PRE-FINAL (REDACTED), PREDECISIONAL FOR DISCUSSION PURPOSES ONLY, DO NOT CITE OR QUOTE

STORM WATER MANAGEMENT PLAN (SWMP) FOR NAVY REGION HAWAII (NRH)

JBPHH, Oahu, Hawaii

Note: Portions of this Plan have been redacted due to National Security concerns

NPDES Permit No. HI S000257

Prepared by:

Navy Region Hawaii

April 2022

Table of Contents

1 Introduction 1-1
1.1 Objective 1-3
1.2 Navy Region Hawaii Background 1-4
1.2.1 Overview of JBPHH 1-4
1.3 Storm Water Program Background 1-11
1.3.1 Hawaii Storm Water Program 1-12
1.3.2 Navy Region Hawaii Storm Water Permit Requirements 1-12
1.4 Navy Region Hawaii Environmental Policy 1-14
1.5 Navy Region Hawaii Storm Water Program 1-14
1.5.1 Implementation of the SWMP 1-14
1.5.2 Program Organization & Responsibilities 1-17
1.6 Revisions and Updates 1-18
1.6.1 Permit Renewal 1-21
1.6.2 Accuracy of Information Contained in this Plan 1-21
2 Public Education and Involvement 2-1
2.1 Program Goals 2-3
2.2 Targeted Groups 2-3
2.3 Outreach Activities 2-4
2.3.1 Storm Water Brochures 2-4
2.3.2 Industrial Facilities Training Brochure 2-4
2.3.3 NRH Storm Water Webpage 2-5
2.3.4 NRH and NAVFAC Hawaii Facebook Pages 2-5
2.3.5 Newspaper Articles 2-5
2.3.6 Personnel Training 2-6
2.3.7 Pesticide Applicators Training 2-6
2.3.8 Good Housekeeping Training 2-6
2.3.9 Military Housing Residents Handbook 2-7
2.3.10 Household Hazardous Materials 2-7
2.3.11 Earth Day Events 2-8
2.4 Public Involvement/Participation 2-8
2.4.1 Review, Update, and Implementation of the SWMP 2-8

2.4.2 Base Beautification Projects 2-8
2.4.3 Community Clean-up Events 2-9
2.4.4 Storm Drain Marking 2-9
2.4.5 Partnerships 2-10
2.4.6 Promoting Public Participation 2-10
2.4.7 Annual Survey 2-10
2.4.8 Program Points of Contact 2-11
2.5 Evaluation Methods 2-11
2.6 Summary of Public Education, Outreach and Participation 2-13
3 Illicit Discharge Detection and Elimination 3-1
3.1 Illicit Discharges 3-4
3.1.1 Conditionally Allowable Non-storm Water Discharge 3-4
3.2 Review and Approval Process for Drain Connections 3-7
3.3 Significant and Common Non-storm Water Discharges 3-8
3.4 System Mapping 3-10
3.5 Field Screening Plan and Tracking 3-10
3.5.1 Residential Housing Areas 3-12
3.6 Subsurface Oil Investigation, Cleanup, and Interim Control Measures 3-14
3.7 Public Reporting and Complaint Investigation 3-15
3.8 Spill Prevention and Response 3-16
3.9 Used Oil and Toxic or Hazardous Materials/Waste Disposal 3-18
3.9.1 Household Hazardous Materials/Waste 3-18
3.9.2 Privately Owned Vehicle Maintenance 3-18
3.9.3 Industrial Vehicle Maintenance 3-18
3.9.4 Hazardous Waste Accumulation Point 3-18
3.10 Enforcement 3-19
3.11 Training 3-20
4 Construction Site Runoff Control Program 4-1
4.1 Program Organization 4-6
4.2 BMP Implementation 4-11
4.3 Inventory of Construction Projects 4-11
4.4 Plan Review and Approval 4-13
4.4.1 Approval to Discharge or Connect to MS4 4-14

4.4.2 Commencement of Construction 4-14
4.5 Inspections 4-14
4.5.1 Initial Inspections 4-16
4.5.2 Quarterly and Other Frequency Inspections 4-16
4.5.3 Corrective Action and Reporting Procedure 4-16
4.5.4 Tracking Inspection Results 4-16
4.6 Enforcement 4-17
4.6.1 Referral of Non-compliance and Non-filers to DOH 4-17
4.7 Construction BMP Training 4-17
4.8 Education 4-18
5 Post-Construction Storm Water Management 5-1
5.1 Program Organization 5-4
5.2 Standards 5-9
5.3 Review of Plans for Post-construction BMPs 5-10
5.4 PBMP, Operation and Maintenance, and Inspection Database 5-11
5.5 Education and Training 5-12
5.5.1 Project Proponents 5-12
5.5.2 Inspectors 5-13
6 Debris Control BMPs Program Plan 6-1
6.1 Program Organization 6-4
6.2 Asset Management System and Mapping 6-9
6.3 Inspection/Maintenance Schedule 6-9
6.4 Storm Drain Marking 6-12
6.5 Maintenance of Structural Controls 6-12
6.6 Trash Reduction Plan 6-13
7 Chemical Applications BMPs Program Plan 7-1
7.1 Program Organization 7-2
7.2 Training 7-2
7.3 Authorized Use List 7-7
7.4 Implement Appropriate Requirements for Pesticide, Herbicide, and Fertilizer Applications 7-7
7.5 Reports and Records 7-8
7.5.1 Records 7-8

8 Erosion Control BMPs Program Plan 8-1
8.1 Program Organization 8-2
8.2 Permanent Erosion Control Improvements 8-4
8.3 Temporary Erosion Control Measures 8-4
8.4 Maintenance for Vegetated Best Management Practices 8-5
9 Maintenance Activities BMPs Program Plan 9-1
9.1 Program Organization 9-2
9.2 Maintenance Activities Best Management Practices Field Manual 9-3
9.3 Storm Water Pollution Control Plan 9-7
9.4 Training 9-7
10 Commercial Activities Discharge Management Program 10-1
10.1 Program Organization 10-4
10.2 Inventory and Map of Commercial Facilities and Activities 10-8
10.3 Requirement to Implement BMPs 10-9
10.4 Inspection of Commercial Facilities and Activities 10-9
10.4.1 Prioritization 10-10
10.4.2 Inspection Schedule 10-11
10.4.3 Inspection Procedure 10-11
10.4.4 Documentation and Tracking 10-14
10.4.5 Reporting Requirements 10-14
10.5 Enforcement Policy 10-15
10.6 Training 10-16
10.6.1 Inspector Training 10-16
10.6.2 Personnel Training 10-17
11 Industrial Facilities 11-1
11.1 Program Organization 11-5
11.2 Industrial Facility Mapping and Identification 11-9
11.3 Facility-specific Storm Water Pollution Control Plans 11-9
12 Monitoring Plan 12-1
12.1 Introduction 12-1
1. Monitoring Plan 12-1
12.2 Sampling locations and Rationale 12-2
12.2.1 Annual monitoring sites 12-2

12.2.2 Secondary monitoring locations 12-3
12.3 Priority based Monitoring Schedule 12-6
12.4 Permit Compliance 12-8
12.5 Management Measures Effectiveness 12-8
12.6 Storm event selection criteria 12-8
12.7 Storm Water sampling and analysis 12-8
12.7.1 Sample Collection and Transport 12-8
12.7.2 Analytical Requirements 12-12
12.8 Quality Assurance/Quality Control 12-21
12.8.1 Field Sample Procedures 12-21
12.8.2 Chain-of-Custody Procedures 12-21
12.8.3 Laboratory Procedures 12-22
12.8.4 Data Reduction, Validation, and Reporting 12-22
12.8.5 Reporting Requirements 12-25
12.9 Analytical requirements, map and sampling information by monitoring location 12-25
13 Reporting Requirements 13-1
13.1 Industrial Storm Water Reports 13-5
13.2 Annual Reports 13-5
13.3 Annual Monitoring Reports 13-6
13.4 WLA Completion Report for the North Fork of Kaukonahua Stream 13-7
13.5 Records Management 13-7
13.6 Program Effectiveness Reporting 13-8

Tables

2-1 Summary of Public Education, Outreach and Participation 2-12
3-1 Non-storm Water Discharges and Control Measures 3-9
3-2 Possible Sources of Pollutant Indicators 3-14
4-1 Construction Project Types and Responsible Agencies 4-12
6-1 Inspections/Maintenance Program Implementation Schedule 6-11
10-1 Deadlines for Inspection Notifications 10-14
10-2 Timelines for Corrective Action 10-14
12-1 Annual Monitoring Sites for JBPHH [redacted due to national security concerns] 12-3
12-2 Secondary Monitoring Points to be Monitored over a Five Year Period [redacted due to national security concerns] 12-5
12-3 Priority-Based Monitoring Schedule 12-8
12-4 NPDES Permit S000257 Limitations and Monitoring Requirements for Storm Water Associated with Industrial Sites 12-13
12-5 NPDES Permit S000257 Sample Container Requirements 12-16
12-6 Analytical Parameters, Methodologies and Detection Levels 12-18
12-7 Organic Analytical Parameters Associated with Potential Pollutants 12-20
12-8 Inorganic and General Analytical Parameters Associated with Potential Pollutants 12-22

Figures

1-1 NRH Permit Locations, JBPHH, Island of Oahu [redacted due to national security concerns].. 1-5
1-2 Storm Water Management Program Summary 1-15
1-3 Storm Water Management Program Organizational Chart..... 1-19
4-1 Construction Site Runoff Control Program Organizational Chart..... 4-9
5-1 Post-construction Storm Water Management Program Organizational Chart 5-7
5-2 PBMP Selection Process 5-11
6-1 Debris Control Program Organizational Chart..... 6-7
7-1 Chemical Applications Program Organizational Chart 7-5
8-1 Erosion Control Program Organizational Chart 8-5
9-1 Maintenance Activities Program Organizational Chart 9-5
10-1 Commercial Activities Discharge Management Program Organizational Chart..... 10-6
11-1 Industrial Facilities Program Organizational Chart 11-7
11-1 Sample Chair of Custody Form 12-23

Appendices

1-1 Final Permit Documents [redacted due to national security concerns]
- Final NRH Municipal Separate Storm Sewer System Permit No. HI S000257 (Effective Date February 1, 2021)
- Fact Sheet

1-2 JBPHH Subarea Maps [redacted due to national security concerns]
1-3 NAVFAC Hawaii Organizational Chart
2-1 A Guide to Understanding Storm Water Brochure
2-2 Stormwater Pollution Prevention for Industrial Facilities on JBPHH Brochure
3-1 BMPs for Allowable Non-storm Discharge
3-2 BMPs for Disposal of Waste Materials and Contaminated Water
3-3 Draft Enforcement Response Plan
3-4 Wastewater Spill Response Reporting Guidelines [redacted due to national security concerns]
4-1 Initial BMP Site Inspection Checklist
4-2 Storm Water Pollution Prevention Plan Content Review Checklist
4-3 Construction Oversight Field Inspection Checklist
5-1 LID/EISA Constraints and Waiver Request
6-1 Draft Trash Reduction Plan
6-2 Draft Action Plan for Maintenance of Structural Controls
9-1 Semi-annual Facility Inspection Checklist
9-2 Facility-wide Maintenance BMPs
10-1 List and Maps of Commercial Facilities [redacted due to national security concerns]
10-2 Commercial Activity-Specific BMPs
- General Commercial Activities & Good Housekeeping
- Activities Related to Material & Waste Storage
- Activities Related to Vehicle, Boat & Equipment Maintenance
- Activities Related to Vehicle & Boat Washing
- Activities Related to Vehicle Fueling
- Activities Related to Restaurants & Food Service

