

## Program Effectiveness Strategy



# PROTECT OUR WATER

MĀLAMA I KA WAI

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

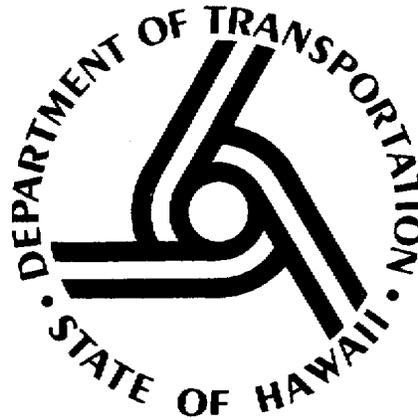
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Hawaii State Department of Transportation  
Highways Division, Oahu District  
Storm Water Management Program  
NPDES Permit No. HI S000001  
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State of Hawaii Department of Transportation  
Highways Division, Oahu District



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## ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CCH	City and County of Honolulu
DOH	State of Hawaii Department of Health
DOT-HWYS	State of Hawaii Department of Transportation, Highways Division, Oahu District
EDOP	Effective date of permit
EPA	United States Environmental Protection Agency
I&M	Implementation & Monitoring
MEP	Maximum Extent Practicable
MS4	DOT-HWYS' Municipal Separate Storm Sewer System
MS4 Permit	DOT-HWYS' NPDES Permit No. HI S000001
NPDES	National Pollutant Discharge Elimination System
SWMP	Storm Water Management Program
SWMPP	Storm Water Management Program Plan
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
WLA	Waste load allocation

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## 1. INTRODUCTION

This Program Evaluation Strategy is submitted to satisfy Part G.1.d of the State of Hawaii Department of Transportation, Highways Division, Oahu District's (DOT-HWYS') National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit No. HI S000001, effective October 28, 2013 (hereinafter referred to as the "MS4 Permit"). Part G.1.d requires that DOT-HWYS submit to the State of Hawaii Department of Health (DOH) a written strategy for determining the effectiveness of the Storm Water Management Program (SWMP), within one year of the effective date of the MS4 Permit (by October 28, 2014). The requirement reads as follows:

### *Reporting Requirements, Program Effectiveness Reporting*

*Part G.1.d "Within one (1) year of the effective date of the permit, the Permittee shall submit to DOH a written strategy for determining the effectiveness of its SWMP. The strategy shall include water quality monitoring efforts as well as program implementation information and other indicators. The Permittee shall include an assessment of program effectiveness and identification of water quality improvements or degradation beginning with the 2<sup>nd</sup> Annual Report."*

## 2. PROGRAM EFFECTIVENESS STRATEGY ORGANIZATION

The purpose of this document is to provide a written strategy for determining the effectiveness of each program element in the DOT-HWYS' Storm Water Management Program Plan (SWMPP), and to describe the reporting strategy that will be implemented beginning with the 2nd Annual Report.

This strategy includes the evaluation of water quality monitoring efforts as well as program implementation monitoring information to provide an assessment of each program element and the overall effectiveness of the SWMP. The reporting beginning with the 2nd Annual Report will include identification of water quality improvements or degradation.

There are five types of Plans and reports required by the MS4 Permit that address monitoring of the SWMP program activities and reports on the results of the monitoring. The plans and reports, including the MS4 Permit required submittal dates for each, are as follows:

- **Storm Water Management Program Plan** – to be submitted by April 28, 2015
- **Total Maximum Daily Load (TMDL) Implementation and Monitoring Plans (I&M Plans)** – five plans submitted October 28, 2014
- **Annual Monitoring Plan** – to be submitted each year by June 1<sup>st</sup>
- **Annual Monitoring Report** – to be submitted each year by October 31<sup>st</sup>, reporting on the previous fiscal year
- **Annual Report** – to be submitted each year by October 31<sup>st</sup>, reporting on the previous fiscal year

This Program Effectiveness Strategy describes the monitoring and reporting components of each of the aforementioned documents. In combination, these documents provide the framework by which DOT-HWYS evaluates the compliance status, success, and efficiency of the SWMP. Collectively, they detail the program activities, standards and milestones, assessment methods, and results of SWMP implementation. DOT-HWYS analyzes the effectiveness of the SWMP in order to utilize an iterative approach to programmatic decision making. The information attained from an evaluation of the effectiveness of the SWMP may be used to adjust MS4 inspection frequencies, debris cleaning and street sweeping schedules, proposed erosion control projects or BMP installations, priorities for industrial and commercial facility inspections, public education efforts, and overall resource allocation.

