

## **Program Evaluation Report**

### **Statewide NPDES Storm Water Permit for the State of California, Department of Transportation Properties, Facilities, and Activities (District 5) (Order No. 99-06-DWQ)**

#### **Executive Summary**

Tetra Tech, Inc., with assistance from U.S. EPA Region 9 and the California Regional Water Quality Control Board, Central Coast Region (Regional Board), conducted a program evaluation of the State of California's Department of Transportation (Caltrans) District 5 storm water management program (Program) in July 2002. The purpose of the evaluation was to determine the permittees' compliance with the Caltrans Statewide National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Discharge Permit and to review the overall effectiveness of the Program with respect to EPA's storm water regulations. The evaluation team reviewed the permittees' compliance with the NPDES permit requirements and the August 2001 Statewide Storm Water Management Plan (SWMP) and conducted an in-field verification of the implementation of selected program elements.

This program evaluation focused on Caltrans District 5 only, not the statewide program as a whole. At the request of the Regional Board, the evaluation team did not inspect active construction sites or evaluate Caltrans inspectors as is typical of other NPDES MS4 evaluations performed in California. However, a detailed file and program review was performed of the construction inspection program organization, administration and enforcement processes. Sections 1.4 and 1.5 of this report discuss in more detail the program areas evaluated and the limitations of this evaluation.

This program evaluation report identifies program deficiencies, as well as positive attributes, and is not a formal finding of violation. Program deficiencies are areas of concern for successful program implementation. Positive attributes are indications of overall progress in implementing the program.

The following program deficiencies were considered the most significant:

- Facility Pollution Prevention Plans (FPPPs) were not site-specific and did not include site maps.
- The current SWMP and District 5 Regional Work Plan did not include measurable goals for SWMP implementation.

The following elements of the permittees' program were particularly notable:

- The NPDES storm water management program is a part of the Design Division within District 5, ensuring that storm water is considered in the critical design and planning stages of projects.
- The District administers three levels of construction inspections: statewide Storm Water Task Force Inspections, on-site contractor self-inspections, and District construction staff inspections.

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## **1.0 Introduction**

### **1.1 Program Evaluation Purpose**

Tetra Tech, Inc., with assistance from U.S. EPA Region 9 and the California Regional Water Quality Control Board, Central Coast Region (Regional Board), conducted a program evaluation of the State of California's Department of Transportation (Caltrans) District 5 storm water management program (Program) in July 2002. The twofold purpose of the program evaluation was (1) to determine the permittees' compliance with the National Pollutant Discharge Elimination System (NPDES) permit (Board Order No. 99-06-DWQ) and (2) to evaluate the current implementation status of District 5 activities to comply with the current Statewide Storm Water Management Plan (SWMP) and EPA's storm water regulations. Secondary goals included the following:

- Review the overall effectiveness of the District 5 Program.
- Identify and document positive elements of the Program that could benefit other Phase I and Phase II permittees.
- Acquire data to assist in reissuance of the permit.

40 CFR 122.41(i) provided the authority to conduct the program evaluation.

This evaluation reviewed the practices and permit compliance status of Caltrans District 5 only.

### **1.2 Permit History**

The NPDES storm water permit was issued on July 15, 1999, and is scheduled for reissuance on July 15, 2004. The current SWMP was approved by the State Water Resources Control Board (State Board) in August 2001. Permit element F.3 requires Caltrans to update the statewide SWMP "each year as part of the Annual Report." At the time of the evaluation, the State Board was reviewing an April 2002 version of the new SWMP, but it had not yet been approved. Therefore, the evaluation team based the review on the August 2001 SWMP.

### **1.3 Logistics and Program Evaluation Preparation**

Before initiating the on-site program evaluation, Tetra Tech, Inc., reviewed the following Program materials:

- NPDES Board Order No. 99-06-DWQ
- Caltrans Statewide Storm Water Management Plan, August 2001
- Caltrans Annual Report, April 2002
- Caltrans District 5 Regional Work Plan, April 2002
- Caltrans Statewide Storm Water Quality Practices Guidelines, April 2002
- Year-End Performance Report: A Summary of Storm Water Task Force Construction Inspections, May 2002
- Caltrans Storm Water Quality Handbooks (November 2000)

On July 22–26, 2002, Tetra Tech, Inc., with assistance from the Regional Board, conducted the program evaluation. The evaluation schedule was as follows:

