



**Evaluation of Storm Water Data Reports for
Fiscal Year 2009/2010**

**CTSW-RT-10-254.10
September 2010**

**California Department of Transportation
Division of Environmental Analysis, Storm Water
Program
1120 N Street
Sacramento, California 95814
<http://www.dot.ca.gov/hg/env/stormwater/index.htm>**

EVALUATION OF STORM WATER DATA REPORTS FOR FISCAL YEAR 2009/2010



For individuals with sensory disabilities, this document is available in alternate formats upon request. Please call or write to Stormwater Liaison, California Department of Transportation Division of Environmental Analysis, PO Box 942874, MS-27, Sacramento, CA 94274-0001, (916) 653-8896 Voice, or dial 711 to use a relay service.

Overview

Independent quality assurance/quality control reviews were conducted on a total of 83 Storm Water Data Reports (SWDRs) prepared during the 2009/10 fiscal year. The reviews were performed to evaluate whether the SWDRs have been prepared consistent with the current version of the Project Planning and Design Guide, the Permit, and the Storm Water Management Plan (SWMP).

A majority of the SWDRs (77 percent) being prepared by or for Caltrans, based on this sampling, conform with the requirements of the Stormwater Quality Handbooks, Project Planning and Design Guide, December 2008 (PPDG), the Permit, and the Department's Storm Water Management Plan (SWMP).

A common issue observed in many of the SWDRs was that the narrative either did not follow the Targeted Design Constituent (TDC) approach or used incomplete descriptions of design decisions and the Best Management Practice (BMP) strategy. For instance, many times the Project Engineer (PE) simply omitted TDC information from the narrative. In some cases, the PE identified which BMPs would be included in the design, but failed to fully consider and/or document why other BMPs were not included.

Additionally, costs were many times included in the narrative of the SWDRs. Costs should only be included in the attachments, as all costs are for Caltrans internal use only. Only quantities should be listed in the narrative.

The reports have been evaluated against information expected in eleven categories that comprise a fully-developed SWDR. Rating summaries and general recommendations are included in the following sections for each category of evaluation. Table 1 summarizes ratings for each of the review categories further presented in Tables 2 through 12 of this report.

Category	Percentage of Reports By Rating		
	Outstanding	Acceptable	Poor
1. Overall Review	4%	73%	23%
2. Appropriately Incorporated and Evaluated BMPs	9%	77%	14%
3. Cover Page	0%	84%	16%
4. Project Description	20%	75%	5%
5. Site Data and Storm Water Quality Issues	7%	78%	15%
6. RWQCB Agreements	7%	83%	10%
7. Design Pollution Prevention BMPs	8%	75%	17%
8. Permanent Treatment BMPs	10%	65%	25%
9. Temporary Construction Site BMPs	6%	46%	48%
10. Maintenance BMPs	4%	89%	7%
11. Required Attachments	11%	54%	35%

Overall Review Rating

Table 2 summarizes the overall results of the 83 reviewed reports.

	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	3	61	19
Percentage of Reports Receiving Score	4%	73%	23%

Three SWDRs from the sampling were deemed as “Outstanding” and provided most of the required information in a clear, concise, and easy-to-follow format, along with backup data to substantiate the statements in the narrative. In general, most of the SWDRs reviewed were consistent among the various Caltrans districts, particularly in regard to narratives for the project description, completion of checklists, and consideration of all types of BMPs.

Most “Poor” ratings associated with the reviews were based on the following findings:

- Incomplete consideration or documentation of Design Pollution Prevention BMPs and Treatment BMPs;
- Incomplete consideration or documentation of Stormwater Quality Issues - PE did not follow the TDC approach;
- Incomplete or incorrect signatures on the cover page and initials on the Evaluation Documentation Form (EDF) and/or Construction Site BMP Consideration Form; and
- Lack of a Construction Site BMP strategy, including concurrence from the Construction Division.

General Recommendations - In order to increase the level of consistency throughout various Caltrans districts, it is recommended that Caltrans provide further training to PEs related to the proper methods for preparing SWDRs in the next fiscal year. This training should focus on roles and responsibilities; timelines regarding negotiation or receipt of Regional Water Quality Control Board (RWQCB) agreements (i.e. not waiting to engage RWQCB at later phases of design); timelines regarding coordination and concurrence from the Construction and Maintenance Divisions; the minimum acceptable level of detail required at the various project development phases; backup calculations and data necessary to substantiate Design Pollution Prevention and Treatment BMP selections; assurance of appropriate or required attachments; and the use of the TDC approach.

Does the design incorporate and evaluate BMPs appropriately

Table 3 summarizes SWDR review results in terms of the number of reports that appropriately incorporated and evaluated BMPs in the design.

