Provide regular internal training on applicable components of the SWMP; and
 - e. As a part of the annual reporting process, conduct an assessment (at least annually) to determine the effectiveness of the Program Element and identify any necessary modifications.
14. The Discharger shall update and continue to implement the Planning and Land Development Component of its SWMP to minimize the short and long-term impacts on receiving water quality from new development and redevelopment. At a minimum the Planning and Land Development Program shall address the objectives listed above and include the following control measures:
- a. Incorporation of Water Quality Protection Principles into City Procedures and Policies
 - b. New/Revised Development Standards
 - c. Plan Review Sign-Off
 - d. Maintenance Agreement and Transfer
 - e. Training
 - f. Effectiveness Assessment

- g. New Development Standards for Capital Improvement Projects
15. **Water Quality Planning and Design Principles** - In order to reduce pollutants and runoff flows from new development and redevelopment the Discharger shall address the following concepts:
- a. The Discharger shall incorporate water quality and watershed protection principles into planning procedures and policies such as the Development Standards and requirements to direct land-use decisions and require implementation of consistent water quality protection measures for all development projects. These principles and policies shall be designed to protect natural water bodies, reduce impervious land coverage (such as through low impact development design), slow runoff to prevent hydromodification of waterways, and where feasible, maximize opportunities for infiltration of rainwater into soil. Such water quality and watershed protection principles and policies shall consider, at a minimum, the following:
 - i. Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and where feasible to maximize on-site infiltration of runoff (low impact development concepts).
 - ii. Implement pollution prevention methods supplemented by pollutant source and treatment controls. Where practical, use strategies that control the sources of pollutants or constituents (i.e., the point where water initially meets the ground) to minimize the transport of urban runoff and pollutants offsite and into MS4s.
 - iii. Preserve, and where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands, and buffer zones.
 - iv. Limit disturbances of natural water bodies and natural drainage systems caused by development including roads, highways, and bridges.
 - v. Use methods available to estimate increases in pollutant loads in runoff flows resulting from projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads.
 - vi. Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss; or establish development guidance that protects areas from erosion and sediment loss.

- vii Coordinate with local traffic management programs to reduce pollutants associated with vehicles and increased traffic resulting from development.
 - viii Implement source and structural controls as necessary and appropriate to protect downstream receiving water quality from increased pollutant loads and flows (hydromodification concepts) from new development and significant redevelopment.
 - ix Control the post-development peak storm water run-off discharge rates and velocities to maintain or reduce pre-development downstream erosion, and to protect stream habitat.
 - b. Low Impact Development - New development and redevelopment projects shall integrate Low Impact Development (LID) principles into project design. LID is a storm water management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect predevelopment hydrologic functions. When developing the LID program, the City shall consider and incorporate all appropriate and applicable LID components and measures that have been successfully and effectively implemented in other municipal areas. Other programs include, but are not limited to, USEPA's "Managing Wet Weather with Green Infrastructure, Action Strategy, 2008" and LID program elements specified in the permits or Storm Water Management Plans of other MS4s throughout the state.
 - c. The Discharger shall revise applicable ordinances/standards/specifications no later than **one year** after the adoption of the SWMP/Development Standards by the Regional Water Board.
- 16. The Discharger has adopted development standards in the *City of Modesto Guidance Manual for New Development Stormwater Quality Control Measures*, January 2001 and their Standard Specifications. The Development Standards shall be amended/revised in accordance with this Provision and Provision 23 to ensure that the storm water quality and watershed principles, as listed above in 16.a. and b., are integrated.
 - a. **Post Development Standards:** The Discharger shall ensure that all new development and significant redevelopment projects falling under the priority project categories listed below meet Development Standards. When the Development Standards are revised, the revised Development Standards shall apply to all priority projects or phases of priority projects at the date of adoption of the Development Standards which do not have one of the following: approval of a tentative map within two years prior to approval of the revised Development Standards, approval of improvement plans by the City engineers, or a permit for development or construction.

Any extensions of a tentative map after adoption of revised Development Standards shall ensure compliance with the revised Development Standards. In addition, those infill projects that require only a Use Permit from the City that apply to the Priority Development Project Categories are subject to the requirements under the Development Standards.

- b. **Priority Development Project Categories** – Development Standards requirements shall apply to all new development and significant redevelopment projects falling under the priority project categories or locations as: (1) *significant* redevelopment; (2) home subdivision of 10 housing units or more; (3) commercial developments greater than 10,000 square feet of impervious surface area; (4) automotive repair shops; (5) restaurants; (6) parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to urban runoff; (7) street and roads; and (8) retail gasoline outlets (RGO).

Significant redevelopment is defined as the creation or addition of at least 5,000 square feet of impervious surfaces on an already developed site. Significant redevelopment includes, but is not limited to, expansion of a building footprint or addition or replacement of a structure; structural development including an increase in gross floor area and/or exterior construction or remodeling; replacement of impervious surface that is not part of a routine maintenance activity; and land disturbing activities related with structural or impervious surfaces. Where significant redevelopment results in an increase of less than fifty percent of the impervious surfaces of a previously existing development, and the existing development was not subject to the Development Standards, the numeric sizing criteria discussed below applies only to the addition, and not the entire development.

- c. **BMP Requirements** – The Development Standards shall include a list of recommended pollution prevention, source control, and/or structural treatment control BMPs. The Development Standards shall require all new development and significant redevelopment projects falling under the above priority project categories or locations to implement a combination of BMPs selected from the recommended BMP list, including at a minimum: (1) source control BMPs and (2) structural treatment control BMPs.
- d. **Numeric Sizing Criteria** – The Development Standards shall require structural treatment BMPs to be implemented for all priority development projects. In addition to meeting the BMP requirements listed above, all structural treatment BMPs for a single priority development project shall be sized collectively to comply with either the volume-based or flow-based numeric sizing criteria:

- i Volume-based BMPs shall be designed to mitigate (infiltrate or treat) either:
 - a) The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record; or
 - b) The volume of runoff produced by the 85th percentile 24-hour rainfall event, determined as the maximized capture storm water volume for the area, from the formula recommended in *Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87*, (1998); or
 - c) The volume of annual runoff based on unit basin storage volume, to achieve 80% or more volume treatment by the method recommended in *California Storm Water Best Management Practices Handbook – Industrial/Commercial*, (1993); or
 - d) A Discharger justified design storm volume that is determined as part of the Development Standard development and approved by the Executive Officer. The treatment of this volume shall achieve approximately the same reduction in pollutant loads achieved by treatment of the 85th percentile 24-hour runoff event.
- ii Flow-based BMPs shall be designed to mitigate (infiltrate or treat) either:
 - a) The maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity, as determined from the local historical rainfall record, multiplied by a factor of two; or
 - b) The maximum flow rate of runoff, as determined from local historical rainfall records, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile hourly rainfall intensity multiplied by a factor of two.
- e. **Equivalent Numeric Sizing Criteria** – The Discharger may develop an equivalent numeric sizing criteria or performance-based standard for post-construction structural treatment BMPs as part of the Development Standards. Such equivalent sizing criteria may be authorized for use in place of the above criteria. In the absence of development and

subsequent authorization of such equivalent numeric sizing criteria, the above numeric sizing criteria requirement shall be implemented.

- f. **Pollutants and Activities of Concern** – As part of the Development Standards, the Discharger shall identify pollutants and/or activities of concern for each new development or significant redevelopment project. The Discharger shall identify the pollutants of concern by considering the following (1) receiving water quality, including pollutants for which receiving waters are listed as impaired under CWA Section 303(d); (2) land use type of the development project and pollutants associated with that land use type; (3) pollutants expected to be present on site at concentrations that pose potential water quality concerns; (4) activities expected to be on the site; and (5) changes in flow rates and volumes resulting from the development project and sensitivity of receiving waters to changes in flow rates and volumes.
 - g. **Restaurants Less than 5,000 Square Feet** - New development and significant redevelopment restaurant projects where the land area development is less than 5,000 square feet of impervious surface area shall meet all Development Standards except for structural treatment BMP and numeric sizing criteria requirement above.
 - h. **Infiltration and Groundwater Protection** – To protect groundwater quality, the Discharger shall consider the type of development and resulting storm water discharge and, if appropriate, apply restrictions to the use of structural BMPs, which are designed to primarily function as infiltration devices (such as infiltration trenches and infiltration basins and rock wells).
 - i. **Regional Storm Water Mitigation** – The Discharger may apply to the Regional Water Board for approval of a regional or sub-regional storm water mitigation program to substitute in part or wholly Development Standard requirements. The Regional Water board may consider for approval such a program if its implementation will:
 - a) Result in equivalent or improved storm water quality;
 - b) Protect stream habitat;
 - c) Promote cooperative problem solving by diverse interests;
 - d) Be fiscally sustainable and has secure funding; and
 - e) Be completed in five years including the construction and start-up of treatment facilities.
17. **Maintenance Agreement and Transfer**

The Discharger shall require that all developments subject to Development Standards and site specific plan requirements provide verification of maintenance provisions for Structural Treatment Control BMPs, including but not limited to

legal agreements, covenants, California Environmental Quality Act (CEQA) mitigation requirements, and or conditional use permits. Verification at a minimum shall include:

- a. The developer's signed statement accepting responsibility for maintenance until the responsibility is legally transferred; and either
- b. A signed statement from the public entity assuming responsibility for Structural Treatment Control BMP maintenance and that it meets all local agency design standards; or
- c. Written conditions in the sales or lease agreement, which requires the recipient to assume responsibility for maintenance and conduct a maintenance inspection at least once a year; or
- d. Written text in project conditions, covenants and restrictions for residential properties assigning maintenance responsibilities to the Home Owners Association for maintenance of the Structural Treatment Control BMPs; or
- e. Any other legally enforceable agreement that assigns responsibility for the maintenance of post-construction Structural Treatment Control BMPs.

18. **California Environmental Quality Act (CEQA) Document Update**

The Discharger shall incorporate into its CEQA process, procedures for considering potential storm water quality impacts and providing for appropriate mitigation when preparing and reviewing CEQA documents. The procedures shall require consideration of the following:

- a. Potential impact of project construction on storm water runoff;
- b. Potential impact of project post-construction activity on storm water runoff;
- c. Potential for discharge of storm water from material storage areas, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas;
- d. Potential for discharge of storm water to impair the beneficial uses of the receiving waters or areas that provide water quality benefit;
- e. Potential for the discharge of storm water to cause significant harm to the biological integrity of the waterways and water bodies;
- f. Potential for significant changes in the flow velocity or volume of storm water runoff that can cause environmental harm; and
- g. Potential for significant increases in erosion of the project site or surrounding areas.

19. General Plan Update

- a. The Discharger shall amend, revise, or update its General Plan to include watershed and storm water quality and quantity management considerations and policies when any of the following General Plan elements are updated or amended: (i) Land Use, (ii) Housing, (iii) Conservation, and (iv) Open Space.
- b. The Discharger shall provide the Regional Water Board with the draft amendment or revision when a listed General Plan element or the General Plan is noticed for comment in accordance with California Government Code § 65350 et seq.

20. Planning Department Coordination, Enforcement and Tracking

- a. The Discharger shall provide for the review of proposed project plan and require measures to ensure that all applicable development will be in compliance with their storm water ordinances, local permits, and all other applicable ordinances and requirements.
- b. The Discharger shall develop a process by which Development Standards will be implemented. The process shall identify at what point in the planning process development projects will be required to meet Development Standards. The process shall also include identification of the roles and responsibilities of various municipal departments in implementing the Development Standards, as well as any other measures necessary for the implementation of Development Standards.
- c. The Discharger shall develop and implement no later than (6 months from this Order's adoption) the following:
 - i. A GIS or other electronic system for tracking projects that have been conditioned for post-construction treatment control BMPs. The electronic system, at a minimum, should contain the following information:
 - a) Municipal Project ID.
 - b) State General Construction Permit WDID No.
 - c) Project Acreage.
 - d) BMP Type and Description.
 - e) BMP Location (coordinates).
 - f) Date of Acceptance.
 - g) Date of Maintenance Agreement.
 - h) Inspection Date and Summary.
 - i) Corrective Action.
 - j) Date Certificate of Occupancy Issued.

21. **Targeted Employee Training**

The Discharger shall periodically train its employees in targeted positions (whose jobs or activities are engaged in development planning) to ensure they can adequately implement the Planning and Land Development Program requirements.

22. **Technical Guidance and Information for Developers**

By **12 June 2009** (or 1 year after the SWMP is adopted, whichever is later), the Discharger shall submit a revised/functionally updated Development Standards [e.g., *Guidance Manual for New Development Stormwater Quality Control Measures*] consistent with the requirements of this Order as a component of the SWMP. The Development Standards shall include guidelines and provide recommendations for low impact development/ hydromodification strategies for the development community in the Modesto Urbanized Area. The guidelines shall encourage the use of low impact development/ hydromodification strategies and be based on the existing site design control measures identified in the existing Development Standards. Prior to approval of the Development Standards, the early implementation of measures likely to be included in the Development Standards shall be encouraged by the Discharger.

MONITORING PROGRAM

23. **Monitoring and Reporting Program:** The Discharger shall comply with Monitoring and Reporting Program No. R5-2008-0092, which is part of this Order, and any revisions thereto approved by the Board. Because the Discharger operates facilities which discharge waste subject to this Order, this Monitoring and Reporting Program is necessary to ensure compliance with these waste discharge requirements.

24. In support of the Water Quality Based Programs, the Discharger shall develop and/or implement the storm water monitoring program as defined in the Monitoring and Reporting Program. The storm water monitoring program consists of the following elements:

- Baseline Monitoring
 - Urban Discharge Monitoring
 - Receiving Water Monitoring
 - Urban and Water Column Toxicity Monitoring
 - Dry Weather Characterization
- Sediment Toxicity Monitoring
- Bioassessment Monitoring

- Water Quality Based Programs
 - Pesticide Plan

- Special Studies
 - Targeted Pollutant Reduction Program
 - Detention Basin Monitoring
 - Rock Well and Groundwater Monitoring
 - Peak Discharge Impact Study
 - Treatment Feasibility Study
 - BMP Effectiveness Studies

- Program Effectiveness Assessment

The Discharger shall implement the Water Quality Monitoring program pursuant to the Monitoring and Reporting Program (MRP) and SWMP. Ultimately, the results of the MRP will be used to identify necessary BMPs, refine the SWMP to reduce pollutant loads, and protect and enhance the beneficial uses of the receiving waters in the Modesto urbanized area.

25. **Bioassessment Monitoring:** The purpose of this requirement is to fully evaluate biological data collected under the previous MRP in order to assess the biological integrity of receiving waters, detect biological responses to pollution, and identify probable causes of impairment not detected by chemical and physical water quality analysis.

Further bioassessment monitoring activities will not be required under this permit until the evaluation with recommendations is completed, and the monitoring effort is adapted in consultation with SWAMP's bioassessment workgroup. If applicable, an updated bioassessment monitoring plan shall be included in the SWMP.

The following results and information shall be included in the 2009-2010 Annual Report:

- a. All physical, chemical and biological data collected in the assessment;
- b. Photographs and GPS locations of all stations;
- c. Documentation of quality assurance and control procedures;
- d. Analysis that shall include calculation of the metrics used in the CSBP¹².

¹² California Stream bioassessment Procedure (Protocol Brief for Biological and Physical/Habitat Assessment in Wadable Streams), California Department of Fish and Game- Aquatic Bioassessment Laboratory, May 1999. Located at www.dfg.ca.gov/cabw/protocols.html.

- e. Comparison of mean biological and habitat assessment metric values between stations and year-to-year trends;
- f. Electronic data formatted to the California Department of Fish and Game Aquatic Bioassessment Laboratory for inclusion in the Statewide Access Bioassessment Database; and
- g. Copies of all QA/QC documents from laboratories.

WATER QUALITY BASED CONTROL PROGRAMS

26. The Discharger shall continue or initiate implementation of control programs for pollutants that have been identified to cause or contribute to exceedances of water quality standards and potential impairment of beneficial uses. These control programs shall be incorporated into the Discharger's SWMP and revised in accordance with the directives of this Order. At a minimum, these control programs shall include the following:
- a. **Pesticides:** To address pesticide impairment of urban streams, the Discharger shall continue to implement a pesticide toxicity control program (**Pesticide Plan**) that addresses its own use of pesticides, including diazinon and chlorpyrifos, and the use of such pesticides by other sources within its jurisdictions. The goal of the Pesticide Plan is to protect water quality by implementing Integrated Pest Management (IPM), and associated BMPs to minimize or eliminate pesticides in storm water. IPM shall be integrated into the Discharger's municipal operations and promoted through the public outreach program.
 - i. For municipal operations the Discharger shall complete the following efforts:
 - a) Implement pesticide, herbicide, and fertilizer application protocol at park sites, landscaped medians, and golf courses;
 - b) Implement IPM program;
 - c) Maintain and expand internal inventory on pesticide use and track Department of Parks and Recreation reported pesticide use; and
 - d) Implement Landscaping Standards promoting native plants and IPM.

- ii. For public outreach the Discharger shall complete the following efforts:
 - a) Coordinate with the County Agriculture Commission and Extension Service and environmental organizations, and interested stakeholders and provide targeted information concerning proper pesticide use and disposal, potential adverse impacts on water quality, and alternative, less toxic or non-toxic methods of pest prevention and control, including IPM;
 - b) Conduct periodic surveys of the local or regional sales and use of residential and commercial pest control products potentially found in storm water runoff. The first survey shall be conducted by **12 June 2010** (or two years after adoption of the Order, whichever is later). A second survey shall be conducted by **12 June 2012** (or four years after adoption of the Order, whichever is later). The surveys may be conducted in conjunction with other municipalities in the Central Valley or Bay Area as long as residences and retailers from the Discharger's jurisdiction are included. The proposed survey design and protocols shall be submitted for approval with the Annual Work Plan for the year in which the survey is to be conducted;
 - c) Continue coordination with household hazardous waste collection agencies. The Discharger shall support, enhance, and help publicize programs for proper pesticide disposal; and
 - d) Continue mechanisms to encourage the consideration of pest-resistant landscaping and design features in the design, landscaping, and/or environmental reviews of proposed development projects. Education programs shall target individuals responsible for these reviews and focus on factors affecting water quality impairment.
- iii. In year 4 of the Permit term the Discharger shall conduct an assessment to determine if urban storm water is causing or contributing to an exceedance of water quality standards for diazinon and chlorpyrifos. If urban storm water is causing or contributing to an exceedance, then the Discharger shall determine the relative contribution of urban storm water runoff to diazinon and chlorpyrifos levels in waters within its jurisdiction that are on the CWA 303(d) list.

- iv. The Discharger shall work with the pesticide control stakeholders and other municipal storm water management agencies to assess which pesticide products and uses pose less risk to surface water quality. When applicable, such products will be incorporated into the Pesticide Plan. The Discharger shall also work with the Regional Water Board and other agencies in implementing the control program for pesticides in the Tuolumne River and Dry Creek.

SPECIAL STUDIES

27. Targeted Pollutant Reduction Program

During the previous permit term, the Discharger identified aluminum (total), copper (total), lead (total), iron (total), diazinon, Escherichia coli, fecal coliform, pH, total dissolved solids and turbidity that exceeded water quality objectives or that the City identified as a pollutant of concern (POC) in receiving water and urban water discharges. The Discharger shall:

- a. **POC Identification Report**

Continue to evaluate and prioritize the pollutants in its discharge and determine any new POC. This report shall consider and expand on the previous effort by the Discharger to develop a list of POCs and pollutant of interest (POI). Pollutants shall be prioritized by considering the following: Pollutants listed as causing impairment in the San Joaquin River and Lower Tuolumne River and present in the storm water discharge; Pollutants causing toxicity in urban runoff or local receiving waters; Pollutants identified in urban runoff that may cause or contribute to exceedances of water quality standards in the Central Valley Region Water Quality Control Plan (Basin Plan) and California Toxics Rule (CTR); Issues of significant public or regulatory concern; and controllability of urban runoff pollutants through implementation of available control practices.