## 2.1 STORM WATER MANAGEMENT PROGRAM PLAN

Part D.1 of the MS4 Permit requires that DOT-HWYS:

*Part D.1 “Further develop and improve, implement, and enforce a SWMP designed to address the requirements of this permit and reduce, to the MEP, the discharge of pollutants to and from its MS4 to protect water quality and to satisfy the appropriate water quality requirements of the Act. The SWMP shall include the following information for each of the SWMP components.”*

These required components, or program elements, include:

- Public Education and Outreach;
- Public Involvement/Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Runoff Control;
- Post-Construction Storm Water Management in New Development and Redevelopment;
- Pollution Prevention/Good Housekeeping; and
- Industrial and Commercial Activities Discharge Management Program.

The Permit requires that the revised SWMPP be submitted no later than April 28, 2015. The SWMPP will be organized with a chapter for each of the required program elements and each chapter will contain a section including measurable standards and milestones, plus underlying rationale, including interim measures to aid in determining level of effort and effectiveness of each program component. A draft of the standard/milestone effectiveness table from the Illicit Discharge Detection and Elimination Program is included in Table 1 as a sample. A finalized standard/milestone effectiveness table for each program element will be included in the 2015 SWMPP.

**Table 1. Monitoring Program Effectiveness, Sample Table**

Section	BMP	Standard/Milestone	Monitoring Effectiveness
6.1	Asset Management System	<ul style="list-style-type: none"> <li>• Utilize AMS to establish priorities and schedule and track efforts of debris removal program activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Track and characterize debris removed from program activities and utilize information to revise priority-based schedules as feasible.</li> </ul>
6.2	Street Sweeping	<ul style="list-style-type: none"> <li>• Sweep 100% of segments in accordance with the priority-based schedules.</li> </ul>	<ul style="list-style-type: none"> <li>• Track the location and frequency of all street sweeping activities and compare against priority-based schedules.</li> </ul>

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Section	BMP	Standard/Milestone	Monitoring Effectiveness
6.3	Storm Drain System Inspection and Cleaning	<ul style="list-style-type: none"> <li>Inspect 100% of drainage structures in accordance with the priority-based schedules.</li> </ul>	<ul style="list-style-type: none"> <li>Track the location, frequency, and structure type of all inspection activities and compare against priority-based schedules.</li> </ul>
6.4	Storm Drain Placards	<ul style="list-style-type: none"> <li>Install 75 storm drain placards each year on pedestrian-accessible storm drain inlets.</li> </ul>	<ul style="list-style-type: none"> <li>Track the location and placard number of all storm drain placards installed.</li> </ul>
6.5	Action Plan for Retrofitting Structural BMPs	<ul style="list-style-type: none"> <li>Submit Action Plan for Retrofitting Structural BMPs within one year from the EDOP.</li> <li>Construct/install 38 retrofits within the five year implementation period.</li> </ul>	<ul style="list-style-type: none"> <li>Milestone completed on 10/27/2014.</li> <li>Track and document retrofit BMP construction and installation locations.</li> </ul>
6.6	Trash Reduction	<ul style="list-style-type: none"> <li>Submit Trash Reduction Plan within three years from the EDOP.</li> <li>Comply with schedule/milestones established by Trash Reduction Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Milestone scheduled for completion on 10/27/2017.</li> <li>Ensure timely completion of milestones established by Trash Reduction Plan.</li> </ul>

**2.2 TMDL IMPLEMENTATION AND MONITORING PLANS**

In Hawaii, TMDL reports are prepared by DOH and approved by the United States Environmental Protection Agency (EPA) with the ultimate goal of reducing pollutant loads from all sources to receiving waters in order to meet State Water Quality Standards. Most TMDL reports result in a waste load allocation (WLA) requirement for a variety of point pollutant sources within a watershed, including DOT-HWYS outfalls within the watershed. In order to comply with the MS4 Permit, DOT-HWYS submitted the following five TMDL Implementation & Monitoring Plans (I&M Plans) to DOH:

- *Implementation & Monitoring Plan Ala Wai Canal Waste Load Allocation;*
- *Implementation & Monitoring Plan Kawa Stream Waste Load Allocation;*
- *Implementation & Monitoring Plan Kapaa Stream Waste Load Allocation;*
- *Implementation & Monitoring Plan Waimanalo Stream Waste Load Allocation; and*
- *Implementation & Monitoring Plan Kaneohe Stream Watershed Waste Load Allocations.*

Each of these documents contains a water quality monitoring plan component that outlines the methodology and monitoring data that will be used to document compliance with the WLAs and the Permit.