	Rating		
	*Outstanding	*Acceptable	*Poor
No. of Reports Receiving Score	8	64	11
Percentage of Reports Receiving Score	9%	77%	14%

*Average of the “Does the design incorporate BMPs appropriately?” and “Does the design evaluate BMPs appropriately?” categories.

“Poor” ratings were based on several projects that did not fully consider (or at least document the consideration of) Treatment and Design Pollution Prevention BMPs. In general, these reports typically did not provide details on the quantities, locations, types, and sizes of the proposed permanent BMPs. Most of the “Poor” rated SWDRs considered biofiltration as the only Treatment BMP, or exhibited a clear preference, while excluding detailed consideration of other, possibly more effective, Treatment BMPs. Some “Poor” rated SWDRs did not validate that the required Water Quality Volume or Flow (WQV/WQF) could be treated by the selected BMP or justify why treatment trains were not considered in cases where the percentage of WQV/WQF being treated was less than 100 percent.

“Outstanding” ratings were assigned to eight SWDRs that considered all applicable BMPs in detail and provided backup data to substantiate the statements in the narrative.

General Recommendation – Further training of PEs on the overall BMP evaluation and documentation process is recommended. Specifically, the training should include information related to the minimum level of documented detail necessary when considering BMPs at the Project Initiation Document (PID) and Project Approval/Environmental Document (PA/ED) phases.

Cover Page information rating

Table 4 summarizes SWDR review results related to cover pages.

Table 4. Summary of Cover Page Ratings			
	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	0	70	13
Percentage of Reports Receiving Score	0%	84%	16%

“Poor” ratings were based on missing the following information: signatures, stamp, program identification, and/or dates for the Notification of Construction (NOC) and/or notification of ADL re-use. On a few reports, the PE indicated that the project was in multiple phases. For example, the PA/ED and Plans Specifications and Estimate (PS&E) phases were indicated, or all three phases (PID, PA/ED, and PS&E) were indicated. “Poor” ratings were also given to those reports with Treatment BMP requirements in direct conflict with the EDF form.

General Recommendations – Most missing information for this category could be an incidental mistake; however, District/Regional Storm Water Coordinators should verify all information on SWDRs for the PS&E phase prior to submittal to Caltrans Headquarters (HQ) for evaluation. Discussion of the errors associated with the 13 SWDRs rated “Poor” should occur at a future meeting of the Project Development Storm Water Advisory Team or other similar venue.

Project Description information rating

Table 5 summarizes SWDR review results related to project descriptions.

Table 5. Summary of Ratings			
	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	17	62	4
Percentage of Reports Receiving Score	20%	75%	5%

“Poor” ratings were based on missing quantification of total disturbed soil area (DSA) and impervious area and inclusion of project costs in the narrative.

“Outstanding” ratings were based on all required information being thorough and clearly presented.

General Recommendations – One of the SWDRs rated as “Poor” has yet to reach the PS&E phase, as such the District/Regional Storm Water Coordinator should ensure the future SWDRs for this project provide the missing quantifications in the narrative.

Site Data and Storm Water Quality Issues information rating

Table 6 summarizes SWDR review results related to site data and storm water quality issues.

Table 6. Summary of Site Data and Storm Water Quality Issues Ratings			
	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	6	65	12
Percentage of Reports Receiving Score	7%	78%	15%

“Poor” ratings were based on the following:

- Missing information related to the following:
 - Descriptions of planned measures for reducing or avoiding storm water impacts;
 - Local agency requirements/concerns, if any;
 - Additional right-of-way that is needed to be acquired to construct Treatment BMPs, if any;
 - Description of approaches to identify or avoid drinking water/recharge facilities;
 - Depths to groundwater; and
 - Soil types/classifications.
- Including costs in the narrative; and
- Missing information related to the receiving water bodies, including:
 - 303(d) listings;
 - TMDLs; and
 - Pollutants of concern.

“Outstanding” ratings were based on all pertinent information being provided in the narrative, along with substantiation or a source for each statement.

General Recommendations – Further training of PEs and District/Regional Storm Water Coordinators on the overall SWDR documentation process is recommended. The PE should use this part of the narrative to describe all pertinent responses to checklists SW-2 and SW-3. For example, if a 401 certification is not required, then it should be simply stated that it is not required in the narrative. If the 401 requirement is not known, it should be stated that Environmental Unit is to make determination if a 401 certification is required and when this milestone is anticipated to be determined.

RWQCB Agreements information rating

Table 7 summarizes SWDR review results related to RWQCB agreements.

	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	6	69	8
Percentage of Reports Receiving Score	7%	83%	10%

“Poor” ratings were based on SWDRs that did not contain a discussion or mention of RWQCB Agreements or related meetings and correspondence. These continue to be recurring issues throughout many of the SWDRs. The PE rarely documents whether or not the RWQCB was contacted. In addition, many reports mention applicable Caltrans, State, and City permits, but do not describe special agreements with the RWQCB.