- b. **POC Reduction Report**

By the **4th year** of this permit term, submit a report identifying POCs and a plan to reduce or eliminate the pollutants from entering surface waters to the MEP. The report shall incorporate work plan(s) for pollutants identified above for the controllable sources of the POCs and evaluate the effectiveness of BMPs currently implemented and/or propose additional BMPs that may be implemented to prevent or reduce the pollutants to the MEP. The evaluation shall consider capital and operational costs, technical feasibility, regulatory limitations, and other considerations

identified by the City. The report shall also identify institutional needs, including policies, procedures and/or ordinances, for addressing the POC.

28. **Rock Well and Groundwater Monitoring**

The Discharger shall update and submit the Rock Well Assessment Plan (RWAP) in the revised SWMP. The purpose of the RWAP is to evaluate pollutant removal effectiveness and potential impacts on groundwater. In the prior permit term, the Discharger monitored two rock well installations at residential sites. The results of the investigation were inconclusive and additional study of the issue is necessary. The amended RWAP shall include a comprehensive plan with an implementation schedule and include, at a minimum, the following:

- a. A monitoring plan, which shall include a sampling and analysis plan. The Monitoring plan shall state the objective of the monitoring effort, site selection process, and proposed sampling plan and schedule. The sampling and analysis plan shall include the following:
 - i. List of constituents to be analyzed based on the City's pollutant of concern analysis.
 - ii. Sampling frequency of at least **two storm events** and **two monitoring events during the dry season**.
 - iii. Representative rock wells based on land use areas for residential, industrial, and commercial (minimum of two for each land use), runoff characteristics, rock well installation, soil conditions, and potential for groundwater impact.
- b. All data shall be provided electronically and be included in the Annual Reports as required in this MRP Order.
- c. Coordination with USGS ongoing National Water Quality Assessment Program and Modesto Irrigation District efforts to characterize sources of pollutants and track groundwater contamination. The Discharger shall coordinate with USGS to combine or complement monitoring efforts to optimize the rock well assessment.
- d. Schedule for completing the assessment and preparing a final report by year five of the permit term. The final report shall include summary of monitoring data, analysis of vadose zone and groundwater quality, compared to storm water runoff samples (wet and dry weather), and recommendations regarding rock well installation and maintenance for the protection of groundwater quality. Groundwater quality results shall be summarized in the Annual Report in a table format showing the comparison of data to the applicable water quality standards.

Water quality standards are provided by the Regional Water Board at:
http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_standards_limits/.

29. **Peak Discharge Impact Study**

The Discharger shall continue to conduct a study to determine the extent of erosion of natural stream channels and banks caused by urbanization. If appropriate, the Discharger shall evaluate peak flow control and determine numeric criteria to prevent or minimize erosion of natural stream channels and banks cause by urbanization.¹³

30. **Treatment Feasibility Study**

The Discharger shall submit a report describing the feasibility of diverting dry weather flows to the sanitary sewer system or treatment control BMPs from the positive drainage system, which may impact public health and safety and/or the environment. The Report shall include a watershed based priority list of outfalls for potential diversion or treatment and the feasibility of diverting dry weather flows. The Report shall be submitted as follows:

- a. Within **6 months** after adoption of this permit, submit a work plan to complete this study including details of tasks and a time schedule for completion.
- b. By **year 2** of this permit, submit a list of prioritized outfalls based on flow, concentration of POCs and feasibility of connecting to the sanitary sewer system or directing the dry weather flow to a treatment control facility.
- c. By **year 3** of this permit, submit a feasibility study to connect or treat any or all flows to the sanitary sewer system or treatment control facility.
- d. By **year 4**, submit recommendations and an implementation time schedule.

31. **BMP Effectiveness Study**

The Discharger shall conduct or participate with Stockton and Sacramento-area Dischargers in two studies (e.g., low impact development) to evaluate the effectiveness of source or treatment control BMPs. The Discharger may choose to conduct both studies or may choose to contribute to studies by one of the other dischargers. The objective of this study shall include the following:

¹³ Development Standards require the development of numerical criteria for peak flow control in natural drainage systems.

- a. Monitor the reduction of pollutants of concern in storm water including, but not limited to, pathogen indicators, nutrients, heavy metals, and pesticides from a minimum of one BMP that has been properly installed within the year preceding monitoring. Monitoring shall be continued until the effectiveness of the BMP can be determined;
- b. Evaluate the requirements for and installation and maintenance cost of each BMP; and
- c. Develop recommendations for appropriate BMPs for the reduction of pollutants of concern in storm water in the Modesto Urbanized Area.

32. **Program Effectiveness Assessment**

- a. The Discharger shall assess the effectiveness of their SWMP in their Annual Reports. The assessment shall identify the direct and indirect measurements that the Discharger used to track the effectiveness of their programs as well as the outcome levels at which the assessment is occurring consistent with this Order. Direct and indirect measurements shall include, but not limited to, conformance with established Performance Standards, quantitative monitoring to assess the effectiveness of Control Measures, measurements or estimates of pollutant load reductions or increases from identified sources, raising awareness of the public, and/or detailed accounting/documentation of SWMP accomplishments.
- b. The Discharger shall track the long-term progress of their SWMP towards achieving improvements in receiving water quality.
- c. The Discharger shall use the information gained from the program effectiveness assessment to improve their SWMPs and identify new BMPs, or modification of existing BMPs. This information shall be reported within the Annual Reports consistent with this Order.
- d. Long Term Effectiveness Assessment (LTEA) Strategy: The Discharger shall develop a LTEA strategy, which shall build on the results of the Discharger's Annual Reports and the initial program effectiveness assessments. The LTEA shall be submitted to the Regional Water Board no later than 180 days prior to the permit expiration date (by December 2012) and shall identify how the Discharger will conduct a more comprehensive effectiveness assessment of the storm water program as part of the SWMP. The strategy will address the storm water program in terms of achieving both programmatic goals (raising awareness, changing behavior) and environmental goals (reducing pollutant discharges, improving environmental conditions).

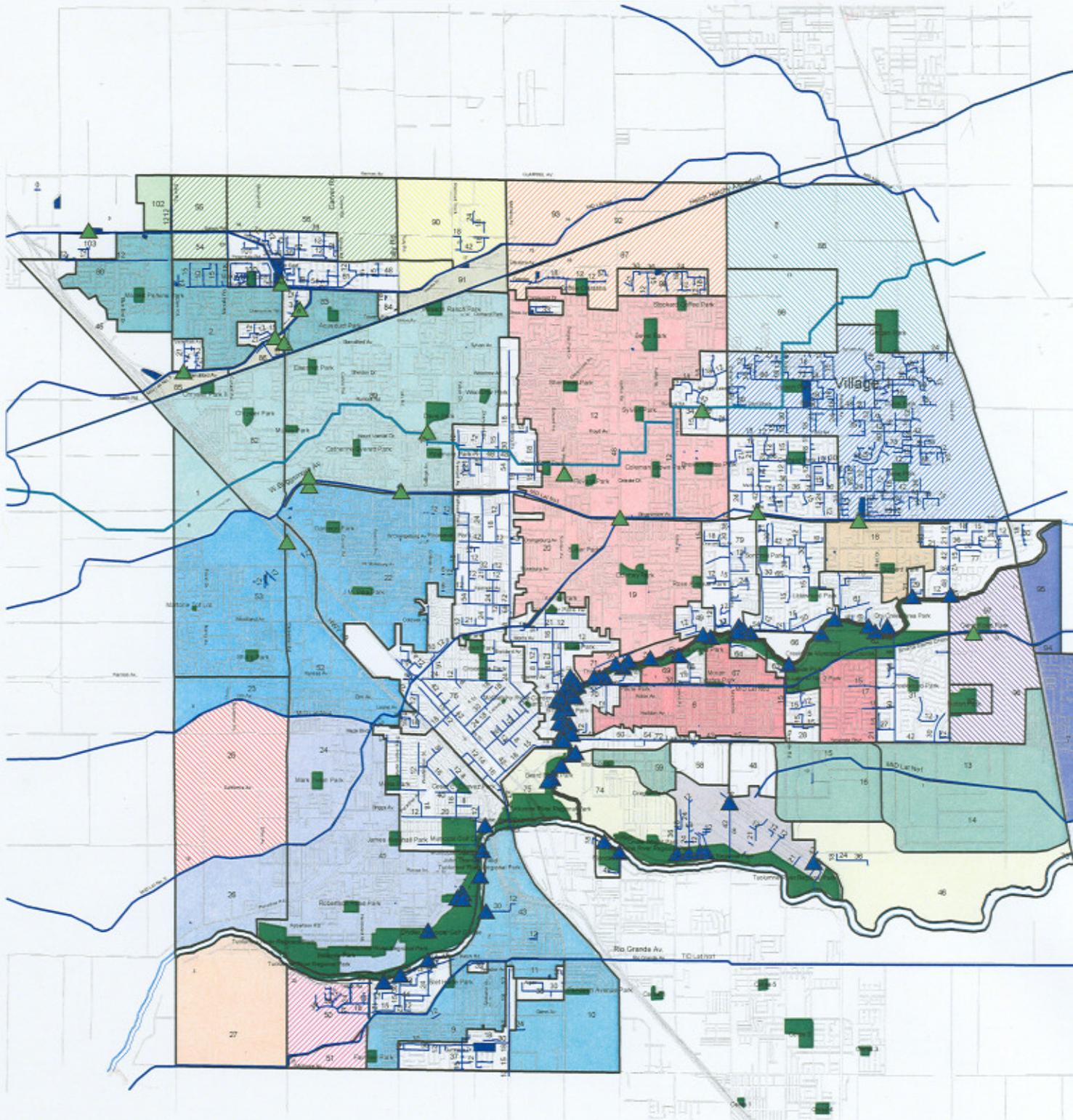
ADDITIONAL REQUIREMENTS

33. This Order may be modified, or alternatively, revoked or reissued, prior to the expiration date as follows: a) to address significant changed conditions identified in the technical reports required by the Regional Water Board which were unknown at the time of the issuance of this Order; b) to incorporate applicable requirements of statewide water quality control plans adopted by the State Board or amendments to the Basin Plan approved by the State Board; or c) to comply with any applicable requirements, guidelines, or regulations issued or approved under Section 402(p) of the CWA, if the requirement, guideline, or regulation so issued or approved contains different conditions or additional requirements not provided for in this Order. The Order as modified or reissued under this paragraph shall also contain any other requirement of the CWA when applicable.
34. The Discharger shall comply with all applicable items of the "Standard Provisions and Monitoring Requirements for Waste Discharge Requirements (NPDES)," dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
35. This Order expires on **12 June 2013**. The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of such date as application for re-issuance of waste discharge requirements. U.S. EPA 40 CFR Part 122 *Interpretive Policy Memorandum on Reapplication Requirements for Municipal Separate Storm Sewer Systems* states the fourth year annual report may be used as the RWD reapplication package. The reapplication package must identify any proposed changes or improvement to the SWMP, an assessment of the effectiveness of the program, and monitoring activities for the upcoming five year term of the permit, if those proposed changes have not already been submitted pursuant to 40 CFR 122.42 (c).

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **12 June 2008**.

Original Signed By
PAMELA C. CREEDON, Executive Officer

ATTACHMENT A



Legend

	Existing Storm Drains	Watershed Group		A		F		K		P		U
	Existing Detention Basins		B		G		L		Q			V
	Sub-basins		C		H		M		R			Village 1
	Existing Pump Stations		D		I		N		S			
	Existing outfall into U.S. Waters		E		J		O		T			
	Parks and Open Space											
	Civil Drain											
	MID and TID Canals											

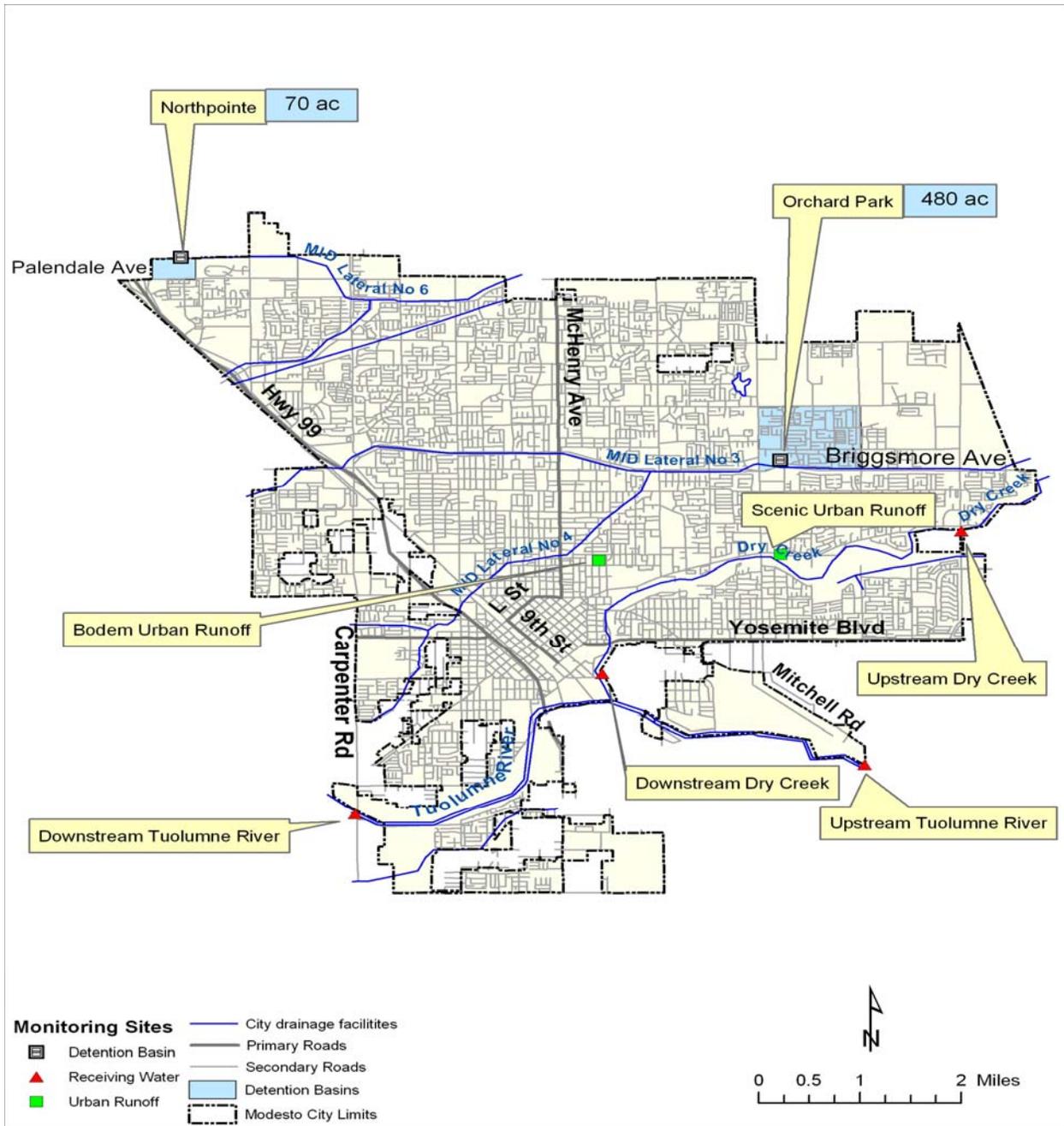
Title

CITY OF MODESTO STORM DRAIN SYSTEM MAP

JANUARY 2008

SCALE = 1:3200

ATTACHMENT B



ATTACHMENT C

DEFINITIONS

**ORDER NO. R5-2008-0092
CITY OF MODESTO
MUNICIPAL SEPARATE STORM SEWER SYSTEM
STANISLAUS COUNTY**

Adverse Impact means a detrimental effect upon water quality or beneficial uses caused by a discharge or loading of a pollutant or pollutants.

Anti-degradation Policy means the *Statement of Policy with Respect to Maintaining High Quality Water in California* (State Board Resolution No. 68-16), which protects surface and ground waters from degradation. In particular, this policy protects water bodies where existing quality is higher than that necessary for the protection of beneficial uses including the protection of fish and wildlife propagation and recreation on and in the water.

Applicable Standards and Limitations means all state, interstate, and federal standards and limitations to which a discharge or a related activity is subject under the Clean Water Act (CWA), including effluent limitations, water quality standards, standards of performance, toxic effluent standards or prohibitions, best management practices, and pretreatment standards under CWA Sections 301, 302, 303, 304, 306, 307, 308, 403 and 404.

Authorized Discharge means any discharge that is authorized pursuant to a National Pollutant Discharge Elimination System (NPDES) permit or meets the conditions set forth in this Order.

Automotive Service Facilities means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 5511, 7532-7534, or 7536-7539.

Basin Plan means the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins*. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin.

Beneficial Uses means the existing or potential uses of receiving waters in the permit area as designated by the Regional Water Board in the Basin Plan.

Best Management Practices (BMPs) means methods, measures, or practices designed and selected to reduce or eliminate the discharge of pollutants to surface waters from point and nonpoint source discharges including storm water. BMPs include structural and nonstructural controls, and operation and maintenance procedures, which can be applied before, during, and/or after pollution producing activities.

Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technologies (BCT) or Best Practicable Treatment or Control (BPTC): is a requirement of State Water Resources Control Board Resolution 68-16 - "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the

“Antidegradation Policy”). BPTC is the treatment or control of a discharge necessary to assure that, “(a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.” Pollution is defined in CWC Section 13050(I). In general, an exceedance of a water quality objective in the Basin Plan constitutes “pollution”.

Commercial Development means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, mini-malls, business complexes, shopping malls, hotels, office buildings, public warehouses, and light industrial complexes.

Construction means clearing, grading, excavating, etc. that results in soil disturbance. Construction includes structure teardown. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility; emergency construction activities required to immediately protect public health and safety; interior remodeling with no outside exposure of construction material or construction waste to storm water; mechanical permit work; or sign permit work.

Control means to minimize, reduce, eliminate, or prohibit by technological, legal, contractual or other means, the discharge of pollutants from an activity or activities.

Dechlorinated/Debrominated Swimming Pool Discharge means swimming pool discharges which have no measurable chlorine or bromine and do not contain any detergents, wastes, or additional chemicals not typically found in swimming pool water. The term does not include swimming pool filter backwash.

Development means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail and other non-residential projects, including public agency projects; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Director means the Director of a municipality and Person(s) designated by and under the Director’s instruction and supervision.

Discharge means when used without qualification the discharge of a pollutant.

Discharger means any agency named in this Order as being responsible for permit conditions within its jurisdiction.

Discharging Directly means outflow from a drainage conveyance system that is composed entirely or predominantly of flows from the subject, property, development, subdivision, or industrial facility, and not commingled with the flows from adjacent lands.

Discharge of a Pollutant means any addition of any pollutant or combination of pollutants to waters of the United States from any point source or, any addition of any pollutant or combination of pollutants to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. The term discharge includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

Disturbed Area means an area that is altered as a result of clearing, grading, and/or excavation.

Environmentally Sensitive Area (ESA) means an area defined by the California Department of Fish and Game (DFG), Environmentally Sensitive Areas Program, as an area that contains an important example of California's biological diversity. The most current ESA maps, reports, and descriptions can be downloaded from the DFG website at <ftp://maphost.dfg.ca.gov/outgoing/whdab/sna/>. These areas are identified using the following biological criteria only, irrespective of any administrative or jurisdictional considerations:

- a. Areas supporting extremely rare species or habitats;
- b. Areas supporting associations or concentrations of rare species or habitats; and
- c. Areas exhibiting the best examples of rare species and habitats in the state.

General Construction Activities Storm Water Permit (GCASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of storm water from construction activities under certain conditions.

General Industrial Activities Storm Water Permit (GIASP) means the general NPDES permit adopted by the State Board which authorizes the discharge of storm water from certain industrial activities under certain conditions.

Hydromodification – means the change in the natural watershed hydrologic processes and runoff characteristics (i.e., interception, infiltration, overland flow, interflow and groundwater flow) caused by urbanization or other land use changes that result in increased stream flows and sediment transport. In addition, alteration of stream and river channels, installation of dams and water impoundments, and excessive stream bank and shoreline erosion are also considered hydromodification, due to their disruption of natural watershed hydrologic processes.

Illicit Connection means any man-made conveyance that is connected to the storm drain system without a permit, excluding roof drains and other similar type connections. Examples include channels, pipelines, conduits, inlets, or outlets that are connected directly to the storm drain system.