10-3 Commercial Inspection Schedule [redacted due to national security concerns]
10-4 Commercial Training Brochures
10-5 NPDES Compliance Commercial Inspection Form
11-1 SIC Codes for Industrial Facilities Requiring Permit Coverage
11-2 Industrial Storm Water Pollution Control Plans [redacted due to national security concerns]
- List of Industrial Facilities
- NRH Industrial Facilities and Base Drainage Map
- Storm Water Pollution Control Plans

11-3 Best Management Practices Fact Sheets
12-1 Sampling Locations and Rationale [redacted due to national security concerns]
12-2 Other Permit-identified Sites [redacted due to national security concerns]
13-1 Draft Program Effectiveness Assessment Plan

List of Acronyms and Abbreviations

AFB	Air Force Base
AM	NAVFAC Hawaii Asset Management
AMS	Asset Management System
APWO	Assistant Public Works Officer
AUL	Authorized Use List
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
BSVE	Base Support Vehicles and Equipment
BWPU	Bilge Water Processing Facility
CADMP	Commercial Activities Discharge Management Program
CATEX	Categorical Exclusion
CBMU	Construction Battalion Maintenance Unit
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CO	Commanding Officer
COD	Chemical Oxygen Demand
CNRH	Commander, Navy Region Hawaii
CWA	Clean Water Act
CWB	Clean Water Branch
DC	Design and Construction
DC4	NAVFAC Pacific Design Division
DMR	Discharge Monitoring Report
DOD	Department of Defense
DODINST	Department of Defense Instruction

DOH	State of Hawaii Department of Health
DON	Department of the Navy
EA	Environmental Assessment
ECATTS	Environmental Compliance Assessment, Training, and Tracking System
EISA	Energy Independence and Security Act (2007)
ERA	Environmental Resource Associates
ERP	Enforcement Response Plan
EPA	United States Environmental Protection Agency
EV	NRH/NAVFAC Hawaii Environmental Department
FEAD	NAVFAC Hawaii Facilities Engineering and Acquisition Division
FLC	Fleet Logistics Center
FMD	JBPHH Public Works Department Facility Management Division
FORFAC	Fuel Oil Reclamation Facility
FWPCA	Federal Water Pollution Control Act
GIS	Geographic Information System
GP	General Permit
GPD	Gallons per Day
GPM	Gallons per Minute
GRX	GeoReadiness Explorer
HAR	Hawaii Administrative Rules
HAZMAT	Hazardous Materials
HAZWASTE	Hazardous Waste
HIA	Honolulu International Airport
HIANG	Hawaii Air National Guard
HM	Hazardous Material
HW	Hazardous Waste
ICP	Integrated Contingency Plan
IDDE	Illicit Discharge Detection and Elimination

IP	Individual Permit
IPMC	Installation Pest Management Coordinator
IPMP	Integrated Pest Management Plan
IRP	Installation Restoration Program
IWTC	Industrial Waste Treatment Complex
JB4	JBPHH Public Works Department
JBC	Joint Base Commander
JBPHH	Joint Base Pearl Harbor-Hickam
LID	Low Impact Development
MC	Makalapa Crater
MEP	Maximum Extent Practicable
MGD	Million Gallons per Day
MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector General Permit
MSL	Mean Sea Level
MWR	Morale, Welfare and Recreation
NAD 83	North American Datum 83
NAICS	North American Industry Classification System
NAVFAC Hawaii	Naval Facilities Engineering Systems Command Hawaii
NAVFAC Pacific	Naval Facilities Engineering Systems Command Pacific
NAVMAG	Naval Magazine
NAVSUP	Navy Supply Systems Command
NEPA	National Environmental Policy Act
NEPMU-6	Navy Environmental Preventative Medicine Unit 6
NEX	Navy Exchange
NGPC	Notice of General Permit Coverage
NISMO	Naval Inactive Ship On-site Maintenance Office
NOI	Notice of Intent (for coverage under a general NPDES Permit)

NOPRS	Navy Online Pesticide Reporting System
NPDES	National Pollutant Discharge Elimination System
NRH	Navy Region Hawaii
O&M	Operation and Maintenance
OHS	Oil and Hazardous Substance
OMC	Ohana Military Communities
OPNAVINST	Office of the Chief of Naval Operations Instruction
PAO	NAVFAC Hawaii Public Affairs Office
PBMP	Permanent Best Management Practice
PCB	Polychlorinated Biphenyls
PCP	Pearl City Peninsula
Permit	NRH's MS4 and Industrial Storm Water NPDES Permit, No. HI S000257
pH	Hydrogen-Ion Activity
PHNSY/IMF	Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
PM	Project Manager
PMEB	NAVFAC Hawaii FEAD Project Management and Engineering Branch
PMSP	Pest Management Service Provider
PPM	Parts Per Million
PPMC	Professional Pest Management Consultant
PPV Housing	Public-Private Venture Housing
POCT	Port Operations Control Tower
PRJ4	JBPHH Public Works Department Environmental Division
PRJ41	JBPHH Public Works Department Environmental Services Branch
PRJ42	JBPHH Public Works Department Environmental Storefront Branch
PROD	JBPHH Public Works Department Production Division
POL	Petroleum, Oil, Lubricant
POTW	Publicly Owned Treatment Works
PW	NAVFAC Hawaii Public Works

QA/QC	Quality Assurance/Quality Control
RDC	Regional Dispatch Center
SDS	Safety Data Sheet
SIC	Standard Industrial Classification
SPCC	Spill Prevention, Control and Countermeasures
STEM	Science, Technology, Engineering, and Mathematics
SWMP	Storm Water Management Plan
SWPCP	Storm Water Pollution Control Plan
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TMK	Tax Map Key
TOC	Total Organic Carbon
TSS	Total Suspended Solids
UM	NAVFAC Hawaii Utilities Management
UFC	Unified Facilities Criteria
U.S.	United States
U.S.C.	United States Code
VOC	Volatile Organic Compound
WAP	Waste Accumulation Point
WIB	Work Induction Board
WL	West Loch
WLA	Waste Load Allocation
WP	Waipio Peninsula
WQC	Water Quality Certification

Definitions

Activity — An independent command performing a specific mission and having its own unit identification code.

Acute Toxicity — Any toxic effect that is produced within a short period of time, generally 96 hours or less. Although the effect most frequently considered is mortality, the end result of an acute effect could be any harmful biological effect.

Adsorption — The collection of a gas, liquid, or dissolved substance in a condensed form on a surface. An example would be the tendency of contaminants to collect on and adhere to sediment particles.

Algae — Aquatic, non-flowering plants that lack roots and use light energy to convert carbon dioxide and inorganic nutrients such as nitrogen and phosphorus into organic matter by photosynthesis. Common algae include dinoflagellates, diatoms, seaweeds, and kelp. An algal bloom can occur when excessive nutrient levels and other physical and chemical conditions enable the algae to reproduce rapidly.

Aquifer — The underground layer of rock or soil in which groundwater resides. Aquifers are replenished or recharged by surface water percolating through soil. Wells are drilled into aquifers to extract water for human use.

Base Flow — The flow contribution to a creek by groundwater. During dry periods, base flow constitutes the majority of stream flow.

Baseline Load — Quantitative estimate of the debris currently being discharged from the MS4

Best Available Technology Economically Achievable (BAT)

Defined at CWA Section 304(b)(2). In general, BAT represents the best available economically achievable performance of plants in the industrial subcategory or category. Factors considered in assessing BAT include:

- cost of achieving BAT effluent reductions;
- age of equipment and facilities involved;
- the processes employed by the industry and potential process changes;
- non-water quality environmental impacts, including energy requirements; and
- other factors as EPA deems appropriate.

Best Conventional Pollutant Control Technology (BCT)

Defined in CWA Section 304(b)(4), addresses conventional pollutants from existing industrial point sources. In addition to considering the other factors specified in Section 304(b)(4)(B), EPA establishes BCT limitations after consideration of a two part "cost-reasonableness" test.

Best Management Practice (BMP)	Measure that is implemented to protect water quality and reduce the potential for pollution associated with storm water runoff.
Bioaccumulation	The process by which a contaminant accumulates in the tissue of an organism. For example, certain chemicals in food eaten by a fish tend to accumulate in its liver and other tissues.
Bioavailable	Available for biological uptake.
Biodegradation	The conversion of organic compounds into simpler compounds (such as carbon dioxide and water) through biochemical activity. Toxic compounds can be converted into non-toxic compounds through biodegradation. However, in some cases, complex compounds are first converted into intermediate substances that can be more toxic than the original substance.
Biofiltration	Treatment technology that uses microorganisms in the destruction of volatile organic compounds. Waste gases are purified by passage through a biologically active, porous medium. As the waste gases pass through the medium, contaminants are absorbed into a wet/biofilm layer and are aerobically degraded to carbon dioxide, water, and biomass end products.
Biochemical Oxygen Demand (BOD)	The amount of oxygen in water required by bacteria to decompose organic matter under an aerobic condition. BOD is an indicator of water quality: a high BOD value indicates a high level of pollution. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Clean Water Act.
Biomagnification	The process by which concentrations of contaminants increase (magnify) as they pass up the food chain such that each animal in the food chain has higher tissue concentrations than did its food. For example, concentrations of certain contaminants can increase as they are passed from plankton to herring to salmon to seals.
Channelization	The process of making a channel or channels. A channel is the bed of a stream or river, or the hollow or course in which a stream flows.
Check Dam	A small dam designed to slow the velocity of water and sediment in a channel, used especially for grade control and channel erosion reduction.
Chemical Oxygen Demand (COD)	A test that measures the amount of oxygen in water required for chemical oxidation of organic matter.
Chronic Toxicity	Any toxic effect on an organism that results after exposure of long duration (often 1/10th of the life span or more). The end result of a chronic effect can be death although the usual effects are sublethal (e.g., inhibited reproduction or growth).

These sublethal effects may be reflected by changes in the productivity and population structure of the community.

Clean Water Act (CWA)

The Federal Water Pollution Control Act enacted by Public Law 92-500 as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; 33 U.S.C. 1251 et seq. It is the primary federal law in the U.S. governing water pollution.

Coliform Bacteria — Organisms residing in the intestinal tracts of human beings and other warm-blooded animals. The presence of coliform bacteria indicates the presence of fecal contamination.

Critical Area — A source area that has a high likelihood for the release of pollutants.