<b>Monday July 22, 2002</b>	
Afternoon	Program evaluation kickoff meeting
<b>Tuesday, July 23, 2002</b>	
Morning	Maintenance Culvert Inspection/Inventory Program NPDES Program coordination Construction Compliance Program Maintenance facility inspections
Afternoon	Project development process Vegetation Management Program Construction field process Cal Poly Erosion Control Lab field visit
<b>Wednesday July 24, 2002</b>	
Morning	Public education Maintenance facility Pollution Prevention Plans Reporting requirements/process
Afternoon	Design of pollution prevention, construction, and treatment best management practices (BMPs) Maintenance BMPs Field trip: Streambank stabilization and erosion reduction projects
<b>Thursday July 25, 2002</b>	
Morning	Headquarters programs as related to District 5 Databases, reporting
Afternoon	Exit interview and presentation of preliminary findings

Upon completion of the evaluation, an exit interview was held with the Caltrans District 5 to discuss the preliminary findings. During the exit interview, the parties were informed that the findings were to be considered preliminary pending further review by EPA and the Regional Board.

**1.4 Program Areas Evaluated**

The Caltrans MS4 statewide storm water program is significantly different from a traditional municipal MS4 storm water program for several reasons. First, because Caltrans has a statewide permit and storm water management program, much of the policy and program decisions are not made at the implementation level (individual Districts); rather they are decided at the Caltrans headquarters level. Normally, storm water program development and implementation necessary to comply with an MS4 permit are performed by the same entity (e.g. local government permittee). Second, Caltrans does not have authority to regulate storm water discharges outside its right-of-way, unlike cities and counties, which can control storm water discharges from both public and private property entering their storm drain system through ordinances or local policies. For example, Caltrans cannot conduct industrial inspections (except for airspace leasing or encroachment permit holders) like a local government would be expected to do to comply with a MS4 permit. For these reasons, the Caltrans MS4 program evaluation consisted of a program evaluation conducted with District staff and an in-field inspection primarily of maintenance facilities and related activities (e.g. hydroseeding, culvert cleanouts, stream

restoration and slope stabilization projects). In addition, at the request of the Regional Board, this evaluation did not include an in-field evaluation of active construction projects.

The following program areas were evaluated within Caltrans District 5:

- District 5 Storm Water Program Management
- Construction Program Management
- Maintenance Program Management
- Education and Public Participation
- Program Evaluation/Reporting

### **1.5 Program Areas Not Evaluated**

The following areas were not evaluated in detail as part of the program evaluation:

- Activities outside Caltrans District 5.
- Wet-weather monitoring program and monitoring program details (e.g., sampling locations, sample types, sampling frequency, parameters monitored).
- Evaluation of on-site erosion and sediment control activities on active Caltrans construction sites. The review of the construction program consisted of a programmatic evaluation of the construction inspection process.
- Detailed review of the design, installation, and maintenance of roadway runoff collection and treatment controls.
- Inspection reports, plan review reports, and other relevant files. The program evaluation team did not conduct a detailed file review to verify that all elements of the Program were being implemented as described. Instead, observations by the evaluation team and statements from the copermittees' representatives were used to assess overall compliance with permit requirements. A detailed file review of specific program areas could be included in a subsequent evaluation.

### **1.6 Additional Program Areas Recommended for Evaluation**

The evaluation team recommends that the following additional evaluations be conducted:

- An assessment of other Caltrans Districts not evaluated.
- An evaluation of statewide design standards for permanent treatment control devices.
- A more intensive review and field visit of BMPs for maintenance yards and construction activities.
- A review of headquarters-level administration of the statewide program in all regions and districts in the state.

## 2.0 Program Evaluation Results

This program evaluation report identifies program deficiencies, as well as positive attributes, and is not a formal finding of violation. Program deficiencies are areas currently of concern for successful program implementation. Positive attributes are indications of overall progress in implementing the Program. The evaluation team identified only positive attributes that were innovative (beyond minimum requirements). Some areas were found to be simply adequate, not particularly deficient or innovative, and therefore are not described in this evaluation report.

The evaluation team focused on aspects of the Program demonstrated in Caltrans District 5 only, not on the statewide program as a whole. Therefore, the permittees should not consider the enclosed list of program deficiencies a comprehensive evaluation of all statewide program elements and their overall implementation.

The most significant program deficiencies, challenges, and positive attributes identified during the evaluation are noted in the Executive Summary and are identified with text boxes in the following subsections.