Illicit Discharge means any discharge to the storm drain system that is prohibited under local, state, or federal statutes, ordinances, codes, or regulations. The term illicit discharge includes all non storm-water discharges except discharges pursuant to an NPDES permit, discharges that are identified in **Discharge Prohibitions** of this Order, and discharges authorized by the Regional Board.

Illicit Disposal means any disposal, either intentionally or unintentionally, of materials or wastes that can pollute storm water.

Industrial/Commercial Facility means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by the SIC Code. Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition.

Infiltration means the downward entry of water into the surface of the soil.

Inspection means entry and the conduct of an on-site review of a facility and its operations, at reasonable times, to determine compliance with specific municipal or other legal requirements. The steps involved in performing an inspection, include, but are not limited to:

- a. Pre-inspection documentation research;
- b. Request for entry;
- c. Interview of facility personnel;
- d. Facility walk-through.
- e. Visual observation of the condition of facility premises;
- f. Examination and copying of records as required;
- g. Sample collection if necessary or required;
- h. Exit conference to discuss preliminary evaluation; and,
- i. Report preparation, and if appropriate, recommendations for coming into compliance.

In the case of restaurants, a Discharger may conduct an inspection from the curbside, provided that such curbside inspection provides the Discharger with adequate information to determine an operator's compliance with BMPs that must be implemented per requirements of this Order and the SWMP.

Medium Municipal Separate Storm Sewer System (MS4) means all MS4s that serve a population less than 250,000 (1990 Census) as defined in 40 CFR 122.26 (b)(4).

Local SWPPP means the Storm Water Pollution Prevention Plan required by the local agency for a project that disturbs one or more acres of land.

Low Impact Development (LID) – A storm water management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect pre-development hydrologic functions.

Maximum Extent Practicable (MEP) – The technology-based standard established by Congress in CWA section 402(p)(3)(B)(iii) that operators of MS4s must meet. Technology-based standards establish the level of pollutant reductions that dischargers must achieve; typically by treatment or by a combination of source control and treatment control BMPs. MEP generally emphasizes pollution prevention and source control BMPs primarily (as the first line of defense) in combination with treatment methods serving as a backup (additional line of defense). MEP considers economics and is generally, but not necessarily, less stringent than BAT. A definition for MEP is not provided either in the statute or in the regulations. Instead the definition of MEP is dynamic and will be defined by the following process over time: Municipalities propose their definition of MEP by way of their storm water management programs (SWMP). The Dischargers' total collective and individual activities conducted pursuant to the storm water management programs (SWMP) becomes their proposal for MEP as it applies both to their overall effort, as well as to specific activities (e.g., MEP for street sweeping, or MEP for MS4 maintenance).

In the absence of a proposal acceptable to the Regional Board, the Regional Board defines MEP. In a memo dated February 11, 1993, entitled "*Definition of Maximum Extent Practicable*," Elizabeth Jennings, Senior Staff Counsel, SWRCB addressed the achievement of the MEP standard as follows:

"To achieve the MEP standard, municipalities must employ whatever Best Management Practices (BMPs) are technically feasible (i.e., are likely to be effective) and are not cost prohibitive. The major emphasis is on technical feasibility. Reducing pollutants to the MEP means choosing effective BMPs, and rejecting applicable BMPs only where other effective BMPs will serve the same purpose, or the BMPs would not be technically feasible, or the cost would be prohibitive. In selecting BMPs to achieve the MEP standard, the following factors may be useful to consider:

- a. Effectiveness: Will the BMPs address a pollutant (or pollutant source) of concern?*
- b. Regulatory Compliance: Is the BMP in compliance with storm water regulations as well as other environmental regulations?*
- c. Public Acceptance: Does the BMP have public support?*

- d. *Cost: Will the cost of implementing the BMP have a reasonable relationship to the pollution control benefits to be achieved?*
- e. *Technical Feasibility: Is the BMP technically feasible considering soils, geography, water resources, etc?*

The final determination regarding whether a municipality has reduced pollutants to the maximum extent practicable can only be made by the Regional or State Water Boards, and not by the municipal discharger. If a municipality reviews a lengthy menu of BMPs and chooses to select only a few of the least expensive, it is likely that MEP has not been met. On the other hand, if a municipal discharger employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit derived, it would have met the standard. Where a choice may be made between two BMPs that should provide generally comparable effectiveness, the discharger may choose the least expensive alternative and exclude the more expensive BMP. However, it would not be acceptable either to reject all BMPs that would address a pollutant source, or to pick a BMP base solely on cost, which would be clearly less effective. In selecting BMPs the municipality must make a serious attempt to comply and practical solutions may not be lightly rejected. In any case, the burden would be on the municipal discharger to show compliance with its permit. After selecting a menu of BMPs, it is the responsibility of the discharger to ensure that all BMPs are implemented.”

Method Detection Limit (MDL) means the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR 136, Appendix B.

Minimum Level (ML) means the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Municipal Separate Storm Sewer System (MS4) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, alleys, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) owned by a State, city, county, town or other public body, that is designed or used for collecting or conveying storm water, which is not a combined sewer, and which is not part of a publicly owned treatment works, and which discharges to Waters of the United States.

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

Natural Drainage Systems means unlined or unimproved (not engineered) creeks, streams, rivers or similar waterways.

New Development means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision.

Non-Storm Water Discharge means any discharge to a storm drain that is not composed entirely of storm water.

Nuisance means anything that meets all of the following requirements: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.; (3) occurs during, or as a result of, the treatment or disposal of wastes.

Parking Lot means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size of 5,000 square feet or more of surface area, or with 25 or more parking spaces.

Planning Priority Projects means those projects that are required to incorporate appropriate storm water mitigation measures into the design plan for their respective project. These types of projects include:

- a. Ten or more unit homes including single family homes, multifamily homes, condominiums, and apartments;
- b. A 10,000 or more square feet of impervious surface area industrial/ commercial development (1 acre starting March 2003);
- c. Automotive service facilities (SIC 5013, 5014, 5541, 7532-7534, and 7536-7539);
- d. Retail gasoline outlets;
- e. Restaurants (SIC 5812);
- f. Parking lots 5,000 square feet or more of surface area or with 25 or more parking spaces;
- g. Redevelopment projects in subject categories that meet Redevelopment thresholds;
- h. Projects located in or directly adjacent to or discharging directly to an ESA, which meet thresholds; and
- i. Those projects that require the implementation of a site-specific plan to mitigate post-development storm water for new development not requiring a SUSMP but which may potentially have adverse impacts on post-development storm water quality, where the following project characteristics exist:

- 1) Vehicle or equipment fueling areas;
- 2) Vehicle or equipment maintenance areas, including washing and repair;
- 3) Commercial or industrial waste handling or storage;
- 4) Outdoor handling or storage of hazardous materials;
- 5) Outdoor manufacturing areas;
- 6) Outdoor food handling or processing;
- 7) Outdoor animal care, confinement, or slaughter; or
- 8) Outdoor horticulture activities.

Pollutants means those substances defined in CWA §502(6) (33.U.S.C.§1362(6)), and incorporated by reference into California Water Code §13373.

Potable Water Distribution Systems Releases means sources of flows from drinking water storage, supply and distribution systems including flows from system failures, pressure releases, system maintenance, distribution line testing, fire hydrant flow testing; and flushing and dewatering of pipes, reservoirs, vaults, and minor non-invasive well maintenance activities not involving chemical addition(s). It does not include wastewater discharges from activities that occur at wellheads, such as well construction, well development (i.e., aquifer pumping tests, well purging, etc.), or major well maintenance.

Project means all development, redevelopment, and land disturbing activities. The term is not limited to "Project" as defined under CEQA (Pub. Resources Code §21065).

Rain Event means any rain event greater than 0.1 inch in 24 hours except where specifically stated otherwise.

Receiving Waters means all surface water bodies in the Central Valley Region that are identified in the Basin Plan.

Receiving Water Limitations (RWLs) - Waste discharge requirements issued by the Regional Board typically include both: (1) "Effluent Limitations" (or "Discharge Limitations") that specify the technology-based or water-quality-based effluent limitations; and (2) "Receiving Water Limitations" that specify the water quality objectives in the Basin Plan as well as any other limitations necessary to attain those objectives. In summary, the "Receiving Water Limitations" provision is the provision used to implement the requirement of CWA section 301(b)(1)(C) that NPDES permits must include any more stringent limitations necessary to meet water quality standards.

Redevelopment means land-disturbing activity that result in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and

grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

Regional Administrator means the Regional Administrator of the Regional Office of the U.S. Environmental Protection Agency (EPA) or the authorized representative of the Regional Administrator.

Restaurant means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812).

Retail Gasoline Outlet means any facility engaged in selling gasoline and lubricating oils.

Runoff means any runoff including storm water and dry weather flows from a drainage area that reaches a receiving water body or subsurface. During dry weather it is typically comprised of base flow either contaminated with pollutants or uncontaminated, and nuisance flows.

Screening means using proactive methods to identify illicit connections through a continuously narrowing process. The methods may include: performing baseline monitoring of open channels, conducting special investigations using a prioritization approach, analyzing maintenance records for catch basin and storm drain cleaning and operation, and verifying all permitted connections into the storm drains. Special investigation techniques may include: dye testing, visual inspection, smoke testing, flow monitoring, infrared, aerial and thermal photography, and remote control camera operation.

Sidewalk Rinsing means pressure washing of paved pedestrian walkways with average water usage of 0.006 gallon per square foot, with no cleaning agents, and properly disposing of all debris collected.

Site means the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity.

Source Control BMP means any schedules of activities, prohibitions of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

SWMP means the City of Modesto Storm Water Management Program.

State Storm Water Pollution Prevention Plan (State SWPPP) means a plan, as required by a State General Permit, identifying potential pollutant sources and describing the design, placement and implementation of BMPs, to effectively prevent non-stormwater Discharges and reduce Pollutants in Stormwater Discharges during activities covered by the General Permit.

Storm Water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm Water Discharge Associated with Industrial Activity means industrial discharge as defined in 40 CFR 122.26(b)(14)

Storm Water Management Program means the City of Modesto program, which includes all elements and descriptions, developed by the City in accordance with provisions of the NPDES Permit, to comply with applicable federal and state law.

Structural BMP means any structural facility designed and constructed to mitigate the adverse impacts of storm water and urban runoff pollution (e.g. canopy, structural enclosure). The category may include both Treatment Control BMPs and Source Control BMPs.

SUSMP or Development Standards means Standard Urban Stormwater Mitigation Plans. They are standards which the Discharger must develop and implement for new development and significant redevelopment projects to control the discharge of storm water pollutants in post-construction storm water.

Total Maximum Daily Load (TMDL) means the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background.

Toxicity Identification Evaluation (TIE) means a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.

Toxicity Reduction Evaluation (TRE) means a study conducted in a step-wise process to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity.

Treatment means the application of engineered systems that use physical, chemical, or biological processes to remove pollutants. Such processes include, but are not limited to, filtration, gravity settling, media absorption, biodegradation, biological uptake, chemical oxidation and UV radiation.

Treatment Control BMP means any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media absorption or any other physical, biological, or chemical process.

U.S. EPA Phase I Facilities means facilities in specified industrial categories that are required to obtain an NPDES permit for storm water discharges, as required by 40 CFR 122.26(c). These categories include facilities subject to storm water effluent limitation guidelines, new source performance standards, or toxic pollutant effluent standards (40 CFR N); manufacturing facilities; oil and gas/mining facilities; hazardous waste treatment, storage, or disposal facilities; landfills, land application sites, and open dumps; recycling facilities; steam electric power generating facilities; transportation facilities sewage of wastewater treatment works; and light manufacturing facilities.

Vehicle Maintenance/Material Storage Facilities/Corporation Yards means any Discharger owned or operated facility or portion thereof that conducts industrial activity, operates equipment, handles materials, and provides services similar to Federal Phase I facilities; performs fleet vehicle service/maintenance on ten or more vehicles per day including repair, maintenance, washing, and fueling; performs maintenance and/or repair of heavy industrial machinery/equipment ; and stores chemicals, raw materials, or waste materials in quantities that require a hazardous materials business plan or a Spill Prevention, Control, and Counter-measures (SPCC) plan.

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

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

Waters of the United States means:

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

- g. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraph (a) through (f) of this definition.

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

Wet Season means the calendar period beginning October 1 through April 15.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2008-0092
NPDES NO. CAS083526

MONITORING AND REPORTING PROGRAM

CITY OF MODESTO
STORM WATER DISCHARGES FROM MUNICIPAL
SEPARATE STORM SEWER SYSTEM
STANISLAUS COUNTY

I. **MONITORING AND REPORTING PROGRAM REQUIREMENTS**

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code Section 13267. Because the Discharger operates facilities, which discharge waste, subject to storm water regulations, Monitoring and Reporting Program No. R5-2008-0092 is necessary to ensure compliance with this Order No. R5-2008-0092.

The Discharger shall not implement any changes to this MRP unless and until the Regional Water Board or Executive Officer issues a revised MRP.

Attachment A shows a map of the City of Modesto, the service area covered under this Order, Modesto Irrigation District (MID) laterals, existing and proposed detention basins, and existing and proposed discharges to MID Facilities.

- A. **Annual Work Plan:** By **1 April 2009**, the Discharger shall submit an MRP Work Plan that supports the development, implementation, and effectiveness of the approved SWMP, and Order No. R5-2008-0092. The work plan must specifically identify any recommended changes to the program from the previous year's work plan.
- B. **Annual Report:** The Discharger shall submit, in both electronic and paper formats and no later than **1 September** of each year, an Annual Report documenting the progress of the Discharger's implementation of the SWMP and the requirements of this Order. The Annual Report shall cover each fiscal year from **1 July through 30 June**. The status of compliance with the permit requirements including implementation dates for all time-specific deadlines should be included for each program area. If permit deadlines are not met, the Discharger shall report the reasons why the requirement was not met and how the requirements will be met in the future, including projected implementation dates. A comparison of program implementation results to performance standards established in the SWMP and this Order shall be included for each program area.

Specific requirements that must be addressed in the Annual Reports are listed below.

1. An Executive Summary discussing the effectiveness of the SWMP to reduce storm water pollution to the MEP.
2. Summary of activities conducted by the Discharger;
3. Identification of BMPs and a discussion of their effectiveness at reducing urban runoff pollutants and flow;
4. Summary of the monitoring data and an assessment of each component of the MRP. To comply with Provisions D.1 and D.2 of the Order No. R5-2008-0092 the Discharger shall compare receiving water and discharge data with applicable water quality standards. The lowest applicable standard from the Basin Plan, California Toxics Rule (CTR), and California Title 22 (Title 22), and constituent specific concentrations limits shall be used for comparison. When the data indicates that discharges are causing or contributing to exceedances of applicable water quality standards or constituent specific concentrations limits, the Discharger shall prepare a Report of Water Quality Exceedance and identify potential sources of the problems, and recommend future monitoring and BMP implementation measures to identify and address the sources.

Raw data is required to be submitted in electronic format.

5. For each water quality program plan requirement (e.g., Pesticide Plan) the Annual Reports shall include the following results and information:
 - a. all physical, chemical and biological data collected in the assessment;
 - b. all graphs, charts, statistical analysis, modeling, and any other analytical analyses in support of the Discharger's evaluation of the data and conclusions derived from that analysis; and
 - c. documentation of quality assurance and control procedures (QA/QC).

6. Effectiveness assessment for each program element, as defined in the SWMP, shall be conducted annually, shall be built upon each consecutive year, and shall identify any necessary modifications. The SWMP shall describe, in detail, the performance standards or goals to use to gauge the effectiveness of the storm water management program. The primary questions that must be assessed for each program element include the following:
 - a. Level 1 Outcome: Was the Program Element implemented in accordance with the Permit Provisions, SWMP Control Measures and Performance Standards?
 - b. Level 2 Outcome: Did the Program Element raise the target audience's awareness of an issue?
 - c. Level 3 Outcome: Did the Program Element change a target audience's behavior, resulting in the implementation of recommended BMPs?
 - d. Level 4 Outcome: Did the Program Element reduce the load of pollutants from the sources to the storm drain system?
 - e. Level 5 Outcome: Did the Program Element enhance or change the urban runoff and discharge quality?
 - f. Level 6 Outcome: Did the Program Element enhance or change receiving water quality?
7. A summary of any Reports of Water Quality Exceedance (RWQEs) that have been completed during the year, and a status update for those in progress. The summary shall include the conclusions and recommendations of completed RWQEs and the status of any additional BMP implementation pursuant to RWQEs;
8. Pursuant to 40 CFR 122.42(c)(7), the Discharger shall identify water quality improvements in, or degradation of, urban storm water;
9. An estimation of total annual pollutant loads due to storm water/urban runoff for each sampling station.
10. For each monitoring component, photographs and maps of all monitoring station locations and descriptions of each location; and
11. Recommendations to improve the monitoring program, BMPs, Performance Standards, and the SWMP to address potential

receiving water quality exceedances and potential pollutant sources, and to meet the MEP standard.

12. Provide operating data from all city pump stations as an appendix in electronic format on an annual basis only to assist in calculating flow volumes, as applicable.

- C. **Certification:** All work plans and reports submitted to the Regional Board shall be signed and certified pursuant to Federal regulations at 40 CFR 122.41 (k). Each report shall contain the following completed declaration:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility, of a fine and imprisonment for knowing violations.

Executed on the ___ day of _____, 20__, at _____.

(Signature) _____ (Title) _____";

The Discharger shall mail the original of each annual report to:

CALIFORNIA REGIONAL WATER QUALITY
CONTROL BOARD – CENTRAL VALLEY REGION
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670

A copy of the annual report shall also be mailed to:

REGIONAL ADMINISTRATOR
ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 Hawthorne Street
San Francisco, CA 94105

II. **Monitoring Program**

The primary objectives of the Monitoring Program include, but are not limited to:

- Assessing compliance with this Order;
- Measuring and improving the effectiveness of the SWMP;
- Assessing the chemical, physical, and biological impacts of receiving waters resulting from urban runoff;
- Characterization of storm water discharges;
- Identifying sources of pollutants; and
- Assessing the overall health and evaluating long-term trends in receiving water quality.

The Modesto storm drainage system is unique since only twenty percent of the city area drains directly to surface waters (positive storm drain system). The other eighty percent of the city area drains into detention/retention basins, MID laterals/drains and rock wells. The positive storm drain system covers approximately 6,650 acres of the urban area with 33-percent draining to the Tuolumne River (0.9 percent of the Tuolumne River's total drainage area at that location), 54-percent to Dry Creek, and 13-percent to Modesto Irrigation Canals (MID Canals).

Ultimately, the results of the monitoring requirements outlined below should be used to refine the SWMP to reduce pollutant loadings and protect and enhance the beneficial uses of the receiving waters in the Modesto Urbanized Area.

At a minimum, the Discharger shall conduct the following monitoring over the next five program years:

- Baseline Monitoring
 - o Urban Discharge Monitoring
 - o Receiving Water Monitoring
 - o Urban and Water Column Toxicity Monitoring
 - o Dry Weather Characterization
- Sediment Toxicity Monitoring
- Water Quality Based Programs
 - o Pesticide
- Detention Basin Monitoring

The Discharger shall implement the Monitoring Program as follows:

Baseline Monitoring

- A. The Discharger shall conduct water column monitoring in both receiving waters (see Section D – Receiving Water Monitoring) and urban discharge outfalls (see Section C – Urban Discharge Monitoring). Water monitoring will take place at each receiving water and urban discharge station. The water column monitoring shall include all storm water pollutants of concern (POCs) identified during the 2002-2007 baseline monitoring as identified in Table 1 of this Order. The frequency of monitoring shall be in accordance with Table A.
- B. **Sampling Protocol**
1. Samples from each receiving water and urban discharge station described below shall be analyzed for all constituents listed in Table 1. All sample collection and analyses shall follow standard U.S. Environmental Protection Agency (U.S. EPA) protocol.
 2. In addition, samples from each receiving water and urban discharge station described below shall be analyzed for constituents in Table 2. The Table 2 constituents shall be monitored with the first storm event sampling for Table 1 constituents and shall be collected only in **year 4** of the permit term. The results shall be submitted in the Annual report or with the new report of waste discharge application.
 3. Grab samples shall be used for receiving water monitoring. For monitoring of urban discharge outfalls during wet weather, the Discharger shall use flow-composite sampling equipment when feasible and grab samples otherwise.
 4. The Discharger shall collect flow data at the time of sampling for all monitoring stations sampled during a given year. Receiving water or urban discharge flow may be estimated using U.S. EPA methods¹ at sites where flow measurement devices are not in place.
 5. The Discharger shall perform an annual analysis, to be included in the Annual Report, of the correlation between pollutants of concern (including but not limited to metals, OP pesticides, and PAHs) and TSS loadings for the sampling events that are analyzed for the constituents in Table 1.