Culvert — A drain, usually a concrete or metal pipe, crossing under a road or an embankment.

Detention — The process of collecting and holding back storm water for later release to receiving waters.

Dissolved Oxygen — Oxygen that is present (dissolved) in water and therefore available for fish and other aquatic animals to use. If the amount of dissolved oxygen in the water is too low, then aquatic animals may die. Wastewater and naturally occurring organic matter contain oxygen-demanding substances that consume dissolved oxygen.

Dry Weather Flow — Flow from anything other than a storm event; non-storm runoff (e.g., air conditioning condensate, landscaping overflow, etc.).

Environmental Impact Statement

A document that discusses the likely significant impacts of a proposal, methods to lessen the impacts, and alternatives to the proposal, required by the National Environmental Policy Act and the Hawaii Environmental Impact Statement Law, Hawaii Revised Statutes Chapter 343.

Erosion — Wearing away of rock or soil by the gradual detachment of rock or soil fragments by water, wind, ice, and other mechanical and chemical forces.

Eutrophication — The process by which a body of water becomes enriched with nutrients, especially nitrogen and phosphate, stimulating the growth of aquatic plants. Excessive plant growth tends to have undesirable effects such as closing streams and reducing water clarity. Also, when large numbers of plants decay, they consume disproportionate amounts of dissolved oxygen, reducing the amount of oxygen available for use by other aquatic life.

Facility — An industrial operation created to serve a particular function.

Fecal Coliform — See Coliform Bacteria.

Geometric Mean	An arithmetic average of the logarithmic values; obtained by combining all data points, computing the logarithm (the power to which a number is raised), taking the average (mean), and transferring it back to an arithmetic number.
Grated Inlet	A storm drain inlet structure with a grate framework opening to allow storm water runoff to enter.
Habitat	The specific area or environment in which a particular type of plant or animal lives. An organism's habitat must provide all of the basic requirements for life and should be free of harmful contaminants.
Health Risk	The risk or likelihood that a person's health will be adversely affected.
Herbicide	A chemical agent that destroys or inhibits plant growth.
Illegal Dumping	The illegal act of putting something other than storm water into a storm water system.
Illicit Connection	An unauthorized connection of a pipe carrying something other than storm water to a storm water system.
Illicit Discharge	Any discharge to a separate storm sewer that is not composed entirely of storm water except discharges pursuant to an NPDES permit and discharges resulting from firefighting activities.
Impervious	A surface that cannot be easily penetrated; for instance, rain does not readily penetrate asphalt or concrete surfaces.
Inflow and Infiltration (I/I)	Excess water that enters a sewer system. Since a sewer system can only handle a certain amount of wastewater at one time, excess flows can trigger overflows of raw wastewater. Inflow refers to water that unnecessarily flows into the system, for example, from manhole covers. Infiltration is water that seeps into the system through cracks and gaps in the pipes. Typically, inflow and infiltration are clean water not needing treatment.
Insecticide	A chemical agent that destroys insects.
Land Use	The way land is developed and used in terms of the types of activities allowed (agriculture, residences, industries, etc.) and the size of buildings and structures permitted. Certain types of pollution problems are often associated with particular land use practices, such as sedimentation from construction activities.
Materials Management	Employ proper handling and storage (inventory control and material labeling) procedures to transport and store significant materials according to Federal, State, and local regulations (i.e., (1) use barrel cart or forklift to move drums; and (2) store significant materials in proper containers and in a covered area).

Metals — Metals are elements naturally found in rocks and minerals that are released to the environment by weathering and erosion. This material can also be released as pollutants by human activity, as is the case for (heavy) metals, such as mercury, lead, nickel, zinc, and cadmium. These are of environmental concern because they are generally toxic to life above 'trace' concentration. Since metals are elements, they do not break down in the environment over time and can be incorporated into plant and animal tissue.

Monitor — To systematically and repeatedly measure conditions in order to track changes. For example, dissolved oxygen in a bay might be monitored over a period of several years in order to identify any trends in its concentration.

Municipal Separate Storm Sewer System (MS4)

A conveyance or system of conveyances (including roads, drainage systems, municipal streets, grated inlets, curbs, gutters, ditches, man-made channels, or storm drains) owned or operated by a state, city, or other public body, designed or used for collecting or conveying storm water. MS4s are not a combined sewer and are not part of a Publicly Owned Treatment Works. MS4s discharge directly into receiving waters.

National Pollutant Discharge Elimination System (NPDES)

NPDES is a part of the federal CWA, which requires point source dischargers to obtain permits. These permits are referred to as NPDES permits and are administered in Hawaii by the Clean Water Branch of the State of Hawaii Department of Health.

NPDES States — NPDES States have NPDES permitting authority. The state agency administers and enforces the storm water program within the state. They may issue individual and general permits for industrial dischargers, including those that are developed as a result of the group application process. Having such authority does not, however, oblige a state to issue general permits (either baseline or group). States with general permitting authority may elect to issue only individual permits. Most states with general permitting authority are expected to use it.

Under the CWA, state NPDES programs must be at least as strict as the EPA's programs but may be more stringent. Several states have indicated that their program requirements will exceed the EPA minimums. Moreover, NPDES states may choose to promulgate baseline permits but are not required to do so.

Non-NPDES States — NPDES states that currently do not have general permitting authority are particularly hard pressed by the regulation's deadlines. These states administer the NPDES program in the same manner as other NPDES states, except that they do not have the EPA-delegated authority to issue general permits.

Non-Point Source Pollution

	Pollution that enters water from dispersed and uncontrolled sources such as surface runoff. Non-point sources (e.g., forest practices, agricultural practices, on-site sewage disposal, street and paved area runoff) may contribute pathogens, suspended solids, and toxicants. While individual sources may seem insignificant, the cumulative effects of non-point source pollution are significant.
Non-Point Sources	
	Diffuse sources from which contaminants originate to accumulate in surface water or groundwater. These sources can add to a cumulative problem with serious health or environmental consequences.
Non-Storm Water Discharge	
	Any discharge to storm water systems that is not composed entirely of storm water.
Nutrients	Essential chemicals needed by plants or animals for growth. If other physical and chemical conditions are optimal, excessive amounts of nutrients can lead to degradation of water quality by promoting excessive growth, accumulation, and subsequent decay of plants, especially algae. Some nutrients can be toxic to animals at high concentrations.
Organics	A broad term that includes numerous compound which are derived (naturally or by man-made processes) from animal or vegetation sources or from petroleum. Typical organic matter would include fallen leaves, grasses, pollen, animal wastes, paper, other litter, oil and grease, gasoline, pesticide, and various synthetic products.
Outfall (Industrial)	The point of discharge of storm water to adjacent property, to an MS4 or directly to waters of the United States. The outlet can be from a storm water system or drain system.
Outfall (Non-Industrial)	
	The outlet point of storm water discharges excluded from the NPDES industrial storm water program.
Oxygen-Demanding Materials	
	Materials such as food waste and dead plant or animal tissue that use up dissolved oxygen in the water when they are degraded through chemical or biological processes. BOD is a measure of how much oxygen demand a substance has.
Parameter	A quantifiable or measurable characteristic. Water quality parameters include temperature, pH, salinity, dissolved oxygen concentration, and many others.
Pathogen	An agent such as a virus, bacterium, or fungus that can cause diseases in humans. Pathogens can be present in municipal, industrial, and non-point source discharges.
Percolate	To pass through a permeable substance. For instance, septic effluent percolates through soil.

Permeable Surfaces	Surfaces, such as soil, that allow some percolation or infiltration of water into the ground and ultimately the groundwater system. This is in contrast to impermeable surfaces, such as concrete, that allow water to run off with little or no infiltration.
Pesticide	A general term to describe chemical substances used to destroy or control organisms. Pesticides include insecticides, algicides, fungicides, and others. Many of these substances are manufactured and are not naturally found in the environment. Others, such as pyrethrum, are natural toxins which are extracted from plants and animals.
pH	The degree of alkalinity or acidity of a solution. A pH of 7.0 indicates neutral water, while a pH of 5.5 is acidic. A reading of 8.5 is alkaline or basic. The pH of water influences many of the types of chemical reactions that will occur in it. For instance, a slight decrease in pH may greatly increase the toxicity of substances such as cyanides, sulfides, and most metals. A slight increase may greatly increase the toxicity of pollutants such as ammonia.
Pluvial	Of or having to do with rain; formed by the action of rain.
Point Sources	A source of pollutants from a single point of conveyance such as a pipe. For example, the discharge pipe from a sewage treatment plant or factory is a point source.
Pollutant	A contaminant that adversely alters the physical, chemical, or biological properties of the environment. The term includes pathogens, toxic metals, carcinogens, oxygen-demanding materials, and all other harmful substances. With reference to non-point sources, the term is sometimes used to apply to contaminants released in low concentrations from many activities which collectively degrade water quality. As defined in the federal CWA, pollutant means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water.
Primary-Treated Sewage	Sewage that has undergone primary treatment.
Primary Treatment	A wastewater treatment method that uses settling, skimming, and (usually) chlorination to remove solids, floating materials, and pathogens, respectively, from wastewater. Primary treatment removes about 35 percent of BOD and less than half of the metals and toxic organic substances.
Priority Pollutants	Substances listed by the EPA under the CWA as toxic and having priority for regulatory controls. The list currently includes metals (13), inorganic compounds containing cyanide and arsenic, and a broad range of both natural and artificial organic compounds (111).

Receptors — When referring to water quality, receptors are users of the water body, such as fish or humans ingesting fish that are affected by the condition of the water.

Regulatory Framework

A particular set of laws, rules, procedure, and agencies designed to govern a particular type of activity or solve a particular program.

Representative Storm Event

A storm event that results in more than 0.1 inch of total rainfall and occurs more than 72 hours since the last event of more than 0.1 inch of total rainfall.

Retention — The process of collecting and holding storm water with no surface outflow.

Riprap — A foundation, wall, or revetment made of various sizes of rock placed irregularly in water or on the soft bottom of a water body.

Riparian — Pertaining to the banks of streams, lakes, or tidewater.

Secondary Treatment

A wastewater treatment method that usually involves the addition of biological treatment to the settling, skimming, and disinfection provided by primary treatment. Secondary treatment may remove up to 90 percent of BOD and significantly more metals and toxic organics than primary treatment.

Sediment — Material suspended in or settling to the bottom of a liquid, such as the sand and mud that make up much of the shorelines and bottom of the ocean. Sediment input to streams and rivers comes from natural sources, such as erosion of soils and weathering of rock; or anthropogenic sources, such as forest or agricultural practices, or construction activities. Certain contaminants tend to collect on and adhere to sediment particles.

Separated Sewer System

A wastewater collection and treatment system where domestic and industrial wastewater is separated from storm water runoff. A separated system consists of independent sanitary wastewater and storm water systems. The storm water is discharged directly into open water and the sanitary wastewater goes to a treatment plant.