### 2.1 Evaluation of Program Management

#### Positive Attribute:

- *District 5 has multiple levels of coordination and communication regarding storm water management and has developed an NPDES Storm Water Responsibility Matrix to facilitate efficient implementation of the SWMP.*

This coordination occurs in the District divisions—Construction, Design, and Maintenance—as well as between the District staff and headquarters. Each division has a storm water coordinator, and the storm water coordinators meet regularly to discuss issues and pending projects. In addition, District 5 staff members participate in regular Storm Water Action Team (SWAT) meetings and initiatives at the state headquarters level. These SWATs have been formed to ensure consistency among the programs. District 5 NPDES staff members participate in the Water Quality SWAT, which has a charter with established goals. In addition, District 5 staff members participate in the new Multi-disciplinary Slope Team, which aims to improve slope maintenance and stabilization around the State.

- *The NPDES storm water management program is a part of the Design Division within District 5, ensuring that storm water is considered in the critical design and planning stages of projects.*

District 5 has chosen to house the NPDES program and staff within its Design Division, instead of within the Environmental Review Section of the Department. This approach helps ensure that storm water is considered in all design and planning phases of a project, including project location, stream crossings, swale design, vegetation, landscaping, maintenance, etc. NPDES staff members participate in project development teams for pending projects and review each document during the process to ensure that storm water needs are addressed.

## 2.2 Evaluation of Construction Program Management

At the request of the Regional Board, the evaluation team did not inspect active construction sites or evaluate Caltrans inspectors as they conducted typical storm water construction inspections. The evaluation focused on the stormwater requirements placed on construction sites and how Caltrans ensures compliance with those requirements. The program evaluation found the following results:

### Positive Attributes:

- *District 5 administers three levels of construction inspections: statewide Storm Water Task Force Inspections, on-site contractor self-inspections, and District construction staff inspections.*

The Caltrans construction inspection program has multiple layers of oversight to ensure compliance. First, on-site Caltrans and contractor staff perform self-inspections on all active sites either weekly or biweekly, depending on the time of year. A storm water quality construction site inspection checklist (Attachment H of the Caltrans Storm Water Quality Handbook – SWPPP/WPCP Preparation Manual) has been developed for the contractor’s water pollution control manager to use.

The District 5 construction storm water inspector also conducts less-frequent inspections on an on-call basis of selected sites to verify compliance. This inspector is also responsible for ensuring that local staff are trained and reviews SWPPPs. The evaluation team visited the Cuesta Grade construction project in San Luis Obispo County as an example of how the District implements the construction inspection program.

Finally, the Storm Water Task Force, which consists of third-party contractors that provide an independent evaluation, conducts inspections statewide in all Districts to verify compliance with the permit. The Task Force conducted about 90 inspections within District 5 (including reinspections) during the October 16, 2000 through October 15, 2001 period. Construction inspection checklists have been developed for both the on-site staff and the Storm Water Task Force. In addition, the Storm Water Task Force reports yearly on the status of their inspections (Caltrans, 2002, *Year-End Performance Report: A Summary of Storm Water Task Force Construction Compliance Inspections*, CTSW-RT-02-015). These multiple levels of construction inspections help ensure that erosion controls are implemented and maintained.

- *Caltrans requires that contractors’ water pollution control managers have formal training in storm water and erosion and sediment control practices.*  
All employees that have storm water quality management responsibilities are required to have storm water pollution prevention training once every four years. The November 2000 Caltrans storm water quality handbook, *SWPPP/WPCP Preparation Manual*, requires that both the contractor’s water pollution control manager and the Storm Water Pollution Prevention Plan (SWPPP) preparer must have at least 24 hours of formal storm water pollution prevention training.

- *Caltrans has developed a table of recommended erosion control BMPs for different areas of the State during rainy/non-rainy seasons so contractors, Caltrans staff, and regulatory agencies know what types of BMPs generally should be used.*  
Tables 2-2 and 2-3 in the Caltrans *Construction Site Best Management Practices Manual* (2000) describe the types of temporary BMPs recommended for sites depending on the slope, location within the State, and season (rainy or non-rainy). The table helps determine when soil stabilization, linear sediment barriers, or desilting basins should be used. On-site contractors still need to determine the exact type of temporary BMP to use, but these tables reduce the guesswork often involved in determining which of these broad categories of BMPs should be applied.