¹NPDES Storm Water Sampling Guidance Document, U.S. EPA 833-B-92-001, July 1992

C. **Urban Discharge Monitoring**

Based on the land usage the Discharger has identified the following two locations for monitoring purposes:

- (i) Scenic Drive--receives runoff from the Sonoma neighborhood, an entirely residential neighborhood; and
- (ii) Bodem Street--receives runoff from the McHenry Avenue Corridor, a mixed residential/commercial land use.

The Discharger monitored the same stations during the prior permit term. Use of the same location or at equivalent location further downstream will allow the Discharger to maintain consistency and compare the data obtained during the previous discharge monitoring studies. The Regional Water Board must approve any relocation of the stations. Urban discharge monitoring shall be consistent with Table 1. Each year,² samples shall be flow weighted and collected **during two storm events**³ and **one dry weather monitoring event**.⁴ The proposed monitoring will allow Modesto to continue to characterize storm water discharges and track water quality constituent levels.

The Discharger shall target for monitoring the first storm event of the year² preceded by at least 30 days of dry weather.⁵ The second storm event to be monitored shall be preceded by at least three dry weather days. The two monitoring events shall be separated by at least 20 days.

If additional sample station locations are needed, they shall be established under the direction of the Regional Water Board staff, and a description of the location shall be attached to this MRP.

D. **Receiving Water Monitoring**

All receiving water samples shall be grab samples, collected at mid-depth, in mid-stream of the receiving water, and in a manner that measures the water quality impacts of corresponding urban discharge outfalls. Receiving water sampling may be postponed if hazardous weather and/or river flow

² This refers to the permit year of July 1 to June 30.

³ A qualifying storm event occurs when there is sufficient rainfall within a 24-hour period to monitor at least one drainage basin and one corresponding receiving water station; the Discharger shall target storm events with a predicted rainfall of at least 0.25 inches at a seventy percent probability of rainfall 72 hours prior to the event.

⁴ Dry weather monitoring events shall be preceded by at least seven days of no rainfall.

⁵ A day with a storm event too small to generate runoff (typically 0.1 inches or less) shall be considered a dry weather day.

conditions prevent safe access to sampling location. Receiving water monitoring shall be taken after discharges from upstream and downstream locations on the Tuolumne River and Dry Creek. **Attachment B** shows the approximate locations of the receiving water sampling stations. Each year, samples shall be collected **during two storm events and one monitoring event during the dry season.**

The receiving water chemistry monitoring will be performed in the Tuolumne River and Dry Creek, the two major water bodies, which receive Modesto urban runoff. Monitoring shall be conducted at two sites (upstream and downstream) for each receiving water location. If additional sample station locations are needed, they shall be established under the direction of the Regional Water Board staff, and a description of the location shall be attached to this MRP.

Receiving water monitoring shall include at least the following:

<u>Station</u>	<u>Description/Location/Type of Watershed</u>
Upstream Tuolumne River	Upstream Tuolumne River, upstream of Mitchell Road Bridge and east of the Modesto City Airport. (Commercial, Industrial, Residential Mixed, Agriculture)
Downstream Tuolumne River	Downstream Tuolumne River, Carpenter Road Bridge on the northern bank of the river. (Commercial, Industrial, Residential Mixed)
Upstream Dry Creek	Upstream Dry Creek, Claus Road Bridge, (Agriculture)
Downstream Dry Creek	Downstream Dry Creek, Beard Brook Park near the confluence of Tuolumne River. (Commercial, Residential, Industrial, Mixed)

The upstream receiving locations shall be representative of what is entering each waterbody from upstream of the Modesto urban area boundary as shown on **Attachment B.**

E. Urban and Water Column Toxicity Monitoring

The Discharger shall conduct short-term chronic toxicity testing at Scenic Drive and Bodem Street urban discharge monitoring locations with their corresponding downstream receiving water monitoring station. Toxicity data collection allows for characterizing a range of hydrologic conditions that vary from year to year and more fully characterizes potential sources of contaminants and toxicity that may be contributing to the decline of fish populations in the Delta. Short-term chronic toxicity testing shall include (1) the analysis of samples from **two storm events, and one dry weather monitoring event** from each monitoring station every other year; and (2) analysis of at least the following two freshwater test species for each storm event: Fathead minnow [*Pimephales promelas* (larval survival and growth test) and water flea [*Ceriodaphnia dubia* (survival and reproduction test)]. The testing shall be conducted in accordance with U.S. EPA's method (U.S. EPA 2002, 4th Edition). A minimum sample volume of 5 gallons for each test species shall be provided with a sample storage (holding time) not to exceed 36 hours.

If 100% mortality to *Pimephales promelas* or *Ceriodaphnia dubia* is detected within 24 hours of test initiation, then a dilution series shall be initiated (0.5x steps) ranging from the undiluted sample (or the highest concentration that can be tested within the limitations of the test methods or sample type) to less than or equal to 6.25 percent of the sample. Further, if statistically significant toxicity is detected and a greater than or equal to 50% increase in *Pimephales promelas* or *Ceriodaphnia dubia* mortality, or reduction in *Ceriodaphnia dubia* reproduction compared to the laboratory control is observed, then TIEs shall be conducted on the initial sample that caused toxicity.

1. Toxicity Identification Evaluations (TIE)

The Discharger shall begin a Phase I TIE immediately on all samples that are substantially toxic to either test species. If mortality of both test species exceeds the 50% trigger, then TIEs shall be conducted using both species. TIEs are required until the cause of toxicity is determined. The Discharger shall indicate the person who will conduct the TIE (in-house expert or outside contractor), which shall be identified in the SWMP and Annual Reports.

2. Toxicity Reduction Evaluations (TRE)

- a. BMPs shall be identified and implemented whenever a toxicant is successfully identified through the TIE process. The TRE shall include all reasonable steps to identify the source(s) of toxicity and discuss appropriate BMPs to

eliminate the causes of toxicity. Once the source of toxicity and appropriate BMPs are identified, the Discharger shall submit the TRE Corrective Action Plan as part of the Annual Report to the Executive Officer for approval. At a minimum, the TRE shall include a discussion of the following items:

- i. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity;
 - ii. The potential sources of pollutant(s) causing toxicity;
 - iii. A list of dischargers having jurisdiction over sources of pollutant(s) causing toxicity;
 - iv. Recommended BMPs to reduce the pollutant(s) causing toxicity;
 - v. Proposed changes to the SWMP to reduce the pollutant(s) causing toxicity; and
 - vi. Suggested follow-up monitoring to demonstrate that toxicity has been removed.
- b. If TRE implementation for a specific pollutant coincides with Total Maximum Daily Load (TMDL) implementation for that pollutant, the efforts may be coordinated.
 - c. Upon approval by the Executive Officer, the Discharger having jurisdiction over sources causing or contributing to toxicity shall implement the recommended BMPs and take all reasonable steps necessary to eliminate toxicity.
 - d. The Discharger shall develop a maximum of two TREs per year. If applicable, the Discharger may use the same TRE for the same toxic pollutant or pollutant class in different watersheds or basins. The TRE process shall be coordinated with TMDL development and implementation to avoid overlap.

The Discharger shall include a monitoring plan, which shall include a sampling and analysis plan, all data (electronic format), assessment of the data, conclusions, proposed BMPs to be implemented, program effectiveness, and an implementation schedule in the SWMP for approval by the Executive Officer. Subsequent information shall be included in the Annual Reports as required in this MRP Order.

F. Dry Weather Characterization

The Discharger shall conduct dry weather field monitoring to characterize the dry weather urban discharge entering the storm drain system, rock wells and retention/detention basins. The following shall be completed during this Permit term.

- a. To characterize the impact of dry weather flows on surface waters, the Discharger shall monitor 20% of the storm drain outfalls a year so that during the Permit term all outfalls will be monitored at least once. Dry weather sampling sites for the positive storm drain system will be located at storm drain outfalls greater than 24 inches in diameter or at the nearest manhole upstream of the outfall.
- b. To characterize the impact of dry weather flows on groundwater, the Discharger shall monitor at least 20 representative rock wells and/or retention/detention basins (residential, industrial, commercial, and/or mixed use) during this Permit term.
- c. Sites with sufficient flow will be analyzed in the field for temperature, pH, specific conductance (EC), dissolved oxygen, chlorine, and turbidity. Grab samples shall be collected and analyzed by a certified laboratory for total dissolved solids, methyl blue activated substances (MBAS, which are detergents/ surfactants), oil and grease, fecal coliform, Escherichia coli, phenols, total copper, lead, iron and aluminum.

Sampling Schedule

The Baseline Monitoring Program shall implement the monitoring schedule shown in Table A:

Table A. 2008-2013 Schedule for Baseline Monitoring Program

Baseline Monitoring Program Element	2008/09			2009/10			2010/11			2011/12			2012/13		
	E ^a	L ^b	D ^c	E	L	D	E	L	D	E	L	D	E	L	D
Urban Discharge															
Water Quality Parameters (Table 1)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Urban and Water Column Toxicity	X	X	X				X	X	X				X	X	X
Receiving Water															
Water Quality Parameters (Table 1)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Urban and Water Column Toxicity	X	X	X				X	X	X				X	X	X
Dry Weather Characterization ^d			X			X			X		X				X
Table 2 Constituent Monitoring ^e										X					

Notes:

- a. Early season storm event
- b. Mid-to-late season storm event
- c. Dry weather event
- d. Field monitoring is conducted during one event per dry season. Approximately 20% of the City outfalls per year and at least 20 representative rock wells and/or retention/detention basins (residential, industrial, commercial and/or mixed use) are monitored each Permit term.
- e. Table 2 constituents shall be monitored with the first storm event sampling for Table 1 constituents and shall be collected only in year 4 of the Permit term.

G. **Sediment Toxicity Monitoring**

The Discharger shall conduct short-term sediment toxicity testing in the first and 4th year of the permit term; which shall include (1) the analysis of sediment samples from **one post first flush⁶ storm event, and one dry weather monitoring event**; and (2) analysis of at least the following freshwater sediment test species: Amphipod [*Hyalella azteca* (10-day survival and growth test)]; and (3) analysis of sediment organic carbon and grain size. The testing shall be conducted in accordance with U.S. EPA's method (U.S. EPA 2000)⁷. Sample sites for sediment toxicity testing shall be conducted on urban receiving water sites. Sediment Total Organic Carbon (TOC) and grain size shall be reported with each sediment toxicity testing.

If toxicity is detected in a sediment sample, follow up actions shall be implemented and shall include chemical analysis for chlorpyrifos and pyrethroids – including bifenthrin, cyfluthrin, deltamethrin, esfenvalerate, lambda cyhalothrin, permethrin or other constituents until the nature and cause(s) of the toxicity are defined.

H. **Water Quality Based Program**

1. Pesticide monitoring, which is described in more detail as part of the Pesticides Plan of this Order, shall be conducted as part of the receiving water and urban runoff monitoring efforts. The purpose of pesticide monitoring is to:
 - a. Monitor trends in the levels of diazinon and chlorpyrifos in all 303(d) listed waters within the Discharger's jurisdictions. Sampling must take place, at a minimum, in one storm event during the dormant spray application season, one storm event following the dormant spray application season, and once during dry season;
 - b. Monitor potential sources of diazinon and chlorpyrifos outside residential and commercial land areas, including discharges from agricultural areas and nurseries upstream or within the Discharger's jurisdictional boundaries; and

⁶ Post first flush timeframe is within two weeks of the qualifying storm event.

⁷ U.S. EPA. 2000. Methods for measuring the toxicity and bioaccumulation of sediment-associated contaminants with freshwater invertebrates. EPA 600/R-99/064. Office of Research and Development. Washington, DC.

- c. Monitor toxicity in storm water through the use of bioassay tests. Any toxicity found shall be evaluated by using TIE procedures, or as otherwise appropriate.

I. Detention Basin Monitoring

The Discharger shall update and submit the Detention Basin Monitoring Work Plan, as part of the SWMP, to reflect additional monitoring of the following constituents: total mercury and methylmercury in water; total mercury in sediment. The work plan is designed to perform influent, effluent, and sediment chemistry/toxicity monitoring at each basin. Monitoring shall be designed to evaluate the effectiveness of the detention basins in removing pollutants of concern and determining whether basins stimulate methylmercury production. The work plan shall include a map showing which basins are being monitored during this permit term. The basins shall represent storm water runoff from representative watersheds for residential and industrial/commercial urban areas. The Discharger may propose a joint study with other Central Valley MS4 Dischargers if they can demonstrate that data collected in other jurisdictions is applicable to detention basins in the Discharger's jurisdiction. The Discharger shall monitor a minimum of two basins in year 2 and 4 of this permit term for the following constituents at each basin:

Arsenic	Barium
Total Mercury	Selenium
Methylmercury	Chromium
Bacteria	Zinc
Total Recoverable Petroleum	Total Petroleum
Hydrocarbons (TRPH)	Hydrocarbons (TPH)
Nickel	Lead
Copper	Total Dissolved Solids (TDS)
Silver	Turbidity
Organophosphate Pesticides (diazinon and chlorpyrifos)	Total suspended solids (TSS)

III. Standard Monitoring Provisions

All monitoring activities shall meet the following requirements:

- A. Monitoring and Records [40 CFR 122.41(j)(1)]

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

B. Monitoring and Records [40 CFR 122.41(j)(2)] [California Water Code §13383(a)]

The Discharger shall retain records of all monitoring information, including all calibration and maintenance of monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the Report of Waste Discharge and application for this Order, for a period of at least five (5) years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Board or U.S. EPA at any time and shall be extended during the course of any unresolved litigation regarding this discharge.

C. Monitoring and Records [40 CFR 122.21(j)(3)]. Records of monitoring information shall include:

1. Date, location, and time of sampling or measurements;
2. Individual(s) who performed the sampling or measurements;
3. Date analyses were performed;
4. Individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. Results of such analyses.

D. Monitoring and Records [40 CFR 122.21(j)(4)]

All sampling, sample preservation, and analyses must be conducted according to test procedures under 40 CFR Part 136, unless other test procedures have been specified in this Order.

E. Monitoring and Records [40 CFR 122.21(j)(5)]

The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Order shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by both.

F. All chemical, bacteriological, and toxicity analyses shall be conducted at a laboratory certified for such analyses by an appropriate governmental regulatory agency.

G. For priority toxic pollutants that are identified in the CTR (65 Fed. Reg. 31682), the MLs published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and

Estuaries of California - 2000 (SIP) shall be used for all analyses, unless otherwise specified. Appendix 4 of the SIP is included as Table 1. For pollutants not contained in Appendix 4 of the SIP, the test method and method detection limit (MDL) listed in Table 1 shall be used for all analyses, and the ML for these parameters shall be lower than or equal to the lowest applicable water quality criteria from the Basin Plan and/or the SIP.

- H. The Monitoring Report shall specify the analytical method used, the MDL and the ML for each pollutant. For the purpose of reporting compliance with numerical limitations, performance goals, and receiving water limitations, analytical data shall be reported with one of the following methods, as appropriate:
1. An actual numerical value for sample results greater than or equal to the ML;
 2. "Not-detected (ND)" for sample results less than the laboratory's MDL with the MDL indicated for the analytical method used; or
 3. "Detected, but Not Quantified (DNQ)" if results are greater than or equal to the laboratory's MDL but less than the ML. The estimated chemical concentration of the sample shall also be reported. This is the concentration that results from the confirmed detection of the substance by the analytical method below the ML value.
- I. For priority toxic pollutants, if the Discharger can demonstrate that a particular ML is not attainable, in accordance with procedures set forth in 40 CFR 136, the lowest quantifiable concentration of the lowest calibration standard analyzed by a specific analytical procedure (assuming that all the method specified sample weights, volumes, and processing steps have been followed) may be used instead of the ML listed in Appendix 4 of the SIP. The Discharger must submit documentation from the laboratory to the Regional Water Board Executive Officer for approval prior to raising the ML for any constituent.
- J. Monitoring Reports [40 CFR 122.41(I)(4)(ii)]
- If the Discharger monitors any pollutant more frequently than required by the permit using test procedures approved under 40 CFR part 136, unless otherwise specified in the Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the annual Monitoring Reports.

K. Monitoring Reports [40 CFR 122.41(I)(4)(iii)]

Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order.

L. If no flow occurred during the reporting period, the Monitoring Report shall so state.

M. The Executive Officer or the Regional Water Board, consistent with 40 CFR 122.41, may approve changes to the Monitoring Program, after providing the opportunity for public comment, either:

1. By petition of the Discharger or by petition of interested parties after the submittal of the Annual Report. Such petition shall be filed not later than 60 days after the Annual Report submittal date, or
2. As deemed necessary by the Executive Officer following notice to the Discharger.

Ordered by _____ *Original Signed By* _____
PAMELA C. CREEDON, Executive Officer
_____ 12 June 2008 _____
Date

Attachment: Table 1, Table 2, Attachment A, Attachment B, Attachment C

TABLE 1
LIST OF CONSTITUENTS AND ASSOCIATED MINIMUM LEVELS (MLs)¹
FOR THE STORM WATER AND URBAN DISCHARGE
MONITORING PROGRAM

CONSTITUENTS	MLs
FIELD/LAB MEASUREMENTS	
Date	mm/dd/yyyy
Sample Time	hr:min (regular time)
Weather	degrees F
Water Temperature	degrees C
pH	0 - 14
Dissolved Oxygen	Sensitivity to 5 mg/L
Turbidity	0.1 NTU
Electrical Conductivity (EC)	1 µmhos/sec
BACTERIA	
Fecal coliform	<20mpn/100ml
E. coli (fresh waters)	<20mpn/100ml
GENERAL	
	mg/L
Oil and Grease	5
Total Suspended Solids	2
Total Dissolved Solids	2
Total Organic Carbon	1
Biochemical Oxygen Demand	2
Chemical Oxygen Demand	20-900
Total Kjeldahl Nitrogen	0.1
Alkalinity	2
Total Ammonia-Nitrogen	0.1
Nitrate-Nitrite	0.1
Total Phosphorus	0.05
Total Hardness	2

¹ For Priority Pollutants, the MLs represent the lowest value listed in Appendix 4 of SIP. Method Detection Limit (MDLs) must be lower than or equal to the ML value. If a particular ML is not attainable in accordance with procedures set for in 40 CFR 136, the lowest quantifiable concentration of the lowest calibration standard analyzed by a specific analytical procedure may be used instead.

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2008-0092
 CITY OF MODESTO
 MUNICIPAL SEPARATE STORM SEWER SYSTEM
 STANISLAUS COUNTY

CONSTITUENTS	MLs
Methylmercury	0.05 ng/L
METALS	µg/L
Aluminum, Dissolved	50
Aluminum, Total	50
Copper, Dissolved	0.5
Copper, Total	0.5
Iron, Total	100
Lead, Dissolved	0.5
Lead, Total	0.5
Mercury	0.5 ng/L
Zinc	1
ORGANOPHOSPHATE PESTICIDES	µg/L
Chlorpyrifos	0.01
Diazinon	0.05
PYRETHROIDS/PYRETHRINS PESTICIDES IN SEDIMENT	Target Reporting Limit (ng/g)²
Bifenthrin	1
Cyfluthrin	4
Cypermethrin	4
Deltamethrin/Tralomethrin	4
Esfenvalerate/Fenvalerate	2
Fenpropathrin	4
Lambda-cyhalothrin	4
Permethrin	8

² US EPA 1660 by GC-ECD

TABLE 2
ADDITIONAL CONSTITUENTS AND ASSOCIATED MINIMUM LEVELS (MLs)¹
FOR THE STORM WATER AND URBAN DISCHARGE
MONITORING PROGRAM

CONSTITUENTS	MLs
CONVENTIONAL POLLUTANTS	mg/L
Total Phenols	0.1
Cyanide	0.005
GENERAL	mg/L
Volatile Suspended Solids	2
Total Petroleum Hydrocarbon	5
MBAS	0.5
Chloride	2
Fluoride	0.1
METALS	µg/L
Antimony	0.5
Arsenic	1
Beryllium	0.5
Cadmium	0.25
Chromium (total)	0.5
Hex. Chromium	5
Nickel	1
Selenium	1
Silver	0.25
Thallium	1
SEMIVOLATILE ORGANIC COMPOUNDS	µg/L
ACIDS	
2-Chlorophenol	2
2, 4-Dichlorophenol	1
2,4-Dimethylphenol	2
2, 4-Dinitrophenol	5

¹ For Priority Pollutants, the MLs represent the lowest value listed in Appendix 4 of SIP. Method Detection Limit (MDLs) must be lower than or equal to the ML value. If a particular ML is not attainable in accordance with procedures set for in 40 CFR 136, the lowest quantifiable concentration of the lowest calibration standard analyzed by a specific analytical procedure may be used instead.