Significant Materials

Includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of Title III of the Superfund Amendment and

	Reauthorization Act; fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.
Significant Quantities	The volume, concentrations, or mass of a pollutant in storm water discharge that can cause or threaten to cause pollution, contamination, or nuisance; adversely impact human health or the environment; and cause or contribute to a violation of any applicable water quality standards for the receiving water.
Siltation	The process by which a river, lake, or other water body becomes clogged with sediment. Silt can clog gravel beds and prevent successful salmon spawning.
Source Control BMP	An effort to prevent or limit the exposure of significant materials to storm water at the source.
Storm Drain	A system of gutters, pipes, or ditches used to carry storm water from surrounding lands to streams, lakes, or the ocean, which is vulnerable to deliberate dumping or spills, and storm water runoff pollutants that can be generated through a variety of routine human activities. This term also refers to the end of the pipe where the storm water is discharged (i.e., storm drain outlet).
Storm Water	Storm water runoff, snow melt runoff, and surface runoff and drainage.
Storm Water Discharge Associated with Industrial Activity	The discharge from any conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process wastewaters; sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.
Surcharge	This refers to a condition where the hydraulic capacity of a storm water system is temporarily exceeded (e.g., during a storm event).
Surge	A large mass of moving water, such as a wave or swell. Also, a heavy, violent swelling motion, such as a surge of water through a storm drain during a heavy rain.
Suspended Solids	Organic or inorganic particles that are suspended in and carried by the water. The term includes sand, mud and clay particles as well as solids in wastewater.

Swale	A broad, shallow, vegetated channel. A swale is essentially a vegetated drainage ditch that has been engineered to collect and transport storm water in a way that allows the vegetation to filter sediments and pollutants.
Total Suspended Solids (TSS)	The weight of particles that are suspended in water. Suspended solids in water reduce light penetration in the water column, can clog the gills of fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles.
Toxic	Poisonous, carcinogenic, or otherwise directly harmful to life.
Trash	For the purposes of this plan, "trash" will be considered analogous to "litter" as defined below by the Hawaii Revised Statutes §339-1. *"Litter" means rubbish, refuse, waste material, garbage, trash, offal, or any debris of whatever kind or description, whether or not it is of value, and includes improperly discarded paper, metal, plastic, glass, or solid waste.* A distinction is made that trash is not inclusive of natural materials, such as branches, leaves, and other vegetation, that is deposited into waterbodies naturally.
Tributary	A stream that flows into another.
Turbidity	A measure of the amount of material suspended in the water. Increasing the turbidity of the water decreases the amount of light that penetrates the water column. High levels of turbidity are harmful to aquatic life.
Urban Runoff	A substance, such as rain, that runs off of surfaces in a watershed in excess of the amount absorbed by the surfaces (usually the ground). Urban runoff can contain sediments and contaminants (non-point source pollution) that can add to water quality degradation in the watershed. Increases in impervious surface usually result in increased urban runoff.
Volatile	Can be readily vaporized at a relatively low temperature.
Watershed	The geographic region from which water drains into a particular river or body of water. A watershed includes hills, lowlands, and the body of water into which the land drains. Watershed boundaries are defined by the ridges of separating watersheds.
Weir	A low dam built across a stream, primarily to control water level or to divert water into another facility. Also used to measure flow.
Wetlands	Wetlands are transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is

	predominantly undrained hydric soil; and (3) the substrate is saturated with water or covered by shallow water at some time during the growing seasons each year.
Zoning	To designate, by ordinances, areas of land reserved and regulated for different land uses.

1 Introduction

On January 22, 2021, the Department of the Navy, Navy Region Hawaii (NRH) was issued National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000257 (referred to hereinafter as the "Permit") by the State of Hawaii Department of Health (DOH), which took effect on February 1, 2021. Refer to Appendix 1-1 for the final permit and rationale.

Under the Permit, NRH is authorized to discharge storm water and specified non-storm water discharges into State Waters from the following facilities:

- Joint Base Pearl Harbor-Hickam (JBPHH) Small Municipal Separate Storm Sewer System (Small MS4)
- Navy Industrial areas or facilities (as specified in the Permit)
- Any additional storm sewer outfalls and Navy Industrial areas and facilities identified by NRH, throughout the Permit term, as potentially significant pollutant sources.

The State Waters identified in the Permit consist of inland streams and open coastal waters in and around the Island of Oahu, Hawaii. These include Pearl Harbor, Halawa Stream, Kaiapo Canal, Kaukonahua Stream, Kumumauu Canal, Mailiilii Stream, Mamala Bay, Manuwai Canal, Poamoho Stream, Transportation Canal, Ulehawa Stream, Unnamed tributary of Waikele Stream, unnamed gulches in Wahiawa, Waikakalaua, and Waiawa Streams. Refer to Appendix 1-2.

Per Part D.1 of the Permit, NRH is required to review, improve, implement, and enforce its Storm Water Management Plan (SWMP). The Permit states:

Permit Reference	SWMP Section
Part D. Storm Water Management Plan (SWMP) 1. *Within 18 months of the effective date of this permit, the Permittee shall review, update as necessary, implement, and enforce each of the SWMP components described in Part D.1.a to Part D.1.f to address the requirements of this permit. The SWMP shall describe the control measures to reduce, to the MEP, the discharge of pollutants to and from its Small MS4 to protect water quality and to satisfy the appropriate water quality requirements of the CWA. The SWMP shall include at a minimum, but not be limited to the following information for each of the SWMP components described in Part D.1.a to Part D.1.f:* • *The Best Management Practices (BMPs), plus underlying rationale and mechanism of execution that shall be implemented for each of the program components.* • *The measurable goals, standards and milestones for each of the BMPs, plus underlying rationale, including interim measures to assess the effectiveness of each program component and to guide the overall program implementation.*	Section 1

• *The name or position title and affiliation of the person or persons responsible for implementation or coordination of each program component.* • *Monitoring to determine effectiveness of the controls and of the overall storm water program.* • *Evaluation of information collected and the resulting programmatic changes in an effort to maximize program resources to comply with this permit.* • *Specify the legal authority allowing for the requirements of this Permit to be met.* *The SWMP shall be updated per the requirements of this permit, be consistent with the format of this permit, shall be submitted to DOH in accordance with Parts A.6. and A.7, and shall be fully implemented upon submittal, including any plans, policies, or systems required to be developed and implemented as part of the SWMP. The Permittee shall implement the existing SWMP until submittal of the updated SWMP. The SWMP and any of its revisions, additions, or modifications are enforceable components of this permit.*	
2. *The Permittee shall revise the SWMP, as necessary, if the discharge from the Small MS4 is causing or contributing to the exceedance of any discharge limitation or water quality standard established in HAR, Section 11-54-4. The revisions shall include BMPs and/or other measures to reduce the amount of pollutants found to be in exceedance from entering State Waters.* 3. *The Permittee shall properly address all modifications, concerns, requests, and/or comments to the satisfaction of the DOH and/or EPA.* a. *SWMP Modifications - The storm water pollution control activities described in the SWMP may need to be modified, revised, or amended from time to time over the life of the permit to respond to changed conditions and to incorporate more effective approaches to pollutant control. Minor changes may be proposed by the Permittee or requested by DOH or the EPA. Proposed changes that imply a major reduction in the overall scope and/or level of effort of the SWMP must be made for cause and in compliance with 40 CFR §122.62 and Part 124. A written report shall be submitted to the Director of Health (Director) for acceptance at least 30 calendar days prior to the initiation date of the major modification. The Permittee shall report and justify all other modifications made to the SWMP in*	Section 1.6

its Annual Report for the year in which the modification was made. *b. System Modifications include any planned physical alterations or additions to the permitted Small MS4 and any existing outfalls newly identified over the term of the permit. All alterations and/or additions to the Small MS4 with the potential to significantly affect the quality or quantity of discharge shall be identified by letter within 30 calendar days of the completion of the alteration and/or addition and summarized in the Annual Report.*	

This revised SWMP is to be fully implemented upon submittal to DOH. The SWMP and any of its revisions, additions, or modifications are enforceable components of the Permit.

1.1 Objective

The goal of NRH's SWMP is to protect the water quality of surface waters affected by its small MS4 and specified industrial activities. This SWMP is designed to accomplish this task using a multi-faceted approach, which is outlined in several program components in accordance with the Permit.

For the purpose of this document, the term "tenants" will be used to describe all individuals, organizations, and installations that make up JBPHH. This includes, but is not limited to military personnel and their dependents, civilian employees, construction and maintenance contractors, industrial facilities, commercial businesses, schools, and recreational facilities.

The main objectives of this SWMP are to outline programs that:

- Promote awareness of NRH's SWMP among its tenants;
- Use education and training as tools to manage the NRH Storm Water Program and identify areas for improvement;
- Identify responsible parties for implementation of the various SWMP components;
- Identify potential sources of storm water pollution, as regulated by the Permit;
- Implement, evaluate, and modify existing Best Management Practices (BMPs), as needed, to prevent storm water pollution from all tenants on Base and address changing conditions on Base;
- Facilitate implementation of facility-specific Storm Water Pollution Control Plans (SWPCPs) for specified industrial activities;
- Support regular inspections to oversee and enforce compliance with Permit, State and Federal regulations through this SWMP; and
- Routinely monitor to measure effectiveness of controls and the overall Storm Water Management Program in preventing, minimizing, and removing pollutants in storm water discharge, for continued development of the SWMP.

This SWMP is intended to be a user-friendly document to facilitate the Base-wide implementation of NRH's Storm Water Management Program and meet State and Federal requirements. It is aimed at the development and application of comprehensive, cost-effective practices that prevent, reduce, and

eliminate pollutants in storm water discharges throughout JBPHH to the maximum extent practicable (MEP).

1.2 Navy Region Hawaii Background

Commander, Navy Region Hawaii (CNRH) oversees two installations, JBPHH on Oahu, and Pacific Missile Range Facility Barking Sands on Kauai. The mission of NRH is to provide, maintain, and improve shore infrastructure, service support and training. The focus of this SWMP are operations directly related to JBPHH. Any further references to NRH in this document are intended to be with respect to JBPHH only.

JBPHH was formed as a result of the October 1, 2010 merger between Naval Station Pearl Harbor and Hickam Air Force Base (AFB). JBPHH provides support to several mission areas and functions ranging from a flying mission, port operations and support, and a wide variety of industrial and administrative functions and agencies.

1.2.1 Overview of JBPHH

The Permit coverage applies to JBPHH and its specified industrial facilities located throughout the island of Oahu, Hawaii. These activities take place in the main area of Joint Base which includes the contiguous areas of the former Hickam AFB and the former Pearl Harbor Naval Base, as well as several non-contiguous areas. The sub areas of JBPHH covered by the Permit are listed below (see Figure 1-1 and Appendix 1-2):

- 1.2.1.1 Former Hickam AFB – includes all areas of the former Hickam AFB
- 1.2.1.2 Pearl Harbor Naval Base – includes:
  - the former Naval Submarine Base Pearl Harbor,
  - the former Naval Supply Center Pearl Harbor, and
  - areas formerly part of Pearl Harbor Naval Shipyard.
- 1.2.1.3 Moanalua
- 1.2.1.4 Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Compound
- 1.2.1.5 Makalapa Crater
- 1.2.1.6 Ford Island
- 1.2.1.7 Pearl City Peninsula
- 1.2.1.8 Waipio Peninsula
- 1.2.1.9 JBPHH Wahiawa Annex
- 1.2.1.10 West Loch
- 1.2.1.11 JBPHH Lualualei Annex
- 1.2.1.12 Family Housing
- 1.2.1.13 Miscellaneous Sub Areas

There are often several different commands and agencies operating simultaneously within each of these areas and sub areas. This SWMP is intended to provide direction with regard to general Base-wide activities versus for specific commands.