### **2.3 ANNUAL MONITORING PLAN**

The Monitoring Program is one component of DOT-HWYS' overall SWMP. The Annual Monitoring Plan is required by the MS4 Permit and must be submitted by June 1<sup>st</sup> of each year. The Annual Monitoring Plan describes the water quality monitoring activities planned for the upcoming fiscal year that runs from July 1<sup>st</sup> to June 30<sup>th</sup> each year. DOT-HWYS has chosen to take a watershed approach for its Monitoring Program by monitoring runoff within high priority watersheds, that is, watersheds where TMDL studies have been established or identified, or have approved TMDLs in place for one or more pollutants.

### **2.4 ANNUAL MONITORING REPORT**

The MS4 Permit also requires an Annual Monitoring Report to be submitted on or before October 31<sup>st</sup> of each year. This Annual Monitoring Report details the efforts conducted during the fiscal year that ended the previous June. The Annual Monitoring Report includes:

- Discussion on the activities/work implemented to meet each objective, the results, and conclusions;
- Written narrative of the past fiscal year's activities;
- Data gathered on levels of pollutants in non-storm water discharges to the MS4;
- Description of how rainfall events relate to measured pollutant loads and discharge volumes;
- The dates when monitoring occurred for each municipal industrial facility covered under the MS4 Permit; and
- Discharge Monitoring Reports for municipal industrial facilities.

### **2.5 ANNUAL REPORT**

Annual Reports are the primary mechanism through which DOT-HWYS documents SWMP activities and demonstrates compliance with the MS4 Permit and Consent Decree. Annual Reports provide a detailed description of the storm water management activities conducted by each program element during the reporting period, as well as an evaluation of the effectiveness of such activities, the resources allocated to implement the SWMP, and an explanation of anticipated future activities. In addition, any modifications made to the SWMPP, certain plans, or the MS4 are also documented in Annual Reports.

The Annual Report chapters are organized by program element, as follows:

- Public Education and Outreach;
- Public Involvement/Participation;
- Illicit Discharge Detection and Elimination;
- Construction Site Runoff Control;
- Post-Construction Storm Water Management in New Development and Redevelopment;

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- Pollution Prevention/Good Housekeeping;
- Industrial and Commercial Activities Discharge Management; and
- Water Quality Monitoring.

Each chapter in the Annual Report contains the following information:

- Requirements – This section describes what is required and DOT-HWYS’ status of compliance with the MS4 Permit requirements.
- Past Activities – This section describes all DOT-HWYS’ activities that were performed during the reporting period to meet the MS4 Permit requirements.
- Future Activities – This section describes planned activities, including specific activities to be undertaken during the next reporting period.
- Program Evaluation – This section reports on the progress of the program in comparison to performance measures provided in the *Monitoring Program Effectiveness* Section at the end of each SWMPP chapter. Graphical analysis, figures, and tables are used to facilitate assessment purposes.

The resources expended to implement the SWMP are detailed in the end of the Annual Report.

Annual Reports are utilized by program management to analyze the effectiveness of past SWMP activities and to guide an iterative approach to future decision making regarding resource allocation and program implementation. The Annual Report will include a chapter on Program Effectiveness where the results of this strategy implementation will be reported each year.

### **3. PROGRAM EFFECTIVENESS REPORTING**

Reporting for the Program Effectiveness Strategy will be incorporated into the Annual Report each year. The reporting will include the evaluation of water quality monitoring efforts as well as program implementation monitoring information to provide an assessment of each program element and the overall effectiveness of the SWMP. This will include identification of water quality improvements or degradation.

The purpose of this section is to provide a written strategy that DOT-HWYS will use to determine the effectiveness of its SWMP as measured against the monitoring objective detailed in Part F.1.a.(1) through F.1.a.(7) of the MS4 Permit. Sections 3.1 through 3.7 below provide the DOT-HWYS Program Effectiveness Strategy for each of the monitoring objectives.

#### **3.1 ASSESS COMPLIANCE WITH THE MS4 PERMIT**

The SWMPP is designed to address the requirements of the MS4 Permit and reduce, to the MEP, the discharge of pollutants to and from the MS4 to protect water quality. The SWMPP will describe the BMPs to be implemented under each program element to meet the MS4 Permit requirements. The SWMPP will include measurable standards and milestones for each component of the program, and achievement in meeting these standards and milestones will be used to assess compliance with the MS4 Permit.