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2008-0092
 CITY OF MODESTO
 MUNICIPAL SEPARATE STORM SEWER SYSTEM
 STANISLAUS COUNTY

2-Nitrophenol	10
4-Nitrophenol	5
4-Chloro-3-methylphenol	1
Pentachlorophenol	2
Phenol	1
2,4,6-Trichlorophenol	10
BASE/NEUTRAL	µg/L
Acenaphthene	1
Acenaphthylene	2
Anthracene	2
Benzidine	5
1,2 Benzanthracene	5
Benzo(a)pyrene	2
Benzo(g,h,i)perylene	5
3,4 Benzoflouranthene	10
Benzo(k)flouranthene	2
Bis(2-Chloroethoxy) methane	5
Bis(2-Chloroisopropyl) ether	2
Bis(2-Chloroethyl) ether	1
Bis(2-Ethylhexl) phthalate	5
4-Bromophenyl phenyl ether	5
Butyl benzyl phthalate	10
2-Chloroethyl vinyl ether	1
2-Chloronaphthalene	10
4-Chlorophenyl phenyl ether	5
Chrysene	5
Dibenzo(a,h)anthracene	0.1
1,3-Dichlorobenzene	1
1,4-Dichlorobenzene	1
1,2-Dichlorobenzene	1
3,3-Dichlorobenzidine	5
Diethyl phthalate	2
Dimethyl phthalate	2
di-n-Butyl phthalate	10
2,4-Dinitrotoluene	5
2,6-Dinitrotoluene	5
4,6 Dinitro-2-methylphenol	5
1,2-Diphenylhydrazine	1
di-n-Octyl phthalate	10
Fluoranthene	0.05
Fluorene	0.1
Hexachlorobenzene	1

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 STANISLAUS COUNTY

Hexachlorobutadiene	1
Hexachloro-cyclopentadiene	5
Hexachloroethane	1
Indeno(1,2,3-cd)pyrene	0.05
Isophorone	1
Naphthalene	0.2
Nitrobenzene	1
N-Nitroso-dimethyl amine	5
N-Nitroso-diphenyl amine	1
N-Nitroso-di-n-propyl amine	5
Phenanthrene	0.05
Pyrene	0.05
1,2,4-Trichlorobenzene	1
CHLORINATED PESTICIDES	µg/L
Aldrin	0.005
alpha-BHC	0.01
beta-BHC	0.005
delta-BHC	0.005
gamma-BHC (lindane)	0.02
alpha-chlordane	0.1
gamma-chlordane	0.1
4,4'-DDD	0.05
4,4'-DDE	0.05
4,4'-DDT	0.01
Dieldrin	0.01
alpha-Endosulfan	0.02
beta-Endosulfan	0.01
Endosulfan sulfate	0.05
Endrin	0.01
Endrin aldehyde	0.01
Heptachlor	0.01
Heptachlor Epoxide	0.01
Toxaphene	0.5
ORGANOPHOSPHATE PESTICIDES	µg/L
Prometryn	2
Atrazine	2
Simazine	2
Cyanazine	2
Malathion	1

MONITORING AND REPORTING PROGRAM ORDER NO. R5-2008-0092
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STANISLAUS COUNTY

HERBICIDES	µg/L
Glyphosate	5
2,4-D	0.02
2,4,5-TP-SILVEX	0.2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
(National Pollutant Discharge Elimination System)

February 2004

A. **GENERAL PROVISIONS**

1. Any violation of this Order constitutes a violation of the Federal Clean Water Act (CWA) and the California Water Code (CWC) and, therefore, may result in enforcement action under either or both laws.
2. The Clean Water Act provides that any person who violates a portion of this Order implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who willfully or negligently violates this Order with regard to these sections of the CWA is subject to a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both.
3. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another; protect the Discharger from liability under federal, state, or local laws; or guarantee the Discharger a capacity right in the receiving waters.
4. The Discharger shall allow representatives of the Regional Water Quality Control Board (hereafter Board), the State Water Resources Control Board (hereafter State Board) and the United States Environmental Protection Agency (hereafter U.S. EPA), upon presentation of credentials, at reasonable hours, to:
 - a. enter premises where wastes are treated, stored, or discharged and facilities in which any required records are kept;
 - b. copy any records required to be kept under terms and conditions of this Order;
 - c. inspect facilities, monitoring equipment, practices, or operations regulated or required by this Order; and
 - d. sample, photograph or video tape any discharge, waste, waste unit or monitoring device.
5. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by the California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, California Code of Regulations (CCR), Division 3, Chapter 14.
6. The Discharger shall at all times properly operate and maintain all facilities, and systems of treatment and control including sludge use and disposal facilities (and related appurtenances) that are installed or used to achieve compliance with this Order.

Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger only when necessary to achieve compliance with this Order.

7. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

- a. violation of any term or condition contained in this Order;
- b. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
- c. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
- d. a material change in the character, location, or volume of discharge.

The causes for modification include:

- a. New regulations. New regulations have been promulgated under Section 405(d) of the Clean Water Act, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- b. Land application plans. When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.
- c. Change in sludge use or disposal practice. Under 40 Code of Federal Regulations (CFR) 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

The Regional Board may review and revise this Order at any time upon application of any affected person or the Board's own motion.

8. The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order, or notification of planned changes or anticipated noncompliance, does not stay any condition of this Order.

The Discharger shall furnish, within a reasonable time, any information the Board or U.S. EPA may request to determine compliance with this Order or whether cause exists for modifying or terminating this Order. The Discharger shall also furnish to the Board, upon request, copies of records required to be kept by this Order.

9. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, **even if this Order has not yet been modified.**

10. If more stringent applicable water quality standards are approved, pursuant to Section 303 of the CWA, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

11. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
 - a. contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or
 - b. controls any pollutant limited in the Order.

The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

12. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
13. By-pass (the intentional diversion of waste streams from any portion of a treatment facility or collection system, except those portions designed to meet variable effluent limits) is prohibited except under the following conditions:
 - a. (1) by-pass was unavoidable to prevent loss of life, personal injury, or severe property damage; (severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a by-pass; severe property damage does not mean economic loss caused by delays in production);
and
 - (2) there were no feasible alternatives to by-pass, such as the use of auxiliary treatment facilities or retention of untreated waste; this condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a by-pass that would otherwise occur during normal periods of equipment downtime or preventive maintenance;
 - b. (1) by-pass is required for essential maintenance to assure efficient operation;
and
 - (2) neither effluent nor receiving water limitations are exceeded;
and
 - (3) the Discharger notifies the Board ten days in advance.

The permittee shall submit notice of an unanticipated by-pass as required in paragraph B.1. below.

14. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, failure to

implement an appropriate pretreatment program, or careless or improper action. A Discharger that wishes to establish the affirmative defense of an upset in an action brought for noncompliance shall demonstrate, through properly signed, contemporaneous operating logs, or other evidence, that:

- a. an upset occurred due to identifiable cause(s);
- b. the permitted facility was being properly operated at the time of the upset;
- c. notice of the upset was submitted as required in paragraph B. 1.; and
- d. remedial measures were implemented as required under paragraph A. 17.

In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof.

15. This Order is not transferable to any person except after notice to the Board. The Board may modify or revoke and reissue the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA.
16. Except for data determined to be confidential under Section 13267 of the CWC, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Board and U.S. EPA. Effluent data are not confidential.
17. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.
18. The fact that it would have been necessary for the Discharger to halt or reduce the permitted activity in order to comply with this Order shall not be a defense for violating this Order.
19. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by U.S. EPA under Section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.
20. The discharge of any radiological, chemical or biological warfare agent or high-level, radiological waste is prohibited.
21. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.
22. Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the CWC, Section 13050.

B. GENERAL REPORTING REQUIREMENTS

1. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, daily maximum effluent limitation, or receiving water limitation of this Order, the Discharger shall notify the Board by telephone (916) 464-3291 [*Note: Current phone numbers for all three Regional Board offices may be found on the internet at http://www.swrcb.ca.gov/rwqcb5/contact_us.*] within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Board waives

confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

2. Safeguard to electric power failure:
 - a. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.
 - b. Upon written request by the Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past five years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Board.
 - c. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Board not approve the existing safeguards, the Discharger shall, within ninety days of having been advised in writing by the Board that the existing safeguards are inadequate, provide to the Board and U.S. EPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Board, become a condition of this Order.
3. The Discharger, upon written request of the Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under B.2.

The technical report shall:

- a. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.
- b. Evaluate the effectiveness of present facilities and procedures and state when they became operational.
- c. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Board, after review of the technical report, may establish conditions, which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

4. The Discharger shall file with the Board a Report of Waste Discharge at least 180 days before making any material change in the character, location, or volume of the discharge. A **material change** includes, but is not limited to, the following:
 - a. Adding a major industrial waste discharge to a discharge of essentially domestic sewage, or adding a new process or product by an industrial facility resulting in a change in the character of

- the waste.
- b. Significantly changing the disposal method or location, such as changing the disposal to another drainage area or water body.
 - c. Significantly changing the method of treatment.
 - d. Increasing the discharge flow beyond that specified in the Order.
5. A publicly owned treatment works (POTW) whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the Discharger shall notify the Board by **31 January**. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Board may extend the time for submitting the report.
6. A manufacturing, commercial, mining, or silvicultural discharger shall notify the Board as soon as it knows or has reason to believe:
- a. That any activity has occurred or will occur that would result in the discharge of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels":
 - (1) 100 micrograms per liter ($\mu\text{g}/\text{l}$);
 - (2) 200 $\mu\text{g}/\text{l}$ for acrolein and acrylonitrile; 500 $\mu\text{g}/\text{l}$ for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/l) for antimony;
 - (3) five times the maximum concentration value reported for that pollutant in the Report of Waste Discharge; or
 - (4) the level established by the Board in accordance with 40 CFR 122.44(f).
 - b. That it expects to begin to use or manufacture, as an intermediate or final product or by-product, any toxic pollutant that was not reported in the Report of Waste Discharge.
7. A POTW shall provide adequate notice to the Board of:
- a. any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the CWA if it were directly discharging those pollutants, and
 - b. any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order, and
 - c. any planned physical alterations or additions to the permitted facility, or changes planned in the Discharger's sludge use or disposal practice, where such alterations, additions, or changes may justify the application of permit conditions that are different from or absent in the existing permit including notification of additional disposal sites not reported during the permit application

process, or not reported pursuant to an approved land application plan.

Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

8. The Discharger shall give advance notice to the Board of any planned changes in the permitted facility or activity that may result in noncompliance with this Order.
9. The Discharger shall submit technical reports as directed by the Executive Officer.
10. Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than two years per violation, or by both.

C. PROVISIONS FOR MONITORING

1. All analyses shall be performed in accordance with the latest edition of *Guidelines Establishing Test Procedures for Analysis of Pollutants*, promulgated by U.S. EPA (40 CFR 136) or other procedures approved by the Board.
2. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Board staff. The Quality Assurance-Quality Control Program must conform to U.S. EPA guidelines or to procedures approved by the Board.
Unless otherwise specified, all metals shall be reported as Total Metals.
Unless otherwise specified, bioassays shall be performed in the following manner:
 - a. Acute bioassays shall be performed in accordance with guidelines approved by the Board and the Department of Fish and Game or in accordance with methods described in U.S. EPA's manual for measuring acute toxicity of effluents (EPA-821-R-02-012 and subsequent amendments).
 - b. Short-term chronic bioassays shall be performed in accordance with U.S. EPA guidelines (EPA-821-R-02-013 and subsequent amendments).
3. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Board and U.S. EPA.
4. The Discharger shall conduct analysis on any sample provided by U.S. EPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to U.S. EPA's DMQA manager.
5. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
6. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed

monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy.

7. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this Order shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or be imprisoned for not more than two years per violation, or by both.
8. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board Executive Officer.
9. The records of monitoring information shall include:
 - a. the date, exact place, and time of sampling or measurements,
 - b. the individual who performed the sampling of measurements,
 - c. the date(s) analyses were performed,
 - d. the individual(s) who performed the analyses,
 - e. the laboratory which performed the analyses,
 - f. the analytical techniques or methods used, and
 - g. the results of such analyses.

D. REPORTING REQUIREMENTS FOR MONITORING

1. The Discharger shall file with the Board technical reports on self-monitoring performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this Order.
2. Monitoring reports shall be submitted on forms to be supplied by the Board to the extent that the information reported may be entered on the forms. Alternate forms may be approved for use by the Board.
3. The results of all monitoring required by this Order shall be reported to the Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.
4. The results of analyses performed in accordance with specified test procedures, taken more frequently than required at the locations specified in the Monitoring and Reporting Program, shall be reported to the Board and used in determining compliance.
5. Upon written request of the Board, the Discharger shall submit a summary monitoring report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
6. All reports shall be signed by a person identified below:
 - a. **For a corporation:** by a principal executive officer of at least the level of senior vice-president.

- b. **For a partnership or sole proprietorship:** by a general partner or the proprietor, respectively.
- c. **For a municipality, state, federal or other public agency:** by either a principal executive officer or ranking elected or appointed official.
- d. A duly authorized representative of a person designated in 6a, 6b or 6c of this requirement if:
 - (1) the authorization is made in writing by a person described in 6a, 6b, or 6c of this provision,
 - (2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position), and
 - (3) the written authorization is submitted to the Board.

Each person signing a report required by this Order or other information requested by the Board shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

The Discharger shall mail a copy of each monitoring report and any other reports required by this Order to:

Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

Note: Current addresses for all three Regional Board offices may be found on the internet at http://www.swrcb.ca.gov/rwqcb5/contact_us.

In addition, dischargers designated as a "major" discharger shall transmit a copy of all monitoring reports to U.S. EPA (see address in Provision G. 10).

E. DEFINITIONS:

- 1. The **daily discharge rate** is obtained from the following calculation for any calendar day:

$$\text{Daily discharge rate (lbs/day)} = \frac{8.34}{N} \sum_{I=1}^N Q_i C_i$$

In which N is the number of samples analyzed in a day. Q_i and C_i are the flow rate (mgd) and the

constituent concentration (mg/l), respectively, which are associated with each of the N grab samples that may be taken in a day. If a composite sample is taken, C_i is the concentration measured in the composite sample and Q_i is the average flow rate occurring during the period over which samples are composited.

2. The **monthly or weekly average discharge rate** is the total of daily discharge rates during a calendar month or week, divided by the number of days in the month or week that the facility was discharging.

Where less than daily sampling is required by this permit, the monthly or weekly average discharge rate shall be determined by the summation of all the daily discharge rates divided by the number of days during the month or week for which the rates are available.

For other than weekly or monthly periods, compliance shall be based upon the average of all rates available during the specified period.

3. The **monthly or weekly average concentration** is the arithmetic mean of measurements made during a calendar month or week, respectively.
4. The **daily maximum discharge rate** means the total discharge by weight during one day.
5. The **daily maximum concentration** is the greatest concentration found in grab or composite samples analyzed for one day.
6. A **grab sample** is an individual sample collected in less than 15 minutes.
7. Unless otherwise specified, a **composite sample** is a combination of individual samples collected over the specified sampling period:
 - a. at equal time intervals, with a maximum interval of one hour, and
 - b. at varying time intervals (average interval one hour or less) so that each sample represents an equal portion of the cumulative flow.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results.

8. **Sludge** means the solids, residues, and precipitates separated from, or created in, wastewater by the unit processes of a treatment system.
9. **Median** is the value below which half the samples (ranked progressively by increasing value) fall. It may be considered the middle value, or the average of the two middle values.
10. **Overflow** means the intentional or unintentional diversion of flow from the collection and transport systems, including pumping facilities.

F. PRETREATMENT PROGRAM REQUIREMENTS (Applies to dischargers required to establish pretreatment programs by this Order.)

The Discharger shall be responsible for the performance of all pretreatment requirements contained in 40 CFR Part 403 and shall be subject to enforcement actions, penalties, fines, and other remedies by the U.S. EPA, or other appropriate parties, as provided in the CWA, as amended (33 USC 1351, et. seq.)

The Discharger shall implement and enforce its Approved publicly owned treatment works (POTW) Pretreatment Program. The Discharger's Approved POTW Pretreatment Program is hereby made an enforceable condition of this permit. U.S. EPA may initiate enforcement action against an industrial user for noncompliance with applicable standards and requirements as provided in the Act.

The Discharger shall enforce the requirements promulgated under Sections 307(b), (c), and (d) and Section 402(b) of the CWA. The Discharger shall cause industrial users subject to Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

1. The Discharger shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:
 - a. Implement the necessary legal authorities as provided in 40 CFR 403.8(f)(1).
 - b. Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6.
 - c. Implement the programmatic functions as provided in 40 CFR 403.8(f)(2), in particular, the publishing of a list of significant violators.
 - d. Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3).

G. ANNUAL PRETREATMENT REPORT REQUIREMENTS (Applies to dischargers required to establish pretreatment programs by this Order.)

The Discharger shall submit annually a report to the Board, with copies to US U.S. EPA Region 9 and the State Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

An annual report shall be submitted by **28 February** or as otherwise specified in the Order and include at least the following items:

1. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants U.S. EPA has identified under Section 307(a) of the CWA which are known or suspected to be discharged by industrial users.

The Discharger is not required to sample and analyze for asbestos until U.S. EPA promulgates an applicable analytical technique under 40 CFR 136. Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto.

2. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant which the Discharger knows or suspects were caused by industrial users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name

and address of the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

3. The cumulative number of industrial users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.
4. An updated list of the Discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent than the federal categorical standards. The Discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:
 - a. complied with baseline monitoring report requirements (where applicable);
 - b. consistently achieved compliance;
 - c. inconsistently achieved compliance;
 - d. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
 - e. complied with schedule to achieve compliance (include the date final compliance is required);
 - f. did not achieve compliance and not on a compliance schedule; and
 - g. compliance status unknown.

A report describing the compliance status of each industrial user characterized by the descriptions in items c. through g. above shall be submitted for each calendar quarter **within 21 days of the end of the quarter**. The report shall identify the specific compliance status of each such industrial user and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report. This quarterly reporting requirement shall commence upon issuance of this Order.

5. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include:
 - a. the names and addresses of the industrial users subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
 - b. the conclusions or results from the inspection or sampling of each industrial user.
6. A summary of the compliance and enforcement activities during the past year. The summary shall

include the names and addresses of the industrial users affected by the following actions:

- a. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.
 - b. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
 - c. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
 - d. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
 - e. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.
 - f. Restriction of flow to the POTW.
 - g. Disconnection from discharge to the POTW.
7. A description of any significant changes in operating the pretreatment program which differ from the information in the Discharger's approved Pretreatment Program including, but not limited to, changes concerning: the program's administrative structure, local industrial discharge limitations, monitoring program or monitoring frequencies, legal authority or enforcement policy, funding mechanisms, resource requirements, or staffing levels.
 8. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

Duplicate signed copies of these reports shall be submitted to the Board and the

State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812-0100

and the

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

Order No. R5-2008-0092

NPDES PERMIT NO. CAS083526

FACT SHEET

**CITY OF MODESTO
MUNICIPAL SEPARATE STORM SEWER SYSTEM
STANISLAUS COUNTY**

I. PURPOSE

The Regional Water Quality Control Board, Central Valley Region (Regional Water Board) will be considering adoption of a renewal of the City of Modesto's Municipal Separate Storm Sewer System NPDES Permit. The purpose of this Fact Sheet is to provide the Discharger and interested parties an overview of the proposed permit and to provide the technical basis for the permit requirements. Sections I through IV describe water quality problems from storm water and urban runoff, and permit conditions designed to address these problems. Sections V and VI discuss each major element of the Discharger's Storm Water Management Plan (SWMP), that will be adopted by the Regional Water Board and is considered an integral and enforceable component of the proposed permit.