The following sections provide a general overview of each area covered by the Permit, including a general description of usage, drainage and topography. For additional information regarding specific industrial activities that take place within each area, refer to Chapter 11.

Figure 1-1 NRH Permit Locations, JBPHH, Island of Oahu
[redacted due to national security concerns]

This page left intentionally blank.

1.2.1.1 Former Hickam AFB Sub Area

The former Hickam AFB Sub Area is located on a flat plain region built upon an uplifted marine terrace along the southern coast of Oahu. Hickam is bordered by the Honolulu International Airport (HIA) to the east, the JBPHH entrance channel to the west, and Mamala Bay to the south. The sub area serves several functions, to include aircraft operations and support, administrative, military family housing, and other personnel support services. Hickam and HIA share runways, constituting a single airport complex operated under a joint-use agreement.

The former Hickam AFB sub area portion of JBPHH encompasses approximately 2,520 acres of land. Impervious areas consist of buildings, sidewalks, paved roads, and runways. Approximately 60 percent of the total Hickam area is covered by impervious surfaces.

All of the sub area is relatively flat and often experiences ponding during heavy rains. Runoff across the Hickam sub area is controlled by a number of constructed and natural drainage features. Storm water runoff is controlled by scuppers, and a network of storm drain systems. In areas that are less developed, storm water flows are primarily conveyed as sheet flow or by swales. A few small size retention ponds are located in various locations throughout Hickam. These channel systems discharge into the Maunuwai, Kumumauu, or Transportation Canals. Storm drain systems discharge directly into Mamala Bay, Pearl Harbor Entrance Channel, or the Reef Runway Lagoon.

1.2.1.2 Pearl Harbor Naval Base Sub Area

The Pearl Harbor Naval Base Sub Area consists of all the lands and activities of the former main base of the Pearl Harbor Naval Complex. It includes the former Naval Station Pearl Harbor, the former Naval Submarine Base Pearl Harbor, the former Naval Supply Center Pearl Harbor, and areas formerly part of the Pearl Harbor Naval Shipyard. It does not include the industrial portions within the fence line of the Controlled Industrial Area of the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY/IMF), which for storm water management purposes is covered under a separate permit.

The Naval Base Sub Area supports a wide range of functions and activities to include berthing wharves, support facilities, administration, military family housing, and other personnel support services. The area enclosed by the sub area is approximately 790 acres. The majority of the area is situated on relatively level ground at an elevation of approximately 10 feet above mean sea level (MSL). The area is generally flat, but slopes gently to the northwest. Approximately 90 percent of the sub area is impervious to storm water infiltration.

Three smaller areas are part of the Naval Base Sub Area and are described below.

- The Marine Barracks facility is roughly 44 acres that slope gently toward the northwest at less than 1 percent. The elevations within this area range from 12 to 19 feet MSL. The impervious areas at the Marine Barracks consist of buildings, sidewalks, and paved helicopter pad, roads and parking lots. Approximately 80 percent of the total area at Marine Barracks is impervious to storm water infiltration.
- Naval Supply Systems Command Fleet Logistics Center (NAVSUP FLC) encompasses approximately 432 acres of land. With the exception of the steep hillside near the Upper Tank Farm, the area is relatively flat, with a mild slope to the northwest. Approximately 90 percent of the total area of the activity is impervious to storm water infiltration.

- The Shipyard covers a total area of approximately 504 acres. Generally, the area is flat and slopes gently toward the northwest with elevations ranging from 10 to 23 feet MSL.

1.2.1.3 Moanalua Sub Area

The Moanalua Sub Area includes the Pearl Harbor Navy Exchange (NEX) Mall, the NEX Distribution Center, Moanalua Shopping Center, and the Navy Marine Golf Course.

The Moanalua Sub Area encompasses approximately 175 acres. The part of the sub area that does not include the Navy Marine Golf Course is highly developed and nearly 80 percent of this area is covered by impervious surfaces which are surrounded by a grassy buffer strip on all sides. Storm water generated on the northeast portion of this site generally flows toward storm drain inlets and catch basins within the front parking area and in Bougainville Drive. Storm water from the southwest portion of the facility flows away from the building and is collected by storm drain inlets throughout the paved lots.

The Navy Marine Golf Course portion of this sub area is comprised of 164 acres of mainly vegetated surfaces. Impervious surfaces include the paved parking lots and buildings, which contribute to 5 percent of the entire site. Storm water runoff generated onsite is generally infiltrated into the surrounding vegetated areas or conveyed to retention basins located throughout the course. Storm drain inlets near housing areas on the north side of the golf course convey runoff in a southerly direction to discharge onto adjacent grass areas. Grassy swales throughout the golf course channel larger flows toward a drainage ditch that leaves the golf course at its south central boundary.

1.2.1.4 NAVFAC Hawaii Compound Sub Area

The NAVFAC Hawaii Compound Sub Area is located approximately one mile east of the Pearl Harbor Naval Base Sub Area and is adjacent to the Pearl Harbor NEX Mall complex. It is bounded by the Bougainville Industrial Park on the north, Salt Lake Boulevard on the east, Moanalua Terrace Housing on the south, and Radford Drive on the west. NAVFAC Hawaii provides a wide range of support and services for the management and operations of shore facilities.

The NAVFAC Hawaii Sub Area covers approximately 71 acres. The topography of the facility rises gently to the southeast where approximately half of the area is on a 10- to 15-foot-high terrace. The ground slopes uniformly at approximately 0.5 percent away from the terraced areas to points of flow concentration to the northwest. Approximately 60 percent of the area in the NAVFAC Hawaii Sub Area is impervious.

Runoff is collected in underground storm drainage systems running southeasterly and northeasterly. The systems terminate at the northwest corner of the site and drain into an 84-inch storm drain which empties into Pearl Harbor approximately 3,600 linear feet downstream.

1.2.1.5 Makalapa Crater Sub Area

Makalapa Crater Sub Area (MC) is located within the eroded Makalapa Crater area, south of Aloha Stadium, and between Kamehameha Highway and the H-1 Freeway. The site consists of administrative facilities, unaccompanied and family housing, and other support facilities.

MC Sub Area is approximately 110 acres with elevations up to 65 feet MSL. Approximately 25 percent of the site is covered by impervious surfaces.

Storm water runoff generated at MC generally follows the topography of the site. The northern portion of the site flows to Halawa Stream, which feeds East Loch, Pearl Harbor, a few hundred feet to the west. The central portion tends to drain to a large, adjacent vegetated area. Storm water runoff generated in the southern region of MC flows southerly as sheet flow or through a system of culverts and ditches that discharge to Southeast Loch, Pearl Harbor.

1.2.1.6 Ford Island Sub Area

Ford Island is situated in the middle of Pearl Harbor surrounded by Middle Loch to its west, East Loch to the east, Southeast Loch to the southeast and the entrance channel to the south. The operational facilities on Ford Island include piers and wharfs, and administrative and support facilities. The sub area also includes a number of visitor industry facilities that include the Battleship Missouri Memorial, and the Pacific Aviation Museum. The auxiliary landing field's runway and taxiway on Ford Island are considered historic features of the island and are not currently used for Navy aircraft operations.

Ford Island encompasses approximately 450 acres. The area is relatively flat, with elevations ranging from 10 to 25 feet MSL and slopes ranging from flat to approximately 3 percent. Approximately 50 percent of the total area is impervious.

Storm water runoff from Ford Island discharges as sheet flow or from outlet pipes to Pearl Harbor. The runway runs from southwest to northeast, typically setting a dividing line for the drainage flows on the island. Surface runoff generated on the northwest side of the island generally flows northwesterly along slopes ranging from the nearly flat slope (at the runway), to roughly 3 percent (at water's edge). On the southeast side of the island, the runoff flows southeasterly along slopes ranging from almost flat (at the landing field) to approximately 2 percent (at water's edge).

1.2.1.7 Pearl City Peninsula Sub Area

The Pearl City Peninsula Sub Area (PCP) is located on the west shore of East Loch. It is bounded on the south and west by Middle Loch, on the north by residential housing, and on the east by East Loch. The site can be accessed from the north via Lehua Avenue. The Pearl City Peninsula Landfill site is located on the northwest side of the peninsula. A National Wildlife Refuge lies directly west of the landfill site, and directly south is the abandoned Pearl City Sewage Treatment Plant. Outside of the landfill area, PCP is used for Navy administrative and training activities.

The PCP Sub Area is comprised of a total of approximately 126 acres. Nearly 60 percent of the facility has impervious ground cover.

Surface drainage at the southern portion of the peninsula generally follows the topography from the center of the peninsula to the east where runoff discharges into the Ford Island Channel as sheet flow or via a series of storm drain inlets. Surface drainage also flows both to the south and to the west where it discharges into Middle Loch.

1.2.1.8 Waipio Peninsula Sub Area

Waipio Peninsula Sub Area (WP) consists of two non-contiguous areas along the northwest shoreline of Middle Loch, Pearl Harbor. The Waipio Point Access Road provides entry to these facilities. The Navy facilities at WP cover approximately 25 acres of land.

Beckoning Point is located in the southern portion of Waipio Peninsula. The primary function of this site is the demagnetizing of Navy ships and includes facilities on land and within the harbor.

The Naval Inactive Ship Maintenance Office (NISMO) facility, a separate command located on the northern portion of Waipio Peninsula, is primarily dedicated to the maintenance of inactive service craft and Navy ships. Ground cover is comprised of moderately sloped asphalt concrete pavement, flat gravel storage areas, and small grassy areas. Roughly 70 percent of the site is covered by impervious surfaces.

All storm water generated onsite is discharged to Middle Loch, Pearl Harbor via sheet flow or storm drain outlets.

1.2.1.9 JBPHH Wahiawa Annex Sub Area

JBPHH Wahiawa Annex Sub Area (Wahiawa Annex) is located in the central plateau region of Oahu. The main tenant is the Naval Computer and Telecommunications Area Master Station Pacific. Lands adjacent to the station are largely agriculture lands. The nearest urban areas are the town of Wahiawa and Whitmore Village. The gulches bordering the station were formed by the North Fork Kaukonahua Stream to the south and the Poamoho Stream to the north. Wahiawa Annex is divided by a small gully.