“Outstanding” ratings were based on a detailed and clear description of project specific meetings held with the RWQCB and requirements dictated in specific RWQCB permits or orders for the project.

General recommendations – PEs should provide a clear description of coordination conducted with the RWQCB (or at least with the District/Regional Storm Water Coordinator at the PID phase), dates/times/names of such coordination, and a description of any project specific permit requirements imposed as a result of the coordination. If the project does not have negotiated understandings or agreements with the RWQCB, then the PE should state that there are no agreements in the narrative for clarification.

National Pollutant Discharge Elimination System (NPDES) Storm Water Coordinators and Design Storm Water Coordinators should take more responsibility in assuring documentation related to discussions with RWQCB on agreements is memorialized.

Design Pollution Prevention BMPs information rating

Table 8 summarizes SWDR review results related to design pollution prevention BMPs.

	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	7	62	14
Percentage of Reports Receiving Score	8%	75%	17%

“Poor” ratings were based on the following:

- Most of the SWDRs included costs for BMPs in the narrative;
- For vegetated and hard surface BMPs, as well as for storm drain systems within the project, specific quantities, types, and general locations were not provided in most SWDRs;
- The PE didn’t provide backup information on how preservation of existing vegetation will actually be accomplished;
- Pre- and Post-Construction conditions and hydraulic changes were not addressed; and
- Incomplete consideration of Design Pollution Prevention (DPP) BMPs in the narrative.

“Outstanding” ratings were based on detailed quantities, locations, types, and sizes of design BMPs provided in the SWDR narrative.

General Recommendation - Further training of PEs and District/Regional Storm Water Coordinators on the overall SWDR documentation process is recommended. Training should clarify that it is the PE’s responsibility to summarize the decision behind each checklist response within the narrative and to provide quantitative or specific backup to support each statement. For example, if the project increases velocity of a downstream flow and mitigates it with energy dissipation devices, then the PE should provide an explanation of the complete issue rather than just state that there will be no downstream impacts. Calculations of pre and post volume/flows and velocities increases the credibility of mitigating measures or a reference to this information can be obtained such as the drainage report. Training should also specify the minimum level of detail necessary for PID, PA/ED, and PS&E SWDRs and include a reference to the Storm Water BMP Cost Summary attachment required at each phase of the project.

Permanent Treatment BMPs information rating

Table 9 summarizes SWDR review results related to permanent treatment BMPs.

	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	8	54	21
Percentage of Reports Receiving Score	10%	65%	25%

“Poor” ratings based on incomplete consideration of Treatment BMPs and usage of the TDC approach. All applicable Treatment BMPs must be considered unless found infeasible by results on the T-1 checklists. Several SWDRs considered only biofiltration and disregarded detailed consideration of other Treatment BMPs and/or failed to document why a BMP was not feasible. The majority of the SWDRs did not provide backup calculations to validate if the required WQV/WQF could be treated by the selected BMP or justify why treatment trains were not considered in cases where the percentage of WQV/WQF being treated was less than 100 percent. “Poor” ratings are also based on costs being included in the narrative and on reports that do not discuss the strategy and overall treatment approach.

“Outstanding” ratings were based on reports that fully considered all applicable Treatment BMPs and provided backup calculations to confirm compliance with BMP design criteria.

General Recommendation – PEs should follow and document the TDC approach more closely. The TDC approach has been changed in the July 2010 PPDG, thus training venues should emphasize understanding and use of the T-1 by PEs. Electronic tools for assisting PEs with completion of the T-1 checklist may minimize process related mistakes and ensure complete accounting for treatment of the WQV/WQF, especially by infiltration. These tools should be used in training venues and attendees should be tested in their use of these tools to arrive at correct conclusions.

Temporary Construction Site BMPs information rating

Table 10 summarizes SWDR review results related to temporary construction site BMPs.

Table 10. Summary of Temporary Construction Site BMPs Ratings			
	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	5	38	40
Percentage of Reports Receiving Score	6%	46%	48%

“Poor” ratings were based on the lack of a Construction Site BMP strategy (at all phases) and lack of both Construction Site BMP coordination and concurrence (at PS&E) from the Construction Division. Several narratives did not identify and quantify the items designated as separate bid items or as lump sum items, and did not address dewatering requirements. A common problem was the inclusion of costs in the narrative. A few reports failed to include this section even when Temporary Construction Site BMPs were required for the project.

“Outstanding” ratings were based on reports that provided detailed description of all Construction Site BMPs; listed lump sum versus line item BMPs; and documented the coordination with and concurrence of the Construction Storm Water Coordinator.