The proposed permit specifies requirements necessary for the Discharger to reduce the discharge of pollutants in urban runoff to the maximum extent practicable (MEP). However, since compliance with the MEP standard is an iterative process, the Discharger's storm water program must continually be assessed and modified as urban runoff management knowledge increases, to incorporate improved programs, control measures, best management practices (BMPs), etc. in order to achieve the MEP standard. This continual assessment, revision, and improvement of storm water management program implementation is expected to achieve compliance with water quality standards.

II. THE NEED TO REGULATE STORM WATER DISCHARGES

A. Impacts

The quality of storm water and urban runoff are fundamentally important to the health of the environment and the quality of life in the Central Valley Region. Polluted storm water runoff is a leading cause of water quality impairment in the Modesto Area. Other potential sources of pollutants include aerial deposition and runoff from agricultural areas upstream of the Modesto Urbanized Area. Storm water and urban runoff (during dry and wet weather) are often polluted with pesticides, fertilizers, animal droppings, trash, food

wastes, automotive byproducts, and many other toxic substances generated by urban environments. Water that flows over streets, parking lots, construction sites, and industrial, commercial, residential, and municipal areas carries these pollutants through the storm drain systems directly into the receiving waters.

The Natural Resources Defense Council (NRDC) 1999 report, *Stormwater Strategies, Community Responses to Runoff Pollution*¹ identifies two main causes of the storm water pollution problem in urban areas. Both causes are directly related to development in urban and urbanizing areas:

1. Increased volume and velocity of surface runoff. There are three types of human-made impervious covers that increase the volume and velocity of runoff: (i) rooftop, (ii) transportation imperviousness, and (iii) non-porous (impervious) surfaces. As these impervious surfaces increase, infiltration will decrease, forcing more water to run off the surface, picking up speed and pollutants.
2. The concentration of pollutants in the runoff. Certain activities, such as those from industrial sites, are large contributors of pollutant concentrations to the storm water system.

The report also identified several activities causing storm water pollution from urban areas, practices of homeowners, businesses, and government agencies.

Studies conducted by United States Geological Survey (USGS)² confirm the link between urbanization and water quality impairments in urban watersheds due to contaminated storm water runoff. Furthermore, the water quality impacts of urbanization and urban storm water discharges have been summarized by several other recent U.S. EPA reports.³ Urbanization causes changes in hydrology and increases pollutant loads, which adversely impact water quality and impairs the beneficial uses of receiving waters.

Increases in population density and imperviousness result in changes to stream hydrology including:

1. Increased peak discharges compared to predevelopment levels;
2. Increased volume of storm water runoff with each storm compared to pre-development levels;

¹ *Clean Water & Oceans: Water Pollution: In Depth Report Stormwater Strategies, Community Responses to Runoff Pollution*. Natural Resources Defense Council (NRDC), 1999.

² *Water Quality in the Puget Sound Basin, Washington and British Columbia, 1996-98*, Circular 1216 - USGS 2000; *Water Quality in the Long Island-New Jersey Coastal Drainages, New Jersey and New York, 1996-98*, Circular 1201 - USGS 2000

³ *Storm Water Phase II Report to Congress* (U.S. EPA 1995); *Report to Congress on the Phase II Storm Water Regulations* (U.S. EPA 1999); *Coastal Zone Management Measures Guidance* (U.S. EPA 1992)

3. Decreased travel time to reach receiving water; increased frequency and severity of floods;
4. Reduced stream flow during prolonged periods of dry weather due to reduced levels of infiltration;
5. Increased runoff velocity during storms due to a combination of effects of higher discharge peaks, rapid time of concentration, and smoother hydraulic surfaces from channelization; and
6. Decreased infiltration and groundwater recharge.

B. Benefits of Permit Program Implementation

Implementation of Best Management Practices (BMPs) should also reduce pollutant discharges, and improve surface water quality. The expected benefits of implementing the provisions of the City of Modesto MS4 National Pollutant Discharge Elimination System (NPDES) permit include:

1. **Enhanced Aesthetic Value:** Storm water affects the appearance and quality of a water body, and the desirability of working, living, traveling, or owning property near that water body. Reducing storm water pollution will increase benefits as these water bodies recover and become more desirable.
2. **Enhanced Opportunities for Boating:** reducing sediment and other pollutants, and increasing water clarity, which enhances the boating experience for users, offer additional benefits.
3. **Enhanced Commercial Fishing:** Important because commercial fisheries are a significant part of the nation's economy, and 28% of estuaries in the 305 (b) Report were impacted by storm water/urban runoff.
4. **Enhanced Recreational and Subsistence Fishing:** Pollutants in storm water can eliminate or decrease the numbers, or size, of sport fish and shellfish in receiving waters.
5. **Reduced Flood Damage:** Storm water runoff controls may mitigate flood damage by addressing problems due to the diversion of runoff, insufficient storage capacity, and reduced channel capacity from sedimentation.
6. **Reduced Illness from Consuming Contaminated Fish:** Storm water controls may reduce the presence of pathogens in fish caught by commercial or recreational anglers.

7. **Reduced Illness from Swimming in Contaminated Water:** Epidemiological studies indicate that swimmers in water contaminated by storm water runoff are more likely to experience illness than those who swim farther away from a storm water outfall.
8. **Enhanced Opportunities for Non-contact Recreation:** Storm water controls reduce turbidity, odors, floating trash, and other pollutants, which then allow waters to be used as focal point for recreation, and enhance the experience of the users.
9. **Drinking Water Benefits:** Pollutants from storm water runoff, such as solids, toxic pollutants, and bacteria may pose additional costs for treatment, or render the water unusable for drinking.
10. **Water Storage Benefits:** Storm water is a major source of impairment for reservoirs. The heavy load of solids deposited by storm water runoff can lead to rapid sedimentation of reservoirs and the loss of needed water storage capacity.⁴

III. STATUTORY AND REGULATORY HISTORY AND OTHER CONSIDERATIONS OF THE STORM WATER PROGRAM

A. Basis for Permit Conditions

In the 15 years following the introduction of the Clean Water Act in 1972, water pollution control efforts have focused primarily on certain process wastewater discharges from facilities such as factories and sewage treatment plants, with less emphasis on diffuse sources. The federal Clean Water Act (CWA) prohibit the discharge of any pollutant to waters from a point source, unless a NPDES permit authorizes the discharge. Because the focus on reducing pollutants was centered on industrial and sewage treatment discharges, the U.S. Congress amended the CWA in 1987, requiring the U.S. EPA to create phased NPDES requirements for storm water discharges.

In response to the 1987 Amendments to the CWA, the U.S. EPA developed Phase I of the NPDES Storm Water Program in 1990. Phase I requires NPDES permits for storm water discharges from: (i) "medium" and "large" MS4s generally serving, or located in incorporated places or counties with, populations of 100,000 or more people; and (ii) eleven categories of industrial activity (including construction activity that disturbs five acres or greater of land).

Phase II, adopted in December 2000 and became effective in March 2003, requires operators of small MS4s and small construction sites (construction activity disturbing greater than or equal to 1 acre or if part of a larger common

⁴Report to Congress on Phase II Storm Water Regulations. U.S. EPA, Office of Water. EPA-833-R-99-001, Oct. 1999.

plan of development or sale) in urban areas to control storm water runoff discharges.

B. Statutory Basis for Permit Conditions

The intent of the permit conditions is to meet the statutory mandate of the CWA. The conditions established by this permit are based on Section 402(p)(3)(B) of the CWA which mandates that a permit for discharges from MS4s must: (1) effectively prohibit the discharges of non-storm water to the MS4; and (2) require controls to reduce pollutants in discharges from MS4 to the maximum extent practicable (MEP) including best management practices, control techniques, and system design and engineering methods, and such other provisions determined to be appropriate. Compliance with water quality standards is to be achieved over time, through an iterative approach requiring improved BMPs.

The permit requires the implementation of a comprehensive SWMP through a selection of BMPs [see 40 Code of Federal Regulations (CFR) 122.44(k)] as the mechanism to achieving the reduction of pollutants in storm water to the maximum extent practicable (MEP) [see CWA. § 402(p)(3)(B)(iii)].

C. Regulatory Basis for Permit Conditions

As a result of the statutory requirements of the CWA, the U.S. EPA promulgated the MS4 Permit application regulations set forth in 40 CFR 122.26(d). These federal regulations described in detail the permit application requirements for MS4s operators. The information in the Report of Waste Discharge (ROWD)⁵ was utilized to develop the permit conditions and determine the Discharger's status in relationship to these conditions.

Portions of the City include agricultural, rural and open space land uses. It is not the intent of the federal storm water regulations to regulate storm water discharges from land uses of these types. Therefore, these areas are exempt from the requirements of this Order.

D. Discharge Limitations

No numeric effluent limitations are proposed at this time. In accordance with 40 CFR 122.44(k), the U.S. EPA has required a series of increasingly more effective BMPs⁶, in the form of a comprehensive SWMP and performance standards, in lieu of numeric limitations.⁷

⁵ City of Modesto, National Pollutant Discharge Elimination System, Municipal Stormwater Program, *Report of Waste Discharge & Proposed Stormwater Management Plan*, April 2007, Larry Walker Associates.

⁶ *Interpretative Policy Memorandum on Reapplication Requirements* of MS4s issued by U.S. EPA (61 Fed. Reg. 41697)

⁷ *Interim Permitting Approach for Water Quality-Based Effluent Limitations in Storm Water Permits* (61 Fed. Reg. 43761)

The State Water Resources Control Board (SWRCB) convened a Storm Water Panel (Blue Ribbon Panel) of experts to address the issue of numeric effluent limits.⁸ The study, finalized in June 2006, also concludes that it is not feasible at this time to set enforceable numeric effluent limits for storm water and non-storm water discharges from MS4s.

E. Permitting Approach

The 1987 amendments to the Clean Water Act required municipalities to apply for MS4 permits that would reduce the pollutants in discharges to the maximum extent practicable. EPA Phase I Final Rule and Regulations then established the regulations for NPDES permit application requirements. EPA discussed how the language of CWA section 402(p)(3) contemplated fundamentally different characteristics of many municipalities and that municipalities would have permits tailored to meet particular geographical, hydrological, and climatic conditions. EPA continued to discuss that if MS4 permit conditions required storm water management programs to be developed and implemented, the program elements were enforceable in accordance with the terms of the permit. EPA further pointed out that the permit goal for MS4 discharges is to avoid inflexibility in the types and levels of control. EPA stated that if mandatory requirements were appropriate, these requirements should be established under the authority of Section 402(p)(6), which addresses permit application requirements.

The SWMP is required as part of the application pursuant to 40 CFR 122.26(2)(d)(iv); therefore it is an integral and enforceable component of the MS4 permit. In addition, the California Superior Court ruled, *“Because the Stormwater Management Plan is incorporated and is deemed an integral part of the Permits...any changes to the Plan are actually changes to the Permits. Because these are changes to the Permits, the notice and comment requirements must be complied with.”* (*San Francisco Baykeeper vs. Regional Water Quality Control Board, San Francisco Bay Region, Consolidated Case No. 500527, California Superior Court, 14 November 2003*).

F. Policy

The State Water Resources Control Board adopted Resolution 68-16 (“Statement of Policy with Respect to Maintaining High Quality of Waters in California”) (Antidegradation Policy), which requires the Regional Water Board to assure maintenance of the high quality of waters of the State unless the Regional Water Board makes certain findings. Under this policy, water quality degradation may be allowed if the following conditions are met: 1) any change in water quality must be consistent with maximum benefit to people of the State; 2) will not unreasonably affect present and anticipated beneficial

⁸ Recommendations of the Blue Ribbon Panel were finalized as *The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities*, dated 19 June 2006.

uses; 3) will not result in water quality less than prescribed in the Basin Plan; and 4) the discharge is required to meet waste discharge requirements, discharges that result in the best practicable treatment or control necessary to assure that pollution or nuisance will not occur and the highest water quality consistent with maximum benefit to the people of the state will be maintained.

An antidegradation analysis was submitted in October 2007⁹. The water quality impacts presented in the analysis show that storm water runoff emanating from new urban development projected to occur in the Modesto Urbanized Area during the next five years will generally produce minor changes in loadings and concentrations of the five pollutants evaluated. The pollutants evaluated include: Copper, Diazinon, *E. Coli*, total dissolved solids (TDS) and total suspended solids (TSS). Constituents selected for evaluation include those identified by the Discharger as pollutants of concern (POC) in the Report of Waste Discharge¹⁰, constituents for which the Regional Water Board is developing Total Maximum Daily Loads (TMDLs), or constituents considered particularly relevant to the water quality of the Lower Tuolumne River which is a tributary to the San Joaquin River and Delta. The list of POCs identified in the ROWD was narrowed to this subset because surrogates (copper for aluminum, iron, and lead and *E. Coli* for fecal coliform) are assumed to be representative of pollutant loadings.

The section of the analysis entitled "Assessment of Stormwater Program and SWMP"¹¹ provides an assessment of the Storm Water Management Program. The program elements include new development standards that were developed and implemented during the last permit term. This order requires the revision of the development standards (a.k.a. *Assessment Report* (2003),¹² as part of the SWMP, which states that all new urban development and significant redevelopment projects are subject to the source control measures, runoff reduction control measures, and treatment control measures. Site design and site-specific source controls are generally the most effective means to control urban runoff pollution because they minimize the need for treatment and are required for all applicable projects. Treatment controls are required in addition to source controls to minimize the discharge of pollutants to the storm water conveyance system.

The Water Quality Impacts Assessment Methodology, found in the antidegradation analysis section entitled "*Assessment of Water Quality Impacts*", includes rainfall-runoff mass balance model that estimates a reduction in pollutants by the conversion of agricultural land use to new urban development. The model shows that the estimated pollutant loading attributable to new urban development show both increases and decreases depending on the constituent. The constituent-by-constituent evaluation of

⁹ City of Modesto, *Antidegradation Analysis*-Stormwater Management Program, October 2007, Larry Walker and Associates.

¹⁰ City of Modesto, National Pollutant Discharge Elimination System, Municipal Stormwater Program, *Report of Waste Discharge & Proposed Stormwater Management Plan*, April 2007, Larry Walker Associates.

¹¹ City of Modesto, *Antidegradation Analysis*-Stormwater Management Program, October 2007, Larry Walker and Associates.

¹² City of Modesto, *Stormwater Management Plan*, Appendix G-2, September 2003, Larry Walker Associates.

modeled impacts due to new urban development is presented in the “*Stormwater Discharge Quality*” section. The analysis reports that the estimated pollutant reductions for existing and new development range from 5% to 10%, with the exception of reductions assumed for diazinon. Diazinon has been phased out of both urban and agricultural use, but a conservative estimate of 75% rather than 100% pollutant reduction was chosen to account for stockpiling and continued allowable use of products containing the pesticide. The percent reductions shown in Table 14¹³ reflect a very conservative estimate for pollutant reduction due to implementation of Storm Water Management Plan best management practices. Additionally, implementation of best management practices (primarily, extended detention basins) for new urban development, along with elements of low impact development, such as onsite infiltration, are expected to further reduce pollutant concentrations and flows attributable to new urban development runoff. Specific elements of the Discharger’s Storm Water Management Plan are discussed in the section of the analysis entitled “*Assessment of Stormwater Program and SWMP*” and outlined in Appendix B.

Based on the antidegradation analysis: 1) some degradation for a limited number of constituents is consistent with the maximum benefit to the people of the state; 2) the activity is necessary to accommodate important economic or social development in the area; 3) resulting water quality is adequate to fully protect and maintain existing beneficial uses; and 4) the discharge will not cause measurable changes in the receiving waters to fall below applicable water quality objectives.

The analysis included an examination of: 1) existing applicable water quality standards; 2) ambient conditions in receiving waters compared to standards; 3) incremental changes in constituent loading, both concentration and mass; 4) treatability and levels of treatment or controls to be used and whether increased treatment is proposed to offset any increased volume or mass of discharge; 5) reduction of the discharge of pollutants from the urban areas to the maximum extent practicable (MEP); 6) comparison of the proposed increased volume or mass of pollutants relative to the volume or mass of pollutants that existed when the current permit was adopted; 7) an assessment of the significance of changes in ambient water quality compared to historic conditions; and 8) an analysis of alternatives to the discharge and treatment or control methods that would reduce water quality impacts.

The discharge from continued urban development will result in some minimal degradation of waters of the state and navigable waters of the United States, but in this case, such degradation is consistent with the maximum benefit to the people of the state. Limited degradation that does not cause exceedance of water quality objectives is warranted to allow for the economic benefit stemming from local growth. There is also a need in Modesto to

¹³ *Antidegradation Analysis*, page 36.

accommodate growth. The Regional Water Board does not have the jurisdiction to control growth in the City of Modesto, but is required to assure that the receiving waters are adequately protected as a result of urban discharges. The proposed Order allows storm water utility service necessary to accommodate housing and economic expansion in the area, and is considered to be a benefit to the people of the State. Compliance with these requirements will result in the reduction of discharge pollutants from the urban areas to the MEP. Reducing pollutants in the discharge to MEP will result in an insignificant impact on existing water quality.

IV. BACKGROUND- CITY OF MODESTO MS4

A. City of Modesto MS4 Permit History

The City of Modesto (hereafter City) is defined as a medium municipality (serving between 100,000 and 250,000 people) in the Code of Federal Regulations (CFR). As such, the City must obtain an NPDES municipal storm water permit. The City is currently regulated by Waste Discharge Requirements Order No. R5-2002-0182, NPDES No. CAS083526, adopted on 18 October 2002.

City of Modesto Statistics

The Industrial Waste Division of the Public Works Department administers the City's Storm Water Program. The Storm Water Program is funded from an enterprise fund established by City Council resolution. In 2001, the City passed Resolution No. 2001-433, which established sewer service charges and storm drainage surcharges. The following is a list of these fees:

1. Storm Sewer Fees: Non-residential properties are based on intensity of development and parcel lot size. Residential plots are charged based on lot size. A typical commercial storm drainage surcharge for a property size of 20,000 square feet is \$37.50/month. The current residential charge is \$3.23/month for a property lot between 3,501 and 7,000 square feet.
2. Connection Fees: There are no storm drainage connection fees.
3. Population: The population of Modesto is approximately 211,400
4. Grants/Loans: The City of Modesto does not receive grant/loan funds for the operation of the storm water program.

B. Storm Drain System

The City of Modesto is located in Stanislaus County at the confluence of Dry Creek and the Tuolumne River (tributaries of the San Joaquin River). The storm drain system has approximately 77 miles of storm drain lines and 20 pump stations within the City. Storm water discharges from the City drain to detention/retention basins (13 detention and 11 retention basins in the City), approximately 18 major outfalls to receiving waters (Tuolumne River or Dry Creek), Modesto Irrigation District (MID) laterals/drains, or rock wells (approximately 11,000).

Surface water discharges occur generally in the older areas of the City or those areas immediately adjacent to the Tuolumne River, Dry Creek or irrigation canals. Forty percent of storm water discharges to detention/retention basins, twenty percent to receiving waters (Tuolumne River or Dry Creek), ten percent direct to MID laterals/drains, and thirty percent to rock wells.¹⁴

C. Storm Water Discharge to Shallow Groundwater

The Discharger uses approximately 11,000 wells, which represents approximately thirty percent of the city, to dispose of storm water. These disposal wells are lined with rock for structural safety and additional treatment. The wells are known as “rock wells.”

The rock wells pose a potential threat to the shallow groundwater. The Discharger was required by its previous permit to address this threat through a monitoring program, new development program, public education and outreach program and through the illicit discharges program element. An Assessment Plan was submitted in February 2003 to address the rock well assessment. Monitoring of the groundwater and vadose zone was conducted to evaluate the effectiveness of BMPs and the impact of the discharge on shallow groundwater. The assessment program is complex and additional investigation is necessary to address pollution concerns. These Waste Discharge Requirements address this threat by requiring the Discharger to continue to implement rock well monitoring and shallow groundwater monitoring as outlined in the attached Provisions.