Wahiawa Annex is approximately 700 acres of land. Land occupied by the station slopes gently east to west from an elevation of approximately 1,300 feet above MSL to an elevation of 1,000 feet above MSL. As the foothills of the Koolau Range are encountered a short distance east of the station, the terrain becomes steeper and extremely rough. Impervious areas consist mainly of buildings, sidewalks, patios, tanks, sheds, and paved areas. Approximately 5 percent of the total area of Wahiawa Annex is impervious to storm water infiltration.

Storm water runoff from the areas surrounding the industrial facilities on the north side of the Wahiawa Annex drains into the Poamoho Stream directly or through catch basins. The remainder of the site drains to North Fork Kaukonahua Stream as sheet flow or via the storm drain system.

1.2.1.10 West Loch Sub Area

The West Loch Sub Area (WL) is located on the southwest portion of West Loch, Pearl Harbor, and just north of the Pearl Harbor Entrance.

WL consists of approximately 2,700 acres of sparsely occupied land located on flat to gently sloping land.

The majority of storm water runoff generated on the site sheet flows toward West Loch, with the exception of a few sparsely located storm drain inlets near the south boundary of the site.

1.2.1.11 JBPHH Lualualei Annex Sub Area

JBPHH Lualualei Annex Sub Area (Lualualei Annex) is located in the Lualualei Valley on the leeward coast of Oahu, just east of the town of Waianae. It is bounded on three sides by the Waianae mountain range. Land use in the area surrounding the station is largely rural with small truck farms and residential developments dominating. The nearest urban area is the town of Maili.

Lualualei Annex uses approximately 7,500 acres for naval magazine facilities and an additional 1,720 acres for the radio facilities, for a combined area of 9,220 acres. The entire site is sparsely occupied, with impervious surfaces covering less than 5 percent of the total area.

Approximately 8,220 acres gently slope to the west while the balance of the land lies on the steep western face of the Waianae range. Runoff from the Waianae Mountains flows in a westerly direction across the site eventually to natural streams. Pipe culverts convey the stream flow under roads along the western boundary of the Activity, toward the radio facilities. Surface runoff generally flows in a northwesterly direction toward Mailiilii Stream. Runoff from buildings near the main gate, at the south end of the site, flows overland in drainage swales to the Ulehawa Stream (intermittent) southwest of Lualualei Annex. All the streams identified as receiving waters for this area drain in a west-southwest direction to the Pacific Ocean.

1.2.1.12 Family Housing Sub Areas

There are several Family Housing Sub Areas located on Oahu outside of the boundaries of the sub areas described above. These include Moanalua, Moanalua Terrace, Maloelap, Catlin Park, Halsey Terrace, Salt Lake Storage, Doris Miller, Radford Terrace, Ohana Nui, Hale Moku, Hokulani, Little Makalapa, Manana, Halawa, McGrew Point, and Camp Stover, which are under a Public-Private Venture. Iroquois Point and Puuloa Housing are managed under long-term ground lease by Ford Island Ventures.

1.2.1.13 Miscellaneous Sub Areas

There are several smaller sub areas included in the Permit, located around the island of Oahu. These include Waiawa, Aiea, Halawa Landing, Richardson Field, Hale Keiki, and Red Hill.

1.3 Storm Water Program Background

Storm water discharge has long been identified as a significant source of water pollution. In 1972, in an effort to improve the direction of water pollution control in the United States (U.S.), Congress passed legislation under the Federal Water Pollution Control Act (FWPCA) to create the NPDES program. The NPDES program established regulations for any persons wishing to discharge pollutants into waters of the U.S. These NPDES permits set limits on the composition, quantity and the mass or concentration of pollutants being discharged.

To more adequately address existing water pollution concerns, the FWPCA was amended by the Clean Water Act (CWA) of 1977 to restore and maintain the chemical, physical and biological integrity of the Nation's waters. The CWA provided the U.S. Environmental Protection Agency (EPA) with the authority to control point source discharges, and also required each State to establish water quality standards for its surface waters.

In 1987, the CWA was amended by the Water Quality Act which gave the EPA the authority to regulate storm water discharges associated with discharges from large and medium MS4s, industrial activities, and construction sites that disturb five (5) or more acres. On November 16, 1990, the EPA promulgated regulations under the “Phase I Rule,” which are contained in the Code of Federal Regulations (CFR), Title 40 Parts 122, 123 and 124, establishing permit application requirements for these storm water discharges. Additionally, on December 8, 1999, EPA promulgated the final Phase II storm water regulations for smaller MS4s areas and smaller construction sites, which disturb areas of one (1) to five (5) acres.

The EPA only requires permits for the discharge of storm water for specific types of industrial activities, in accordance with 40 CFR § 122.26(b)(14). Those industries requiring storm water permits are described in one of two ways: by a narrative description or by a Standard Identification Classification (SIC) code.

NRH has specified the industrial facilities that trigger these EPA-regulated SIC codes and are subsequently subject to regulation under the CWA. These industrial facilities are described in detail in Chapter 11.

1.3.1 Hawaii Storm Water Program

The State of Hawaii has been delegated NPDES permitting authority by the EPA. Through such delegation, the State of Hawaii DOH is responsible for administering the NPDES program throughout Hawaii in the same manner that the EPA's regional offices administer the program in non-NPDES States. DOH revised regulations implementing the storm water program in Hawaii Administrative Rules (HAR) Title 11; Chapter 54, Water Quality Standards (Chapter 11-54), effective November 15, 2014; and Chapter 55, Water Pollution Control (Chapter 11-55), effective February 9, 2019. HAR, Chapter 11-54 establish the water quality standards for surface waters in Hawaii. HAR, Chapter 11-55 contains policies and requirements for the NPDES program and the NPDES General Permits are contained in the appendices. The NPDES General Permits authorize a category of discharges. As of December 5, 2017, HAR, Chapter 11-55 Appendix B, General Permit for Storm Water Discharges Associated with Industrial Activity expired and is currently under revision. Proposed amendments to HAR, Chapter 11-55 are meant to be consistent with Part 8 of EPA's 2015 Multi-Sector General Permit for Stormwater Discharges from Industrial Activities (MSGP), effective August 12, 2015. While Appendix B is under revision, new applicants for industrial storm water coverage must apply for an individual permit. NPDES General Permit Authorizing Point Source Discharges from the Application of Pesticides was adopted in HAR 11-55, Appendix M, effective July 13, 2018.

The DOH storm water regulations present two permit application options for storm water discharges in Hawaiian waters: (1) Individual Permit (IP) application; and (2) Notice of Intent (NOI) for coverage under a General Permit (GP). An IP addresses design and water quality standards specific to an individual facility and are issued directly to an individual discharger. A GP is used to authorize a category of discharges within a specific geographic area. The applicant must meet the eligibility requirements of the GP such as common storm point sources, operations, wastes generated, and disposal practices. The IP requires information regarding site information, detailed description of discharge, existing programs, the means available to the municipality to control pollutants, and a field screening analysis of major outfalls to detect illicit connections. Building on this information, the permit requires a limited amount of representative data and a description of a proposed storm water management plan.

To obtain authorization to discharge storm water from industrial activities, the property owner may acquire storm water permits for the lessees that have industrial activities or have the lessees obtain the permits directly through DOH. Since NRH owns all of the industrial facilities within its property, the industrial storm water discharges have been incorporated into Part E of its Permit, No. HI S000257.

1.3.2 Navy Region Hawaii Storm Water Permit Requirements

NRH's permitting strategy is to have all JBPHH activities subject to permitting covered under one permit.

The previous NPDES Permit No. HI 1121466 was issued to NRH for the Navy Storm Water System on Oahu on August 24, 2001 and became effective on September 24, 2001. On January 12, 2006, the Permittee submitted a permit renewal application and Permit No. HI 1121466 was administratively extended on June 22, 2006. With the renewal application, DOH changed the permit reference to No. HIS000006.

Prior to 2010, Hickam AFB was a separate installation with its own NPDES permit and storm water management program. US Air Force 15th Wing (Hickam AFB) was issued Permit No. HI S000069 on October 15, 2007. The permit was modified on December 1, 2010, to transfer ownership to NRH. This permit was administratively extended on October 12, 2012.

Naval Station Pearl Harbor and Hickam AFB merged on October 1, 2010, into JBPHH under the oversight of NRH. At that time, JBPHH requested that the two separate base permits be combined. Due to the similar nature of the operations, types of discharge, and shared resources, DOH went through the process to issue the NPDES Permit No. HI S000257, on February 23, 2015, which became effective March 23, 2015. NRH submitted a renewal application for NPDES Permit No. HI S0000257 on August 22, 2019. The current permit was administratively extended until the issuance of the renewal permit on January 22, 2021, which became effective on February 1, 2021.

The Permit specifies the conditions and requirements that authorize NRH to discharge storm water associated with its Small MS4 and specified industrial activities. These provisions require NRH to:

- Effectively prohibit non-storm water discharges to State Waters, either from its Small MS4 or from commercial and industrial facilities specified in the Permit. Discharges covered by other NPDES permits, allowable non-storm water discharges that have been identified in the Permit, and certain NRH-identified discharges (see Section 3.1.1) are conditionally exempt.
- Reduce the discharge of pollutants from its Small MS4 to the MEP.
- Reduce the discharge of pollutants from industrial facilities, classified in accordance with 40 CFR §122.26(b)(14), including other JBPHH-owned and operated facilities that are potential significant sources of pollution to storm water, to the appropriate discharge limitations. This is subject to the Best Available Technology Economically Achievable (BAT)/Best Conventional Pollutant Control Technology (BCT) discharge requirement, and any other applicable State or Federal regulations for such facilities. At NRH, these facilities have been captured within the list of industrial facilities requiring NPDES permit coverage. Any additional JBPHH-owned and operated facilities that are identified as potential significant sources of pollution in storm water, will be added at that time and included in the subsequent annual report.

1.3.2.1 Allowable Non-Storm Water Discharges

Part B of the Permit includes a list of allowable non-storm water discharges. This list is provided in Section 3.1.1 of this SWMP. The discharge may be released into the JBPHH Small MS4 and its receiving waters, provided that it meets all conditions specified in Appendix 3-1, BMPs for Allowable Non-storm Discharge. In the event that NRH determines any of these allowable non-storm water discharges to be a source of pollution, it will no longer be permitted

The Permit also allows NRH to develop a list of other similar occasional incidental non-storm water discharges that will not be addressed as illicit discharges. These conditional discharges, along with the appropriate controls or conditions needed to classify these as posing no significant source of pollutants, must be specified in this SWMP and are included in Section 3.1.1 Conditionally Allowable Non-storm Water Discharge.

1.4 Navy Region Hawaii Environmental Policy

NRH Environmental Policy is established by CNRH. CNRH is committed to reducing the impact on the environment and to demonstrate environmental stewardship of our natural resources. NRH's environmental policy is as follows:

- Complying with environmental laws, regulations, and other applicable requirements by utilizing the Environmental Management System as a tool to communicate environmental responsibilities, and to establish and track environmental objectives and targets.
- Achieving improvements in the compliance program and hazardous waste management.
- Continuing prudent shore-side infrastructure improvements and modernization to reduce environmental impacts.
- Preventing or minimizing pollution at its source to reduce the generation of waste.
- Providing continual improvement of our environmental performance to strengthen community trust while applying prudent business principles.