### 2.3 Evaluation of Maintenance Program Management

#### Positive Attribute:

- *District 5 is participating in an outfall and culvert maintenance program that uses global positioning system (GPS) and TV technology to identify and inspect outlets for maintenance issues.*  
If this program is fully implemented after the pilot program, it will eventually be matched with existing culvert and outfall maintenance programs. At this point the District is able to inspect about 260 outfalls per month, which equates to about 5 percent of the District's 20,000 outfalls per year. However, this maintenance program could be used to more regularly inspect outfalls for damage and potential illicit discharges. The pilot project ends in July 2003. It is recommended that this regular approach to culvert maintenance and inspection be continued beyond that date.
- *District 5 uses the airspace leasing and the encroachment permit program to monitor storm water discharges from properties adjacent to Caltrans rights-of-way.*  
The District controls third-party activities on Caltrans rights-of-way through conditions associated with encroachment permits and airspace leasing. Encroachment permits issued in District 5 may include conditions that require implementation of certain BMPs and provide Caltrans review and approval authority over SWPPPs. In addition, airspace leases allow for semiannual inspections by Caltrans right-of-way agents for items such as water quality.
- *The District deposits Vactor Truck waste (i.e., sand, silt, debris, and water) into a designated decanting basin.*  
Caltrans District 5 recently purchased a Vactor truck to remove silt, sediment, and other debris from storm drains and culverts. Regular storm drain and culvert cleaning maintains hydraulic connections and normal flow paths. Tetra Tech, Inc. observed the Vactor truck cleaning out a storm drain along State Highway 101, south of San Luis Obispo. The Vactor truck shoots a high-pressure water nozzle into the culvert, vacuuming up the water and debris flowing from the drain. Once full, the Vactor truck deposits its contents into a designated decanting basin. The decanting basin for the observed culvert cleaning was located in an upland area away from obvious drainage paths, at the San Luis Obispo Maintenance Station. If believed to be contaminated, the contents of the decanting basin are sampled prior to being sent to a

land fill or used as fill material. The Vector truck was also washed down into the designated decanting basin.

Deficiencies Noted:

- *The District lacks adequate, current standards for BMP implementation, selection, and design.*  
The current version of Caltrans' *Storm Water Quality Handbooks Maintenance Staff Guide* (July 1998) does not contain detailed information on maintenance BMP implementation, selection, or design standards. This document is being revised and is expected to contain more detail when completed and approved. It is recommended that Caltrans include all appropriate BMPs from the construction BMP manual (e.g., hydroseeding) in the revised maintenance BMP manual.
- *Minor housekeeping and BMP implementation issues were observed at maintenance facilities.*  
Caltrans operates 18 maintenance stations throughout District 5. The evaluation team inspected three Caltrans maintenance facilities in Santa Maria (Santa Maria maintenance station) and San Luis Obispo (District Office maintenance yard and shop). While storm water controls were generally applied on these facilities, several minor housekeeping and BMP implementation issues are noted below.

A leak was observed at the Santa Maria maintenance facility diesel fueling station. The fueling nozzle had been replaced without discharging the entire quantity of diesel into the vehicle. The nozzle was dripping and a pool of diesel was observed beneath the nozzle. The facility representative covered the spill with absorbent material during the evaluation. The facility was recommended to place a spill kit next to the diesel fueling station and a drip pan underneath the fueling nozzle.

At the San Luis Obispo maintenance yard, a storm water drain was observed approximately 10 feet north of the fueling area. A drain cover and spill kit was observed in the fueling shed; however the spill kit should have been located on the fueling island. Without adequate containment, a fuel spill could quickly flow to the storm drain.

At the San Luis Obispo maintenance shop, across from the maintenance yard, sand, silt, and other debris was observed in front of the storm water discharge points. The sand appeared to originate from broken sand bags. The shop yard should be swept and the storm drain inlets cleaned prior to the 2002-2003 rainy season.