D. Total Maximum Daily Loads (TMDLs)

In compliance with the current Order No. R5-2002-0182, the Discharger submitted a Pesticide Plan. The proposed Order requires the Discharger to continue or initiate implementation of control programs for pollutants that have been identified to cause or contribute to exceedances of water quality standards and potential impairment of beneficial uses. The proposed permit requires the Discharger to begin sampling for Sediment Toxicity for pesticides (e.g., pyrethroids). The proposed permit requires continued sampling,

¹⁴ Source: Draft City of Modesto Storm Drainage Mater Plan, October 2006.

implementation of BMPs, and assessment of the effectiveness of the BMPs to ensure that they are performing to the MEP.

The Regional Water Board is currently in the process of developing TMDLs for listed water bodies within the Region. The proposed Order includes: Provisions consistent with the TMDL waste load allocations, the need to develop TMDLs for impaired waterbodies, and the Basin Plan implementation program. Prior to TMDL's being adopted and approved, the Discharger should implement actions and/or assessments to address water quality impairments. Once the Regional Water Board and U.S. EPA approve TMDLs, the proposed Order may be reopened to incorporate provisions to be consistent with waste load allocations established under the TMDLs.

The Regional Water Board considers storm water discharges from the Modesto Urbanized Area to be significant sources of pollutants. The CWA Section 303(d) Listed Waterbodies in the Modesto urbanized area include the following. These impairments are based on identified exceedances of water quality standards.

Waterbody	Reach	Estimated Size affected	Pollutant/Stressor(s)
San Joaquin River	Tuolumne River to Stanislaus River	8.4 miles	Boron DDT Electrical Conductivity Group A Pesticides Mercury Diazinon Chlorpyrifos Selenium Unknown Toxicity
San Joaquin River	Stanislaus River to Delta Boundary	3 miles	Boron DDT Electrical Conductivity Group A Pesticides Mercury Diazinon Chlorpyrifos Selenium Toxaphene Unknown Toxicity
Tuolumne River, Lower	Don Pedro Reservoir to San Joaquin River	60 miles	Diazinon Group A Pesticides Unknown Toxicity

The Basin Plan includes control programs for boron, electrical conductivity, chlorpyrifos, diazinon and selenium in the San Joaquin River. These control

programs include the TMDL waste load allocations applicable to this discharger. This Order is consistent with the Basin Plan.

The California Water Code allows the Regional Water Board to require dischargers submit technical and monitoring reports where the burden of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. The Regional Water Board may require the monitoring and technical reports that are identified specifically in this Order or in a separate Order under authority of the California Water Code.

V. STORM WATER MANAGEMENT PROGRAM ELEMENTS

Federal regulations (40 CFR 122.26(d)(2)(iv)) provide that, "A proposed management program covers the duration of the permit. It shall include a comprehensive planning process which involves public participation and where necessary intergovernmental coordination, to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques and system, design and engineering methods, and such other provisions which are appropriate. The program shall also include a description of staff and equipment available to implement the program."

As part of their application for permit renewal, the Discharger submitted a ROWD and proposed SWMP describing the framework for management of storm water discharges during the term of this permit. A revised SWMP is required to be submitted within 6 months of adoption of the order. The SWMP provides the goals and objectives, legal authorities, source identification process, funding sources, best management practices (BMPs) evaluation and improvement process, approach for effectiveness assessments of the programs, and a monitoring plan. The overall goals of the Discharger's SWMP are to a) Identify and control those pollutants in urban runoff that pose significant threats to the waters of the State and waters of the U.S. and their beneficial uses; b) comply with the federal regulations to eliminate or control, to MEP, the discharge of pollutants from urban runoff associated with the storm drain system; c) Achieve compliance with water quality standards; d) develop a cost-effective program which focuses on pollution prevention of urban storm water; e) seek cost effective alternative solutions where prevention is not a practical solution for significant problems; and f) coordinate implementation of control measures with other agencies. The SWMP and modifications or revisions to the SWMP that are approved in accordance with the proposed permit, are an integral and enforceable component of the proposed permit.

The SWMP includes the following major program components:

- Program Management (legal and fiscal)

- SWMP Development
 - o Construction Element
 - o Commercial/Industrial Business Element
 - o Municipal Operations and Facilities Element
 - o Illicit Connection and Illegal Discharge Elimination Element
 - o Public Outreach Element
 - o Planning and New Development Element
 - o Performance and Effectiveness Evaluations
- Monitoring Program
- Water Quality Based Programs
- Special Studies

Some of these program elements and the corresponding order requirements under those elements are discussed below.

A. **Program Management**

The order requires submission of an Annual Work Plan by 1 April of each year. The Annual Work Plan provides the SWMP's and the Discharger's proposed activities for the upcoming year beginning 1 July of the current year and ending 30 June the following year. The order also requires submission of an Annual Report by 1 September of each year. The Annual Report documents the status of the SWMP and the Discharger's activities during the previous fiscal year, including the results of a qualitative and quantitative field level assessment of activities implemented by the Dischargers, and the performance of tasks contained in the SWMP. The Annual Report includes a compilation of deliverables and milestones completed during the previous 12-month period, as described in the SWMP and Annual Work Plan.

B. **Construction Program**

Legal Authority

Federal regulations [40 CFR 122.26(d)(2)(iv)(D)] provide that a proposed management program must include "a description of a program to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal storm sewer system."

Background

As stated in the *California Storm Water Best Management Practice Handbook for Construction Activity* (BMP Handbook), "Construction usually increases the amount of impervious area causing more of the rainfall to run off, and increasing the speed at which runoff occurs. Unless properly managed, this increased runoff will erode natural and/or unprotected watercourses causing the watercourse to widen...Sedimentation can also contribute to accelerated

filling of reservoirs, harbors, and drainage systems.”¹⁵

C. **Industrial and Commercial Program**

Legal Authority

Federal regulations [40 CFR 122.26(d)(2)(iv)(C)] require the following, “A description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal and recovery facilities, industrial facilities that are subject to section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system.

The program shall:

1. Identify priorities and procedures for inspections and establishing and implementing control measures for such discharges;
2. Describe a monitoring program for storm water discharges associated with industrial facilities [...].”

Background

The municipality is ultimately responsible for discharges from the MS4. Because industrial awareness of the program may not be complete, there may be facilities within the MS4 area that should be permitted but are not (non-filers). The Phase I regulations requirement for industries to obtain permit coverage for storm water discharges is largely based on Standard Industrial Classification Code. This has been shown to be incomplete in identifying industries (which include commercial businesses) that may be significant sources of storm water pollution. In addition, the permitting authority may not have adequate resources to provide the necessary oversight of permitted facilities. Therefore, it is in the municipality’s best interest to assess the specific situation and implement an industrial/commercial inspection and enforcement program to control the contribution of pollutants to the MS4 from all these potential sources.

In the preamble to the 1990 regulations, the U.S. EPA clearly states the intended strategy for discharges of storm water associated with industrial activity:

“Municipal operators of large and medium municipal separate storm sewer systems are responsible for obtaining system-wide or area permits for their

¹⁵ California Storm Water Best Management Practice Handbook for Construction Activity. 1993.

system's discharges. These permits are expected to require that controls be placed on storm water discharges associated with industrial activity which discharge through the municipal system." The U.S. EPA also notes in the preamble "*municipalities will be required to meet the terms of their permits related to industrial dischargers.*"

Similarly, in the U.S. EPA's Guidance Manual¹⁶ (Chapter 3.0), it is specified that MS4 applicants must demonstrate that they possess adequate legal authority to:

- Control construction site and other industrial discharges to MS4s;
- Prohibit illicit discharges and control spills and dumping;
- Carry out inspection, surveillance, and monitoring procedures.

The document goes on to explain that "*control*", in this context means not only to require disclosure of information, but also to *limit, discourage, or terminate* a storm water discharge to the MS4. Further, to satisfy its permit conditions, a municipality may need to impose additional requirements on discharges from permitted industrial facilities, as well as discharges from industrial facilities and construction sites *not* required to obtain permits.

In the same Guidance Manual¹⁷ (Chapter 6.3.3), it is stated that the municipality is ultimately responsible for discharges from their MS4. Consequently, the MS4 applicant must describe how the municipality will help the U.S. EPA and authorized NPDES States to:

- Identify priority industries discharging to their systems;
- Review and evaluate storm water pollution prevention plans (SWPPPs) and other procedures that industrial facilities must develop under general or individual permits;
- Establish and implement BMPs to reduce pollutants from these industrial facilities (or require industry to implement them); and
- Inspect and monitor industrial facilities discharging storm water to the municipal systems to ensure these facilities are in compliance with their NPDES storm water permit, if required.

¹⁶ *Guidance Manual For the Preparation of Part 2 of the NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems* - U.S. EPA -November 1992

¹⁷ *Id.*

Discussion

Recognizing that the municipality is ultimately responsible for the quality of storm water discharges from the MS4, the municipalities are required to evaluate the industrial/commercial facilities and determine their compliance with the permit requirements, as well as their contribution to the MS4 and potential impacts to the receiving waters. The proposed permit requires the Discharger to update existing ordinances/standards/specifications if they do not provide sufficient legal authority to implement the Industrial and Commercial Program components as required by the regulations.

Integration of NPDES Program for MS4 with NPDES Program for Industrial Activities

Recognizing the dual coverage envisioned by the federal regulations¹⁸, and suggested partnership between local and State authorities, this Order requires the Discharger to coordinate with State activities for the implementation of the General Industrial Activities Storm Water Permit (General Industrial Permit). The goal is to control industrial sources and other sources not specifically covered under Phase I storm water regulations but identified as significant contributors of pollutants by the municipalities through their identification and prioritization studies. The net result should be a better and improved coordinated program with greater impact on limiting and eliminating (as a final goal) the contribution of pollutants to the receiving water while maintaining and/or restoring the capacity of the receiving water to sustain the beneficial uses without impairments.

Based on the dual coverage and partnership approach between the permitting authority and municipalities that the U.S. EPA envisioned in the storm water regulations^{19,20}, and in order to best use limited resources at the State and local levels, the proposed permit requires the Discharger to:

- (i) Control the storm water discharges associated with industrial activities and other commercial facilities identified as significant contributors of pollutants;
- and (ii) Assist the Regional Water Board in implementing the general permit for industrial activities. This approach is consistent with the nationwide approach used by the U.S. EPA in issuing MS4 permits.²¹ The education and outreach should be continued under the auspices of the Public Education program.

¹⁸ Federal Register Vol. 55, No 222, pp. 48000; U.S. EPA Storm Water Phase II Compliance Assistance Guide, 2000, pp. 4-32 and 5-11, where it clarifies the dual responsibility

¹⁹ Letter dated December 19, 2000, from Alexis Strauss, Director, Water Division, U.S. EPA Region IX, to Dennis Dickerson, Executive Officer, Regional Water Quality Control Board-Los Angeles Region.

²⁰ Letter dated April 30, 2001, from Alexis Strauss, Director, Water Division, U.S. EPA Region IX, to Honorable Stephen Horn, U.S. House of Representatives

²¹ MS4 NPDES Permits issued to Palm Beach County, Broward County, Sarasota County, Florida, Tulsa, Oklahoma, Denver, Colorado.

The strategy, as outlined in the draft permit, builds on the State/ municipality's partnership by focusing their limited resources on the following activities:

- The Discharger will take a lead role in inspecting restaurants, automotive service facilities, retail gasoline outlets, and industrial facilities not covered by the General Industrial Permit;
- The Regional Water Board will be the lead agency for inspections of facilities covered or in need of coverage under General Industrial Permit;
- The Discharger will assist the Regional Water Board in its activities to fully enforce the General Industrial Permit through spot check inspections, referrals, data information research, joint inspections; and
- The Regional Water Board and Discharger will coordinate their information systems and task scheduling to avoid duplication and strengthen their inspections activities.

D. Municipal Operations Program

Legal Authority

Federal regulations [40 CFR 122.26(d)(2)(iv)(A)(1,3,4,5, and 6)] require that the Discharger must develop a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable for all urban land uses and activities, including municipal areas and activities.

Background

Many dischargers provide services that ultimately result in the enhancement of the lives of the residents. Some examples of services include the prevention of sanitary sewer overflows; implementation of standard protocols for storage, usage, and disposal of pesticides, herbicides and fertilizers; conduct street sweeping activities; and annually determine the effectiveness of these services and identify necessary modifications to improve services.

The Discharger is required to update and continue to implement a Municipal Program in its SWMP to effectively prohibit non-storm water discharges and prevent or reduce pollutants in runoff from all municipal land use areas, facilities, and activities to the MEP.

E. Illicit Connection/Illegal Discharge Program

Legal Authority

Federal regulations [40 CFR 122.26(d)(2)(iv)(B)] state that a proposed management program shall be based on a description of a program, including

a schedule, to detect and remove (or require the discharger to the municipal storm sewer to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer. It states further that a Discharger must include in its proposed management program, a program, including inspections, to implement and enforce an ordinance, orders or similar means to prevent illicit discharges to the municipal storm sewer system.

Background

During dry weather, much of the discharge to storm drain systems consists of non-storm water sources. A significant amount of such discharges may be from illicit discharges or connections, or both. Illicit discharges may occur either through direct connections, such as deliberate or mistaken piping, or through indirect connections, such as dumping, spillage, subsurface infiltration, and washdown.

The Discharger is required to update and continue to implement an Illicit Discharge Detection and Elimination Program component of the SWMP to actively seek and eliminate illicit discharges and connections to the MEP.

F. Public Outreach Public Education Program (Collectively Public Outreach Program)

Legal Authority

Federal regulations [40 CFR 122.26(d)(2)(iv)(A)(6)] provide that the proposed management program include, "A description of a program to reduce to the maximum extent practicable, pollutants in discharges from municipal separate storm sewer system associated with the application of pesticides, herbicides, and fertilizer which will include, as appropriate, controls such as educational activities, permits, certifications, and other measures for commercial applicators and distributors, and controls for application in public right-of-ways and at municipal facilities." These regulations [40 CFR 122.26(d)(2)(iv)(B)(6)] also provide that the proposed management program include, "A description of education activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials."

To satisfy the Public Outreach Program, the Discharger needs to:

(i) Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local water bodies and the steps that can be taken to reduce storm water pollution; and (ii) Determine the appropriate BMPs and measurable goals for this minimum control measure.

Background

Implementation of a Public Outreach Program is a critical BMP and a necessary component of a storm water management program. The State Board Technical Advisory Committee “recognizes that education with an emphasis on pollution prevention is the fundamental basis for solving nonpoint source pollution problems.” The U.S. EPA Phase II Fact Sheet 2.3 finds that “An informed and knowledgeable community is critical to the success of a storm water management program since it helps insure the following: (i) greater support for the program as the public gains a greater understanding of the reasons why it is necessary and important, and (ii) greater compliance with the program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters.”²²

Furthermore, the public can provide valuable input and assistance to a municipal storm water management program and should play an active role in the development and implementation of the program. An active and involved community is essential to the success of a storm water management program.

Discussion of Requirements

Based on the background information, the Discharger should continue their educational storm water and urban runoff outreach programs. According to the U.S. EPA, materials and activities should be relevant to local situations and issues, and incorporate a variety of strategies to ensure maximum coverage.²³ To help address local situations and sources of specific pollutants, the Public Outreach Program requires specific programs for targeted communities, for example, ethnic groups, retail gasoline outlets (RGOs), and restaurants, that may not be reached by or understand existing storm water educational materials. In an effort to reach these groups the Public Outreach Program must require the development of a strategy to provide outreach information including bilingual materials to target ethnic communities. The U.S. EPA encourages partnerships and cooperation.²⁴ The proposed permit requires coordination between the Discharger and other MS4 Dischargers. This requirement will ensure that the Discharger is apprised of the most efficient and effective program. It is generally more cost-effective to have numerous operators coordinate to use an existing program than all developing their own local programs. Furthermore, directing materials or outreach programs toward specific groups of commercial, industrial, and institutional entities likely to have significant storm water

²² *Storm Water Phase II Final Rule - Public Education and Outreach Minimum Control Measure*. U.S. EPA Fact Sheet 2.3, January 2000.

²³ Phase II Fact Sheet 2.3

²⁴ *Id.*

impacts is recommended.²⁵ The next step in this targeted outreach program is education of specific businesses to facilitate employee compliance. Therefore, the permit requires implementation of a business outreach program to educate management and employees at prioritized businesses about storm water regulations. Also, a non-regulatory business assistance program would encourage small businesses that lack access to the expertise necessary to comply with storm water regulations and to implement pollution prevention measures. The business assistance program is not a requirement, however, its implementation is encouraged.

Program Performance Measures

The Discharger shall implement a Public Outreach Program using all media as appropriate to (1) measurably increase the knowledge of target communities regarding MS4s, impacts of urban runoff on receiving waters, and potential BMP solutions for the target audience; and (2) to change the behavior of target communities and thereby reduce pollutant releases to MS4s and the environment.

The Discharger will be required to update and continue to implement the Public Outreach Component of its SWMP to educate the public and encourage their participation in the implementation of the SWMP to the MEP. In addition, the Discharger will be required to continue to incorporate a mechanism for **public participation** in the implementation of the SWMP (i.e., programs that engage the public in cleaning up creeks, removal of litter in river embankments, stenciling of storm drains, etc.).

G. Water Quality-Based Programs

Section 303(d)(1)(A) of the CWA requires that “Each state shall identify those waters within its boundaries for which the effluent limitations...are not stringent enough to implement any water quality standard (WQS) applicable to such waters.” A TMDL is a quantitative assessment of the total pollutant load that can be discharged from all sources each day while still meeting water quality objectives. The CWA also requires states to establish a priority ranking of impaired waterbodies known as Water Quality Limited Segments and to establish Total Maximum Daily Loads (TMDLs) for such waters. This priority list of impaired waterbodies is called the Section 303(d) List. The current Section 303(d) List was approved by the SWRCB on 25 October 2006. The USEPA approved up to 99% of the State’s assessment determinations by letter dated 8 March 2007. The City of Modesto’s discharge of storm water into an impaired water body will be subject to load allocations and implementation plans established under the TMDLs.

²⁵ Phase II Fact Sheet 2.3

As discussed previously under Section D. “TMDLs,” the Modesto Urbanized Area has listed impaired water bodies pursuant to Section 303(d) of the CWA.

H. Planning and Land Development Program

Legal Authority

Federal regulations (40 CFR 122.26) require that pollutants in storm water be reduced to MEP. The U.S. EPA’s definition is intentionally broad to provide maximum flexibility in MS4 permitting and to give municipalities the opportunity to optimize pollutant reductions on a program-to-program basis.²⁶ The definition of MEP has generally been applied to mean implementation of economically achievable management practices. Because storm water runoff rates can vary from storm to storm, the statistical probabilities of rainfall or runoff events become economically significant and are central to the control of pollutants through cost effective BMPs. Further, it is recommended that storm water BMPs be designed to manage both flows and water quality for best performance.²⁷ It is equally important that treatment BMPs, once implemented, be routinely maintained.

Background

On a national level, the U.S. EPA is planning to standardize minimum BMP design and performance criteria for post-construction BMPs, and will likely build from the experience of effective state and local programs to establish national criteria.²⁸ The U.S. EPA, based on the NURP, supports the first half-inch of rainfall as generating first flush runoff.²⁹ First flush runoff is associated with the highest pollutant concentrations, and not pollutant load. The U.S. EPA considers the first flush treatment method, the rainfall volume method, and the runoff capture volume method as common approaches for sizing of water quality BMPs.

On 5 October 2000, the State Water Board adopted Order WQ 2000-11³⁰ concerning the use of Standard Urban Storm Water Mitigation Plans (SUSMPs) in municipal storm water permits for new developments and significant redevelopments by the private sector. The precedent setting decision largely sustained the LA Regional Water Board SUSMPs. The State Board amended the SUSMP to limit its application to discretionary projects as defined by CEQA, eliminated the category for projects in environmentally

²⁶ *Storm Water Phase II Final Rule* – Pre-Federal Register Version, p 87 (U.S. EPA 1999). See U.S. EPA’s discussion in response to challenges that the definition is sufficiently vague to be deemed adequate notice for purposes of compliance with the regulation.