1.5 Navy Region Hawaii Storm Water Program

NRH obtained individual NPDES Permit No. HI S000257 for storm water and specified non-storm water discharges from the JBPHH Small MS4 and specified industrial facilities.

In accordance with the requirements of the Permit, this SWMP was prepared to meet the storm water discharge requirements of:

- Title 40 of the CFR, Parts 122, 123, and 124, Subparts A and D, and 125;
- NPDES Permit Program in the HAR, Title 11, Chapter 55, Water Pollution Control, effective February 9, 2019;
- HAR, Title 11, Chapter 54, Water Quality Standards, effective November 15, 2014;
- Part 8 of EPA's 2015 Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), effective June 4, 2015; and
- Applicable portions of the Clean Water Act, Sections 301, 302, 307 and 402.

The information provided in this SWMP outlines the Base-wide practices required to comply with the Permit, and furthermore to protect and improve the water quality of receiving waters downstream of JBPHH facilities to the MEP. A summary of NRH's Storm Water Management Program is displayed in Figure 1-2.

This document is intended to guide all responsible NRH tenants in implementing and managing NRH's Storm Water Management Program. It is also a complete and comprehensive compliance document, developed to meet the State and Federal requirements described above.

1.5.1 Implementation of the SWMP

This updated SWMP becomes effective and enforceable upon its submission to DOH. As a Base-wide program, the policies outlined in this SWMP are applicable to all tenants located and operating at JBPHH and its facilities.

In the event that the Permit requirements conflict with any other State or Federal regulations, NRH will comply with the more stringent requirement.

Figure 1-2 Storm Water Management Program Summary

Navy Region Hawaii Storm Water Management Program

Public Education & Outreach (Chapter 2)

Objective: Raise awareness and effect positive behavioral change throughout the community with respect to the overall goals and implementation of the Base-wide Storm Water Management Plan (SWMP).

Illicit Discharge Detection and Elimination Program (Chapter 3)

Objective: Detect and eliminate all illicit discharges to the Municipal Separate Storm Sewer System (MS4), through a program of field screening, public reporting, compliant investigation, monitoring, tracking of illicit discharges, and approved connections to MS4.

Construction Site Runoff Control (Chapter 4)

Objective: Reduce to the maximum extent practicable (MEP) the discharge of pollutants from construction sites, through standardized policies, plan review, best management practices (BMPs), routine inspections, and tracking.

Post-construction Storm Water Management Pollution (Chapter 5)

Objective: Implement permanent controls, in all new development and redevelopment projects to prevent or minimize water quality impacts to the MEP, through standardized standards and criteria, design and plan review, and a database to inventory BMPs, schedule and track routine maintenance.

Prevention/Good Housekeeping:

Debris Control BMPs Program (Chapter 6)

Chemical Applications BMPs Program (Chapter 7)

Erosion Control BMPs Program (Chapter 8)

Maintenance Activities BMPs Program(Chapter 9)

Commercial Activities Discharge Management Program (Chapter 10)

Objective: Incorporate BMPs throughout basewide maintenance programs, to reduce the discharge of pollutants from all NRH property to the MEP.

Industrial Activities

(Chapter 11)

Objective: Reduce the discharge of pollutants from industrial facilities basewide, through requirements to implement BMPs, and inventory, inspect, and track these facilities.

Monitoring Program (Chapter 12)

Objective: Provide an ongoing measureable assessment of the progress and effectiveness of the implementation of NRH's Storm Water Management Program.

Reporting (Chapter 13)

Objective: To conduct annual evaluations and report the progress of NRH's Storm Water Management Program. It also supports the continued development of SWMP by identifying areas for improvement, and tracking monitoring results and all changes/progress made in the program throughout the year.

This page left intentionally blank.

1.5.2 Program Organization & Responsibilities

Permit No. HI S000257 and this updated SWMP supersede all previous versions. NRH is responsible to ensure compliance with the Permit No. HI S000257 and the conditions established within this SWMP. All tenants on Base are subject to the rules and regulations of these documents.

Oversight of the policies and develop=ment of the Base-wide SWMP is managed by NAVFAC Hawaii Environmental Department (EV), who also acts as NRH's Environmental Department. This includes: plan revisions, as necessary; annual reporting; and ensuring that this document, and any subsequent updates, are available to affected parties. More detailed information is provided in Chapter 13, Reporting Requirements.

The Base is unique from most MS4s in that within its property boundary, it owns the property and almost all of the facilities.

The Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants and agencies subject to the programs contained in this SWMP. CNRH has the ultimate authority for Permit policies and enforcement actions. In addition to EV, there are various levels of authority between the JBC and each tenant on Base, through which day-to-day practices are monitored and managed.

The primary entities responsible for various NRH storm water pollution prevention activities are listed below. Refer to Appendix 1-3 for the NAVFAC Hawaii organizational chart.

- NAVFAC Hawaii, Environmental Department (EV) – provides Navy regional environmental coordinator support; Navy on-scene coordinator support; and environmental compliance, restoration, and planning for NRH and to support JBPHH
- NAVFAC Hawaii, Design and Construction (DC) – responsible for project management, design and construction management, and engineering services
- NAVFAC Hawaii, Public Works (PW) – responsible for utilities, facilities sustainment and management, facility support contract management, base support vehicles and equipment (BSVE), and facility services
- NAVFAC Hawaii, Utilities Management (UM) – responsible for planning and management of utilities commodities, including construction and maintenance projects and energy management and conservation
- NAVFAC Hawaii, Asset Management (AM) – responsible for real estate services and program management, planning, and management of the Geospatial Information Systems Program
- NAVFAC Hawaii, Facility Engineering and Acquisition Division (FEAD) - responsible for engineering services and management of NAVFAC construction and services contracts
- JBPHH Public Works Department (JB4), Facility Management Division (FMD) – responsible for execution plans for facilities, requesting projects and funding, interfacing with tenants, and maintenance planning, site approvals, land use compatibility, space management, community liaison and encroachment planning, facilities requirements, and planning documents
- JB4, Assistant Public Works Officers (APWOs) – responsible for coordination of project scoping, execution, requirements, planning, and energy conservation within a geographic area
- JB4, Production Division (PROD) – responsible for NAVFAC Hawaii in-house construction and maintenance projects

- JB4, Environmental Division (PRJ4) – responsible for environmental compliance inspections and oversight for JBPHH, and environmental services (e.g., collection and disposal of hazardous waste, industrial wastewater treatment, recycling, laboratory services, pest management oversight, and recycling)
- Morale, Welfare and Recreation (MWR) – responsible for management of commercial and recreational facilities
- Navy Exchange (NEX) – responsible for management of commercial facilities
- Ohana Military Communities and Hickam Communities – responsible for management of JBPHH Public-Private Venture (PPV) Housing

As appropriate NRH will conduct enforcement actions and ensure that the necessary corrective action for any Permit "non-compliance" issues. Enforcement procedures are under development for the storm water programs set forth in this document. Typically, all non-compliance issues are handled through an escalation of levels of authority involved for issues that have continued to go unaddressed. In these situations, notification of the JBC is the last resort and this has been found to be an effective mechanism for ensuring Base-wide rules and regulations are followed. To date there have been no issues that have required escalation to the level of the JBC.

The organization of the overall Storm Water Management Program is shown in Figure 1-3. The entities responsible for ensuring that each Storm Water Management Program task is completed in compliance with Permit requirements, are listed below that task.

1.6 Revisions and Updates

To promote the continued improvement and efficacy of NRH's Storm Water Management Program, this SWMP is intended to be a "living document." Modifications to the SWMP are triggered by the criteria presented in Parts D.2 and D.3 of the Permit.

Generally, revisions or additions to the SWMP may include any of, but not exclusively, the following:

- If discharge from the MS4 is causing or contributing to the exceedance of any discharge limitation or water quality standard.
- Changes in program organization, operation, maintenance, or construction of new facilities at NRH that affect the Small MS4 and/or storm water pollution control.
- Addition or removal of industrial facilities covered by this Permit, including changes to the primary activity at an industrial facility.
- Observations or patterns discovered through routine maintenance or monitoring, and any significant spills.
- Program deficiencies, and the appropriate mitigation to ensure the protection of storm water runoff quality and compliance with the Permit.
- Program improvements and justification for the change.

NRH is required to document any changes made to the Storm Water Management Program throughout each year, to be included in the Annual Report and as a revision to the SWMP at the end of that year.

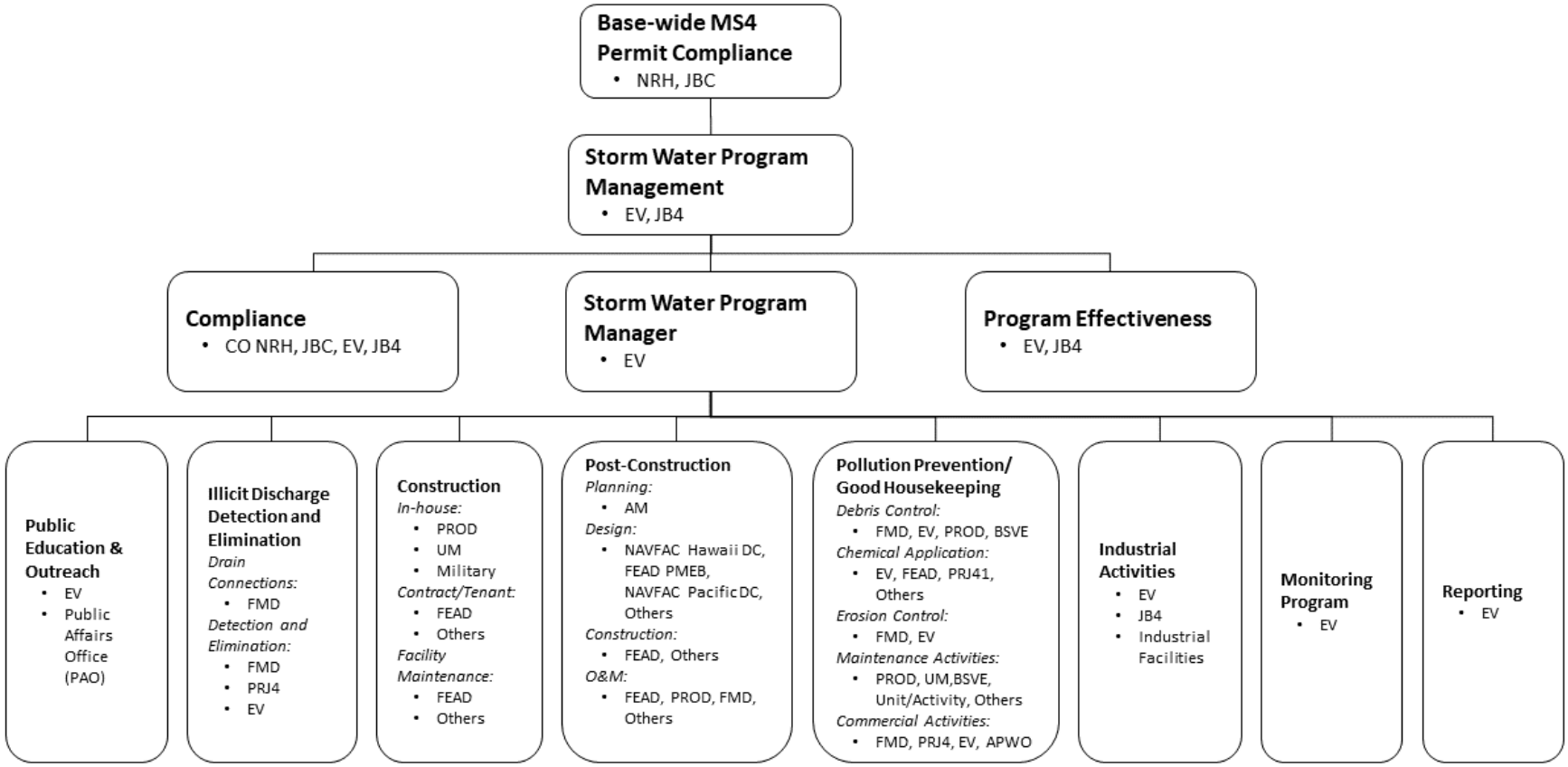


Figure 1-3 Storm Water Management Program Organizational Chart

This page left intentionally blank.