#### **3.2 MEASURE THE EFFECTIVENESS OF THE SMWPP**

As noted above, the SWMPP will include measurable standards and milestones for each component of the program and achievement in meeting these standards and milestones will be used to assess compliance with the Permit.

#### **3.3 ASSESS IMPACTS ON RECEIVING WATERS FROM STORM WATER DISCHARGES FROM THE MS4 AND EVALUATE LONG-TERM TRENDS**

DOT-HWYS MS4 will utilize water quality monitoring analysis results from sampling discharges from the MS4 together with other SWMP monitoring, such as debris removal quantities, to assess impacts on receiving waters from storm water discharges from the MS4. DOT-HWYS will continue to report debris removal quantities and pollutant reductions achieved through other BMPs, assess the impact of these reductions on receiving waters, and evaluate long-term trends in pollutant reductions. DOT-HWYS will also utilize water quality monitoring analysis results from both in-stream and outfall discharge sampling conducted by other agencies such as the City and County of Honolulu (CCH), the United States Geological Survey (USGS), and DOH to provide a comparison between discharges from the MS4 and water quality in receiving waters. The water quality monitoring analysis results from sampling of the MS4 discharges will be utilized to compare relative contributions and progress towards improving water quality.

### **3.4 CHARACTERIZE STORM WATER DISCHARGES**

The Annual Monitoring Plan will outline the proposed water quality monitoring to be conducted each year, including required water quality monitoring at DOT-HWYS' municipal industrial facilities. In addition to the water quality monitoring described in the Annual Monitoring Plan, DOT-HWYS may conduct additional water quality monitoring as part of the program to detect and eliminate illegal connections and illicit discharges.

The laboratory analysis results of water quality monitoring conducted by DOT-HWYS each year will be reported in the Annual Monitoring Report, and the data will be analyzed in the Annual Report to characterize storm water discharges from the MS4.

### **3.5 IDENTIFY SOURCES OF SPECIFIC POLLUTANTS**

The laboratory analysis results of water quality monitoring conducted by DOT-HWYS will also be utilized to identify sources of specific pollutants in discharges from the MS4. In addition to water quality monitoring results, inspections conducted as part on the Industrial and Commercial Activities Discharge Management Program will include source identification, and the results of these inspections will be included in the Annual Report.

### **3.6 DETECT AND ELIMINATE ILLEGAL CONNECTIONS AND ILLICIT DISCHARGES**

The SWMP includes a program element for the Illicit Discharge Detection and Elimination Program. The goal of this program is to detect and eliminate illegal connections and illicit discharges. The primary tools for identifying illegal connections and illicit discharges include outfall and structure inspections and inspections of industrial and commercial facilities. DOT-HWYS also responds to citizen reports of illegal connections and illicit discharges reported through [www.stormwaterhawaii.com](http://www.stormwaterhawaii.com) or other means.

The SWMPP will include measurable standards and milestones for the Illicit Discharge Detection and Elimination Program and these standards and milestones will be used to measure the effectiveness of the Illicit Discharge Detection and Elimination Program.

### **3.7 ASSESS WATER QUALITY ISSUES RESULTING FROM STORM WATER DISCHARGES**

Assessing the water quality issues in watersheds resulting from storm water discharges to receiving waters from the MS4 is a complex and complicated problem. By their very nature, storm water discharges are highly variable in timing, duration, discharge volume, and pollutant loading. Assessing the impacts of these variable MS4 discharges at the watershed level is difficult because of the small percentage of the total stream volume contributed by DOT-HWYS' MS4 discharges. For instance, according to the approved Ala Wai TMDL Report, DOT-HWYS MS4 discharges runoff from approximately 1.1% of the total watershed. For the Kawa Stream Watershed, the DOT-HWYS MS4 discharges runoff from approximately 1.6% of the total watershed. Because of the variability and relatively small volume of discharge from the MS4, DOT-HWYS will utilize water quality monitoring analysis results from both in-stream and outfall discharge sampling that are made available from other agencies such as CCH, USGS, and DOH to assess water quality issues in watershed resulting from storm water discharges to

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receiving waters. The water quality monitoring analysis results from sampling of DOT-HWYS' MS4 discharges will be utilized to compare relative contributions and progress towards improving water quality.