General Recommendation – Further training of PEs and District/Regional Storm Water Coordinators on the overall SWDR documentation process is recommended. It is the PE’s responsibility to assemble a Construction Site BMP strategy at each phase of the project and to coordinate with the Construction Division through all phases of the project. It is the PE’s responsibility to document concurrence from the Construction Division at the PS&E stage. District/Regional Storm Water Coordinators should not approve (sign) a SWDR unless the PE has documented receipt of Construction Site BMP strategy concurrence from the Construction Division.

It is recommended that the upcoming SWDR workshop training venues stress coordination between the PE and the Designated Construction Representative to formulate a thorough Construction Site BMP strategy. This strategy and coordination efforts will need to be documented in the SWDR, as significant changes resulting from the new Construction General Permit (CGP) will demand even greater need for planning and development of a monitoring program in conjunction with the BMP strategy.

Maintenance BMPs information rating

Table 11 summarizes SWDR review results related to maintenance BMPs.

Table 11. Summary of Maintenance BMPs Ratings			
	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	3	74	6
Percentage of Reports Receiving Score	4%	89%	7%

“Poor” ratings were assigned to SWDRs that provided no explanation for why Drainage Inlet Stenciling was not required for a project in an urban Municipal Separate Storm Sewer Systems (MS4) area where pedestrians are expected to use the facility. “Poor” ratings were also assigned to SWDRs that did not contain a Maintenance BMP section.

“Outstanding” ratings based on information presented in a clear and concise manner including maintenance coordination and concurrence effort.

General recommendations – Follow up on the six projects that did not include inlet stenciling to see if this was just an over sight in documentation. Stencils could be placed into the projects by contract change order or through the efforts of the Maintenance Division.

Required Attachments information rating

Table 12 summarizes SWDR review results related to required attachments.

Table 12. Summary of Required Attachments Ratings			
	Rating		
	Outstanding	Acceptable	Poor
No. of Reports Receiving Score	9	45	29
Percentage of Reports Receiving Score	11%	54%	35%

“Poor” ratings were based on missing required attachments including vicinity maps, Treatment BMP summary spreadsheets, Construction Site BMP Quantities, and Construction Site BMP Consideration Forms; EDFs without required initials; or Construction Site BMP Strategy Form without the PE’s signature at the PS&E phase.

“Outstanding” ratings were based on SWDRs that provided comprehensive design backup data for each proposed Treatment BMP.

General Recommendation –District/Regional Storm Water Coordinators have the authority to not approve SWDRs when the PE has not included all required attachments for each phase of the project. District/Regional Storm Water Coordinators should verify that all attachments are included with the SWDRs prior to submittal to HQ for evaluation.

Conclusion

This annual evaluation has determined that the current Caltrans stormwater program is adequate. Caltrans incorporates stormwater management into the project planning and design processes. Caltrans incorporates BMPs into the design process, protects water quality to the MEP, and documents these steps through the preparation of their SWDRs. These reports document the process and stormwater design decisions made by the Caltrans designers from PID through final PS&E adequately.

Recommendations

Areas of the SWDRs that can be improved include the design and documentation of permanent treatment BMPs, documentation of coordination and concurrence from the Construction Division, and the inclusion of required attachments at each phase of the project.

Caltrans extensive water pollution control program can be improved by updating existing guidance and training curriculums for staff. The following items have been updated or are planned for revision, thus these items provide a distinctive opportunity to address many of the recommendations described within each review category of this report:

1. Plans and specifications, including hidden instruction that could reinforce synchronization with the SWDR;
2. PPDG, specifically in regard to identification of short form SWDRs, use of T-1 checklist processes, and prohibition of costs into the SWDR narrative;
3. T-1 checklist tools, which may minimize process related errors and ensure accounting for treatment of the WQV/WQF;
4. SWDR workshop, emphasizing use of the revised T-1 checklist, incorporation of descriptive narratives, and ensuring all BMP categories are adequately evaluated;
5. Example SWDRs, which are being developed on the basis of the July 2010 PPDG and available at the Design website, as well as being used as examples for the SWDR workshop or PPDG training venues; and
6. PPDG Training, which could include a self-paced internet component that allows staff to obtain consistent and timely clarification on PPDG direction without having to rely upon other staff or the District/Regional Stormwater Coordinator.

In order to increase the level of consistency throughout various Caltrans districts, the training curriculum should be updated and implemented statewide.

It is recommended that the training curriculum focus on the following issues: roles and responsibilities throughout the development process; timelines regarding negotiation or receipt of Regional Water Quality Control Board (RWQCB) agreements; timelines regarding coordination and concurrence from the Construction and Maintenance Divisions; the minimum acceptable level of detail required at the various project development phases; backup calculations and data necessary to substantiate DPP and Treatment BMP selections; and assurance of appropriate or required attachments.

This Page Intentionally Left Blank.