- *Facility Pollution Prevention Plans (FPPPs) were not site-specific and did not include site maps.*

Caltrans' *Statewide Storm Water Management Plan* (SWMP) (August 2001) states that Facility Pollution Prevention Plans (FPPPs) have been developed for each maintenance facility owned or operated by Caltrans (Section 5.6). "The FPPPs describe the activities conducted at the facility and the BMPs to be implemented to reduce the discharge of pollutants in storm water runoff from these facilities." Tetra

Tetra Tech, Inc., reviewed the FPPPs prepared for the Santa Maria maintenance station, the San Luis Obispo maintenance station, and the San Luis Obispo maintenance shop and determined that although the FPPPs did describe the activities conducted at each facility, the Plan did not contain a list of site-specific BMPs. Rather, it referenced the Caltrans *Storm Water Quality Handbooks Maintenance Staff Guide* (July 1998) for BMP guidance without identifying which BMPs were applicable at that facility, when and where they should be used, and who was responsible for implementing them. Inclusion of site-specific BMPs would assist the facility storm water manager and inspectors (Caltrans and other) in determining whether appropriate BMPs have been identified and implemented. Caltrans indicated that the same contractor prepared the FPPPs for all eighteen maintenance facilities; therefore Tetra Tech assumes that none of the FPPPs in the District contain site-specific storm water BMPs.

A site map also must be included to identify drainage pathways, discharge points, and material storage areas. This is not a specific requirement in the Caltrans permit; however, the California General Permit for Storm Water Discharges Associated with Industrial Activity (NPDES General Permit CAS000001) does require permitted facilities to include a complete site map in SWPPPs. A site map was available in the Santa Maria maintenance facility's business plan, but the map did not include pertinent storm water information and should have been included in the FPPP.

## 2.4 Evaluation of Education and Public Participation

### Positive Attribute:

- *Caltrans is conducting a public education research study to determine the effectiveness of public education in reducing highway litter.*  
Although the study is not specifically a District 5 project, it is worth noting that Caltrans is conducting a public education research study to collect baseline data on highway litter from two cities, Fresno and Stockton. After conducting a public outreach campaign in one of the cities while leaving the other city as a control area, Caltrans will measure the reduction of litter at designated litter monitoring sites and conduct a public opinion survey to determine whether the public has changed its behavior toward litter on highways. If the public education program is determined to be successful, Caltrans will extend it statewide; it is not known, however, specifically how this program will be implemented in District 5.

## 2.5 Evaluation of Program Evaluation/Reporting

### Deficiencies Noted:

- *The current SWMP and District 5 Regional Work Plan did not include measurable goals for SWMP implementation.*

The August 2001 Statewide SWMP commits Caltrans “by January 1, 2002, in consultation with the SWRCB and RWQCBs, [to]... establish measurable goals for SWMP implementation.” These measurable goals have not yet been developed.

The measurable goals should be linked to programmatic, social, or environmental indicators such as those listed in the Center for Watershed Protection’s *Storm Water Environmental Indicators* fact sheets. For example, the City of Phoenix monitors social indicators such as the public’s knowledge of storm water issues as a measure of success. In another example, the Sacramento Storm Water Management Program uses a variety of special studies, evaluation of performance measures, statistical analysis, modeling, and/or environmental indicators to assess the effectiveness of its program. Specifically, the Sacramento Program has identified performance or effectiveness measures for each program element BMP and subelement task. For example, Sacramento County tracks the number of warnings, corrective actions, penalties, and stop work orders issued as a performance measure and uses the number of illegal non-storm water discharges reported as an effectiveness measure. The City of Sacramento has set minimum performance standards for each BMP, such as a standard to visit 20 classrooms each year to conduct storm water presentations.

To track and demonstrate progress at a more local level, measurable goals for the Caltrans SWMP should be developed for not only the State but also each individual District office. The goals should be included each year in the Regional Work Plan and reported on in each District’s annual report. Caltrans is developing a central data warehouse to combine and maintain data from around the State. It is recommended that this proposed Caltrans Annual Reporting System (CARS) should support the establishment of measurable goals along with the reporting and analysis of measurable goal results at the State and District levels.

- *The District should focus additional efforts on addressing pollutants of concern from its discharges while continuing to implement existing program elements.*  
The permit prohibits storm water discharges that cause or contribute to a violation of water quality standards or create a nuisance or adversely affect beneficial uses of waters of the State (Part C-1). A number of the waters on the State’s Section 303(d) list of water quality-limited segments are within the District. The District should begin to focus its efforts on, and specifically address in its Regional Work Plan, activities to reduce the loadings and concentrations of specific pollutants that are impairing local waters. The plan should evaluate the effectiveness of existing program elements and, if necessary, develop new elements, or suites of BMPs, focused on targeting these identified pollutants. The Alameda Countywide Clean Water Program and the Sacramento Storm Water Management Program have implemented such programs, which might be useful as examples.