²⁷ *Urban Runoff Pollution – Summary Thoughts* – The State of Practice Today and For the 21st Century. Wat. Sci. Tech. 39(2) pp. 353-360. L.A. Roesner (1999)

²⁸ *Storm Water Phase II Final Rule* – 64 Fed. Reg. 68759. See U.S. EPA’s discussion on construction and post-construction BMP requirements for Phase II.

²⁹ *A Watershed Approach to Urban Runoff: Handbook for Decisionmakers*, Terrene Institute and U.S. EPA Region 5 (1996). See discussion on sizing rules for water quality purposes, p 36.

³⁰ *State Water Board Order WQ 2000-11: SUSMP*; Memorandum from Chief Counsel to Regional Board Executive Officers, (December 26, 2000) discusses statewide policy implications of the decision.

sensitive areas, and set aside the requirement for retail gasoline outlets to treat storm water until a threshold is developed in the future. In addition, the State Water Board articulated its support for regional solutions and the mitigation banking. The State Water Board recognized that the decision includes significant legal or policy determinations that are likely to recur (Gov. Code §11425.60). Due to the precedent setting nature of Order WQ 2000-11, the proposed permit must be consistent with applicable portions of the State Water Board's decision and include SUSMPs, which the proposed permit refers to as Development Standards.

Discussion of Requirements

This component of the Phase I program requires the discharger update and continue to implement the Planning and Land Development Component of its SWMP to minimize the short and long-term impacts on receiving water quality from new development and redevelopment.

New/Revised Development Standards - Impacts from New Development

Treatment control BMP requirements on new development and redevelopment offer the most cost-effective strategy to reduce pollutant loads to surface waters. Retrofit of existing development will be expensive and may be considered on a targeted basis. Studies on the economic impacts of watershed protection indicate that storm water quality management has a positive or at least neutral economic effect while greatly improving the quality of surface waters.³¹

Financing the MS4 program offers a considerable challenge for municipalities. A proven successful financing mechanism is the establishment of a storm water utility.³² Utility fees, which are assessed on the property owner based on some estimate of storm water runoff generated for the site, are a predictable and dedicated source of funds. Utility fees can also provide a mechanism to provide incentives to commercial and industrial property owners to reduce impervious surface areas. Such incentives offer flexibility to property owners to choose the better economic option – paying more fees or making improvements to reduce runoff from the site.

³¹ *The Economics of Watershed Protection*, T. Schueler (1999), Center for Watershed Protection, Endicott, MD. The article summarizes nationwide studies to support the statement that watershed planning and storm water management provides positive economic benefits.

³² *Preliminary Data Summary of Urban Storm Water Best Management Practices* (1999), Report No. U.S. EPA-821-R-99-012, U.S. EPA. The document reviews municipal financing mechanisms and summarizes experience in the U.S. to date.

Low Impact Development (LID) and Hydromodification

This Order requires the Discharger to revise their Development Standards within one year from adoption of the proposed SWMP to incorporate LID design concepts. The Discharger is also required to revise applicable ordinances/standards/specifications within one year of the revision of the Development Standards.

VI. MONITORING PROGRAM

Legal Authority

Federal regulations (40 CFR 122.26 (d) (2)) require the following: (1) quantitative data from representative outfalls designated by the permitting authority, which shall designate between five and ten outfalls or field screening points as representative of the commercial, residential, and industrial land use activities of the drainage area contributing to the MS4; (2) estimates of the annual pollutant load of the cumulative discharges to waters of the United States from all identified municipal outfalls and the event mean concentration of the cumulative discharges for constituents of concern; (3) estimated reductions in loadings of pollutants from discharges of municipal storm sewer constituents from municipal storm sewer systems expected as the result of SWMP implementation; and (4) the Discharger to submit an annual report that identifies, among other things, water quality improvements or degradation. Items 1-3 are required as Part 2 of the initial application. However, since they are needed to evaluate the SWMP, they are being incorporated into this Order.

Using data collected from a monitoring program, storm water management efforts can be prioritized, helping limited resources be most effective in improving receiving water quality. For example, a monitoring program can provide data that can allow for specific receiving waters and watersheds to be targeted for urban runoff management and education efforts based on their need. Particular pollutants and their sources can also be identified and targeted using monitoring data. In addition, monitoring data can be useful in assessing the effectiveness of an urban runoff management program. Successful efforts that have resulted in receiving water quality improvements can be analyzed for application elsewhere, while areas that need greater efforts can also be identified. In general, a comprehensive monitoring program can supply a wealth of data that can be used in a wide range of applications for improving water quality.

The Modesto storm drainage system is unique since only twenty percent of the city area drains directly to surface waters (positive storm drain system). The other eighty percent of the city area drains into detention/retention basins, MID laterals/drains and rock wells. The positive storm drain system covers approximately 6,650 acres of the urban area with 33-percent draining to the Tuolumne River (0.9 percent of the Tuolumne River's total drainage area at that location), 54-percent to Dry Creek, and 13-percent to Modesto Irrigation Canals (MID Canals).

At a minimum, in order to meet the above referenced objectives, the Discharger shall conduct the following monitoring:

- (a) Urban Discharge Monitoring;
- (b) Receiving Water Monitoring;
- (c) Urban and Water Column Toxicity Monitoring;
- (d) Dry Weather Characterization;
- (e) Sediment Toxicity Monitoring.
- (f) Bioassessment Monitoring;
- (g) Targeted Pollutant Reduction Program
- (h) Detention Basin Monitoring;
- (i) Rock Well and Groundwater Monitoring;
- (j) Peak Discharge Impact Study;
- (k) Treatment Feasibility Study; and
- (l) BMP Effectiveness Study

A. Urban Discharge Monitoring

Based on the land usage, the Discharger has identified the following two locations for monitoring:

Scenic Drive - receives runoff from the Sonoma neighborhood, an entirely residential neighborhood.

Bodem Street - receives runoff from the McHenry Avenue Corridor, a mixed residential/commercial land use.

The Discharger monitored the same stations during the prior permit term. Using the same location will allow the Discharger to maintain consistency and compare the data obtained during the previous discharge monitoring studies. The Discharger shall monitor storm water discharges for every year during the five-year term of the permit starting with the 2008/09 wet season. The proposed monitoring will allow Modesto to continue to characterize storm water discharges and track water quality constituent levels.

If additional sample station locations are needed, they shall be established under the direction of Regional Water Board staff, and a description of the location shall be attached to this MRP. Sample collection and analysis shall follow standard EPA protocol. Each year, samples shall be collected **during two storm events and once during the dry season.**

B. Receiving Water Monitoring

Receiving water monitoring shall be conducted on Dry Creek and the Tuolumne River every year of the permit term. The purpose of receiving water monitoring will be to develop baseline water quality data on the receiving water and to assess any impacts from Modesto's urban runoff on the beneficial uses of the receiving water. Receiving water monitoring shall include water chemistry monitoring and bio-assessment monitoring. The receiving water chemistry monitoring will be performed in the Tuolumne River and Dry Creek, the two major water bodies, which receive Modesto's urban runoff. Monitoring shall be conducted at two sites (upstream and downstream) for each receiving water location. If additional sample station locations are needed, they shall be established under the direction of Regional Water Board staff, and a description of the location shall be attached to the Monitoring and Reporting Program. Sample collection and analysis shall follow standard EPA protocol. Receiving water monitoring shall be conducted **during two storm events and once during the dry season.**

At a minimum the discharger will monitor the constituents listed in Table 1 as part of the discharge monitoring and the receiving water monitoring. However, additional constituents may be added to the list if new water quality issues develop over the course of this permit term.

C. Urban and Water Column Toxicity Monitoring

Toxicity testing is used to assess the impact of storm water pollutants on the overall quality of aquatic systems.³³ It can be a very useful tool for storm water managers. The Center for Watershed Protection rated toxicity testing as a "very useful" indicator for assessing municipal storm water programs. Toxicity testing can also be used to evaluate the effectiveness of storm water BMPs and other storm water pollution reduction measures.³⁴ Managers can use the results of toxicity testing to identify areas of high concern and to establish priority locations for BMPs. Furthermore, Toxicity Identification Evaluations (TIEs) and Toxicity Reduction Evaluations (TREs) can be used to identify specific pollutants and their sources so that management actions can be more specifically prioritized.

Toxicity testing using multiple species is needed to provide a more complete assessment of the causes of toxicity in storm water.³⁵ Reliance on single species tests may not provide an accurate assessment of toxicity.³⁶ Because different species vary in their sensitivity to contaminants, tests with multiple species are needed to determine if other contaminants are present at toxic concentrations.³⁷ Specifically, an organism that is sensitive to pesticides, which have been found to be important factors in the toxicity of storm water

³³ Center for Watershed Protection, Environmental Indicators to Assess Stormwater Control Programs and Practices (1996).

³⁴ Ibid.

³⁵ Bay, Jones, Schiff. Study of the Impact of Stormwater Discharge on Santa Monica Bay (1999).

³⁶ Center for Watershed Protection

³⁷ Bay, et al.

from other watersheds, should be used.³⁸ U.S. EPA recommends the use of the *Ceriodaphnia dubia* (water flea) reproduction and survival test for the measurement of receiving water toxicity.

Furthermore, the toxicity component of the Monitoring Program should include toxicity identification procedures so that potential constituents of concern can be confirmed and others can be discounted. TIEs are needed to prioritize management actions.

Two wet weather and one dry weather sample will be analyzed for toxicity from each urban discharge monitoring station and corresponding receiving water discharge monitoring station every other year. When a sample is substantially toxic to either test species, a Phase I TIE will begin immediately. Substantial toxicity means the amount of toxicity necessary to successfully conduct a Phase I TIE. For example, *Ceriodaphnia* TIEs require at least 50% mortality in undiluted sample at any time during the 7-day duration of the initial chronic bioassay.³⁹ If enough toxicity is not present at the beginning of a TIE, it cannot be successfully completed.

After a toxic pollutant or class of pollutants is identified as causing at least 50% of the toxic responses in at least 3 samples at a sampling location, Toxicity Reduction Evaluations (TRE) will be conducted. If a Phase I TIE only identifies a broad category of toxicants (i.e., nonpolar organics), additional TIE analysis, to the extent possible, will be conducted until the source of toxicity is identified.

Overall, the toxicity monitoring program will assess the impact of storm water on the overall quality of aquatic systems and implement measures to ensure that those impacts are eliminated or reduced. Chemical monitoring does not necessarily reveal the impacts of storm water on aquatic life or beneficial uses of water bodies. Therefore, toxicity monitoring is a necessary component of a storm water monitoring program.

D. Dry Weather Characterization

The Discharger shall conduct dry weather monitoring to characterize dry weather urban discharge entering the storm drain system, rock wells and retention/detention basins.

The Discharger shall conduct dry weather urban run-off monitoring that screens 20% of the Discharger's outfalls each year for five years. Dry weather sampling sites for the positive storm drain system will be located at storm drain outfalls greater than 24 inches in diameter or at the nearest manhole upstream of the outfall.

³⁸ Bay, et al.
³⁹ SCCWRP

To characterize the impact of dry weather flows on groundwater, the Discharger shall monitor at least 20 representative rock wells and/or retention/detention basins (residential, industrial, commercial, and/or mixed use) during this Permit term.

Sites with sufficient flow will be analyzed in the field for temperature, pH, specific conductance (EC), methyl blue activated substances (MBAs, which are detergents/ surfactants), oil and grease, and turbidity. Grab samples shall be collected and analyzed by a certified laboratory for total dissolved solids, fecal coliform, *Escherichia coli*, phenols, chlorine, total copper, lead, iron, aluminum and diazinon.

The Discharger shall provide follow-up investigation to verify presence of an illicit connection and perform additional sampling to confirm absence or presence of the constituent if action levels are exceeded.

E. Sediment Toxicity

Ambient water and sediment quality monitoring by the Surface Water Ambient Monitoring Program (SWAMP - Sacramento Basin) identified a high incidence of sediment toxicity in several urban creeks that drain the suburbs of Roseville (Weston et al., 2005).⁴⁰ Nearly all creek sediments sampled caused toxicity to the resident aquatic amphipod *Hyalella azteca*, and about half the samples (10 of 21) caused nearly complete mortality (>90%). Another study by the Sacramento River Watershed Program (SRWP) observed sediment toxicity in almost every Sacramento area urban creek that was tested (Amweg et al., 2006).⁴¹ Several pyrethroid pesticides were present in sediment samples from both studies at acutely toxic concentrations. Pyrethroid pesticides are persistent, hydrophobic, and rapidly sorb to sediments in aquatic environments. The sediment toxicity observed was localized to within tens to hundreds of meters downstream of storm water outfalls draining residential areas.

The phase-out of the sale of diazinon and chlorpyrifos for most residential and commercial uses resulted in an increase in the use of pyrethroid pesticide use in urban and residential areas. Monitoring of sediment quality and urban runoff/discharges is needed to characterize sediment/water quality conditions, determine the significance of the increase in urban pyrethroid usage, and assess management practice effectiveness.

⁴⁰ Weston, D.P., R.W. Holmes, J. You, and M.J. Lydy. 2005. Aquatic toxicity due to residential use of pyrethroid insecticides. *Environ. Sci. & Technol.* 39: 9778-9784.

⁴¹ Amweg, E.L., D.P. Weston, J. You, and M.J. Lydy. 2006. Pyrethroid insecticides and sediment toxicity in urban creeks from California and Tennessee. *Environ. Sci. & Technol.* Published on web 1/31/2006.

F. Detention Basin Monitoring

The Discharger shall update and submit the Detention Basin Monitoring Work Plan, as part of the SWMP, to reflect additional monitoring of the following constituents: total mercury and methylmercury in water; total mercury in sediment. The work plan is designed to perform influent, effluent, and sediment chemistry/toxicity monitoring of at each basin. Monitoring shall be designed to evaluate the effectiveness of the detention basins in removing pollutants of concern and determining whether basins stimulate methylmercury production.

G. Rock Well Monitoring

The Discharger shall update and submit the Rock Well Assessment Plan (RWAP) in the revised SWMP. The purpose of the RWAP is to evaluate pollutant removal effectiveness and potential impacts on groundwater. In the prior permit term, the Discharger monitored two rock well installations at residential sites. The results of the investigation were inconclusive and additional study of the issue is necessary. The amended RWAP shall include a comprehensive plan with an implementation schedule and include, at a minimum, the following:

1. A monitoring plan, which shall include a sampling and analysis plan. The Monitoring plan shall state the objective of the monitoring effort, site selection process, and proposed sampling plan and schedule. The sampling and analysis plan shall include the following:
 - a. List of constituents to be analyzed based on the City's pollutant of concern analysis.
 - b. Sampling frequency of at least **two storm events** and **two monitoring events during the dry season**.
 - c. Representative rock wells based on land use areas for residential, industrial, and commercial (minimum of two for each land use), runoff characteristics, rock well installation, soil conditions, and potential for groundwater impact.
2. All data shall be provided electronically and be included in the Annual Reports as required in this MRP Order.
3. Coordination with USGS ongoing National Water Quality Assessment Program and Modesto Irrigation District efforts to characterize sources of pollutants and track groundwater contamination. The Discharger shall coordinate with USGS to combine or complement monitoring efforts to optimize the rock well assessment.
4. Schedule for completing the assessment and preparing a final report by year five of the permit term. The final report shall include summary

of monitoring data, analysis of vadose zone and groundwater quality, compared to storm water runoff samples (wet and dry weather), and recommendations regarding rock well installation and maintenance for the protection of groundwater quality. Groundwater quality results shall be summarized in the Annual Report in a table format showing the comparison of data to the applicable water quality standards. Water quality standards are provided by the Regional Water Board at:

http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_standards_limits/

H. Method Detection Limits

The Minimum Levels (MLs) listed in Appendix 4 of the State Board Policy for Implementation of Toxics Standards for Inland Surface Water, Enclosed Bays, and Estuaries of California, 2000 (SIP) represent the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interferences.⁴² These MLs must be incorporated into all water quality monitoring programs to detect priority toxic pollutants. The MLs are the only established criteria that take into consideration recent improvements in chemical analytical methods. If they are not used in the storm water program, concentrations of concern of priority toxic pollutants may not be detected. Detection and control of toxic pollutants in surface waters is necessary to achieve the CWA's goals and objectives.⁴³ Numeric criteria for toxic pollutants are necessary to evaluate the adequacy of existing and potential control measures to protect aquatic ecosystems and human health.⁴⁴ Also, using MLs will provide quantifiable data that is necessary to better assess water quality and to develop Waste Load Allocations and Load Allocations for TMDLs. Furthermore, non-detects cannot be used to accurately determine mass loadings. The criteria established in the CTR are legally applicable in the State of California for inland surface waters, enclosed bays and estuaries for all purposes and programs under the CWA.⁴⁵ Section 402(p)(3)(B)(iii) gives U.S. EPA and states the authority to incorporate appropriate water quality-based effluent limitations in NPDES permits for discharges from MS4s.⁴⁶

I. Bio-assessment

Monitoring and Reporting Program Order No. R5-2002-0182 required the Discharger to perform bioassessment at selected sites upstream and downstream of major discharge points from 2003 through 2007. The purpose of the bioassessment requirement was to assess the biological integrity of

⁴² SIP

⁴³ 65 Fed. Reg. 31683

⁴⁴ *Id.*

⁴⁵ 65 Fed. Reg. 31682

⁴⁶ 65 Fed. Reg. 31703

receiving waters, detect biological responses to pollution, identify probable causes of impairment not detected by chemical and physical water quality analysis, and provide a more holistic approach to evaluating processes of the waterways for designing effective BMPs. Two years of data has been collected, but provides a limited assessment of overall biological response. Additional time is needed in order to fully evaluate biological information collected to date, so that future monitoring can be adapted to continue assessment of biological integrity of receiving water, while linking more directly with the statewide Surface Water Ambient Monitoring Program's (SWAMP's), long term goal of utilizing bioassessment to develop biocriteria for a variety of eco-regions and land-use dominated areas in California. Further bioassessment monitoring activities will not be required under this permit until the evaluation of the existing data is complete, and the monitoring effort is adapted in consultation with SWAMP's bioassessment workgroup.

J. Peak Discharge Impact Study

The Discharger shall continue to conduct a study to determine the extent of erosion of natural stream channels and banks caused by urbanization. If appropriate, the Discharger shall evaluate peak flow control and determine numeric criteria to prevent or minimize erosion of natural stream channels and banks caused by urbanization.⁴⁷

K. BMP Effectiveness Study

The BMP Effectiveness Study is an integral part of the storm water monitoring program. It is necessary to document the effectiveness of treatment control BMPs so that the Discharger can make informed decisions on the use of BMPs.

VII. Program Effectiveness Assessment

The proposed permit requires the Discharger provide an analysis of the effectiveness of their SWMP in their Annual Reports. The assessment shall identify the direct and indirect measurements that the Discharger used to track the effectiveness of their programs as well as the outcome levels at which the assessment is occurring consistent with the proposed permit. Direct and indirect measurements shall include, but not be limited to, conformance with established Performance Standards, quantitative monitoring to assess the effectiveness of Program Elements, measurements or estimates of pollutant load reductions or increases from identified sources, raising awareness of the public, and/or detailed accounting/ documentation of SWMP accomplishments.

⁴⁷ Development Standards require the development of numerical criteria for peak flow control in natural drainage systems.

- a. The Discharger will be required to track the long-term progress of their SWMP towards achieving improvements in receiving water quality.
- b. The Discharger will be required to use the information gained from the program effectiveness assessment to improve their SWMPs and identify new BMPs, or modification of existing BMPs. This information shall be reported within the Annual Reports consistent with this Order.
- c. Long Term Effectiveness Assessment (LTEA) Strategy: The Discharger will develop a LTEA strategy, which shall build on the results of the Annual Reports and the initial program effectiveness assessments. The LTEA is required to be submitted to the Regional Water Board no later than 180 days prior to the permit expiration date (**by 12 December 2012**) and shall identify how the Discharger will conduct a more comprehensive effectiveness assessment of the storm water program as part of the SWMP. The strategy will address the storm water program in terms of achieving both programmatic goals (raising awareness, changing behavior) and environmental goals (reducing pollutant discharges, improving environmental conditions).