Proposed changes that imply a major reduction in the overall scope and/or level of effort of the SWMP must be made for cause and in compliance with 40 CFR §122.62 and Part 124. A written report shall be submitted to the Director of Health (Director) for acceptance at least 30 calendar days prior to the initiation date of the major modification. System modifications to the Small MS4 and any existing outfalls newly identified over the term of the permit with the potential to significantly affect the quality or quantity of discharge shall be identified by letter within 30 calendar days of the completion of the alteration and/or addition and summarized in the Annual Report.

All information, reports, and updates related to this Permit and SWMP shall be submitted through the CWB Compliance Submittal Form for Individual NPDES Permits and Notice of General Permit Coverages (NGPCs), as outlined in Part A.7 of the Permit. This form is accessible through the e-Permitting Portal website at:

https://eha-cloud.doh.hawaii.gov/epermit/

There is additional information, regarding annual reporting and SWMP revisions, provided in Chapter 13.

1.6.1 Permit Renewal

The current NRH NPDES Storm Water Permit and the authorization to discharge will expire at midnight on January 31, 2026. A renewal application will be required prior to the expiration of the permit.

1.6.2 Accuracy of Information Contained in this Plan

This Storm Water Management Plan is accurate as best as practicable, based on available information, data collected during routine field survey, and updates from previous plans. It is hereby acknowledged that the major provisions of the Plan are accurate, but that there may be changing conditions that occurred after the routine field surveys which need to be identified and reflected in periodic updates.

2 Public Education and Involvement

In accordance with the Permit, Part D.1.a Part D.1.b, Navy Region Hawaii (NRH) is required to develop and implement a public education and involvement program to educate the community about the impacts of storm water, illicit discharges, and storm water pollution prevention.

The program shall, at a minimum, include the following:

1. Activity-specific educational materials and/or training for various targeted groups on Base.
2. Create positive changes in attitude, knowledge, and awareness.
3. Enable the public to identify and report pollution-causing activities (i.e., illicit discharges).
4. Outreach activities, as specified in the Permit, to promote awareness for the general public.
5. Program evaluation based on an annual survey of tenants, number of brochures distributed, participation in events, volunteer hours, etc.
6. Public involvement in the development of the Storm Water Management Plan (SWMP) including an informational meeting prior to finalizing the SWMP, and other SWMP-related projects that can be used to educate the public about the impacts of storm water.

The Permit describes the requirements for the Public Education and Involvement Program as follows:

Permit Reference	SWMP Section
Part D.1.a. Public Education and Outreach *The Permittee shall implement a comprehensive education and involvement program to distribute educational materials to the community or conduct equivalent outreach activities about the Permittee's Small MS4 program and storm water pollution prevention BMPs, impacts of storm water as well as enabling the public to identify and report a pollution-causing activity (i.e., spotting an illicit discharge) and the steps that the public can take to reduce pollutants in storm water runoff. The program shall target: changes in attitude, knowledge, and awareness; BMP implementation; pollutant load reduction; and changes in discharge and receiving water quality. The SWMP shall include a written public education plan for how the Permittee will reach all targeted audiences and implement, at a minimum, but not limited to, the permit requirements described below.*	Section 2
Part D.1.a.(i) Targeted Groups *- The Permittee shall address the following targeted groups in the Base-wide Awareness Plan with a standardized branding message as well as specific training materials, and shall describe outreach activities and anticipated frequencies that each activity will be conducted over the permit term:* *1) Military personnel and dependents that work or live on base;* *2) Civilian personnel that work on base;* *3) Construction and maintenance contractors that work on base;* *4) Landscaping personnel and contractors;* *5) Construction industry;*	Section 2.2

6) Industrial facilities covered by the NPDES permit program; *7) Commercial businesses (i.e., automobile detailing, automobile repair and maintenance, retail gasoline outlets, and restaurants, including those types of businesses highly ranked, pursuant to Part D.1.f.(5)(d).);* *8) Schools, recreational facilities;* *9) Any other source that the Permittee determines may contribute a significant pollutant load to its Small MS4.*	
***Part D.1.a.(ii) Outreach Activities** – The Permittee shall include in the Base-wide Awareness Plan the following activities, with prescribed frequencies that each activity will be conducted over the permit term:* *1) Publicize the telephone numbers for facilities and on-base personnel to report illegal discharges;* *2) Distribution of brochures to the residential community and industrial/commercial facilities;* *3) Participation in special events (e.g., Earth Day Educational Events) and exhibits;* *4) An informative web site, that provides educational materials/information for residents and commercial tenants regarding storm water pollution, storm water pollutant controls and best management practices, and applicable storm water rules and regulations at the facility. The website shall also provide links to a copy of the SWMP, the most recent storm water annual report, a copy of this permit, and telephone numbers and email address to report illegal storm water activity. Any public meetings regarding storm water policy, regulations, or the SWMP shall also be posted with the applicable date, time, and location.* *5) Pesticides, herbicides, and fertilizer use program;* *6) The promotion of water conservation;* *7) Storm drain stenciling or marker installation;* *8) Proper disposal of grass clippings, leaves, and other green waste;* *9) A hazardous waste information and awareness program to promote awareness of proper disposal and handling of hazardous waste by residents and tenants (i.e., household chemicals, used oil, automotive fluids, paint, pesticides, and other toxics); and* *10) If determined to be necessary by the Permittee, public meetings/resident panels to discuss storm water management policies.* *Information regarding: hazardous waste disposal; the proper disposal of grass clippings, leaves, and other green wastes; a link to the storm water website; and a phone number and email address to report illegal storm water activity shall be provided to all new residents and tenants on the facility.*	Section 2.3

Part D.1.a.(iii) Evaluation Methods *- The Permittee shall evaluate the progress of the public education program based on the following:* *1) An annual survey of facility residents and tenants to measure both behavior and knowledge relating to storm water. The surveys can be conducted in person at events, on the phone, or using Web-based survey tools. The results of the survey shall be compared to past surveys.* *2) Number of brochures distributed.* *3) Participation in events.* *4) Any other methods that the Permittee determines to be effective.* *The results of the evaluation shall be summarized in the Annual Report.*	Section 2.5
Part D.1.b. Public Involvement/Participation *The Permittee shall include the public (i.e., JBPHH personnel, tenants, residents, contractors, and other stakeholders) in reviewing, updating, and implementing the SWMP. The SWMP shall be made available to the public in accordance with Part A.6. Following the public comment period, an informational meeting shall be scheduled and announced prior to finalizing the SWMP to answer questions from the public. Other activities to involve the public may include providing volunteer opportunities that improve water quality, organizing a citizen advisory group to solicit ongoing input from the public about changes to the SWMP and specific SWMP-related projects, or organizing water quality-focused clean-up events to educate the public about storm water impacts.*	Section 2.4

2.1 Program Goals

The goal of the public education and outreach program is to raise awareness and effect behavior change by involving the community in the overall goals and implementation of the Storm Water Management Program. Greater knowledge of the program will garner greater public support for the program, as well as more willingness to comply with the Best Management Practices (BMPs) put forth in the program. The program should create: positive changes in attitude, knowledge, and awareness; BMP implementation; pollutant load reduction; and an improvement in discharge and receiving water quality. The program will prioritize activities and target specific groups with specific goals in mind to maximize use of available funding, which can vary based on defense budgets.

2.2 Targeted Groups

Specific groups have been identified for targeted outreach based on their potential ability to impact storm water runoff quality. The Base-wide Awareness efforts will include activity-specific messages and outreach activities. The Permit identifies the following groups as targeted audiences:

- Military personnel and dependents that work or live on base (including all military housing);
- Civilian personnel that work on base;
- Construction and maintenance contractors that work on base;

- Landscaping personnel and contractors;
- Construction Industry;
- Industrial facilities covered by the National Pollutant Discharge Elimination System (NPDES) permit program;
- Commercial businesses (i.e., automobile detailing, automobile repair and maintenance, retail gasoline outlets, and restaurants, including those types of businesses that have been highly ranked in Section 10.4.1);
- Schools (including personnel, teachers, and students); and
- Recreational facilities (including personnel and participants/customers).

Additionally, NRH may identify any other source that they determine to be a potential pollutant concern to its Small MS4. These groups include:

- Consultants and contractors that work on Joint Base Pearl Harbor-Hickam (JBPHH);
- Pesticide applicators;
- Environmental consultants;
- Health and safety consultants; and
- Custodians.

Depending on the results of these activities and feedback from the targeted groups, the outreach efforts may change over time.

2.3 Outreach Activities

2.3.1 Storm Water Brochures

NRH developed a brochure on "A Guide to Understanding Storm Water," which promotes general environmental awareness and storm water pollution prevention. The brochure, included in Appendix 2-1, contains information on storm water pollution awareness and specific BMPs with regard to yard maintenance, auto care, pet waste, household waste, and general good housekeeping practices. The purpose of the brochure is to provide general storm water information to the population that work and live on JBPHH. The brochure includes links to sources for more information and a telephone number for NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV) to report any questionable discharges to the Municipal Separate Storm Sewer System (MS4). The brochure is available to all NRH personnel, distributed at NRH activities like the annual Earth Day Fair, and posted on the NRH Storm Water Program webpage.

2.3.2 Industrial Facilities Training Brochure

Industrial facilities on base are inspected semi-annually by in-house or contractor personnel. During these inspections, facility occupants are trained via a brochure that explains BMPs for industrial facilities. The brochure "Stormwater Pollution Prevention for Industrial Facilities on Joint Base Pearl Harbor-Hickam" is included in Appendix 2-2. It explains the purpose of the semi-annual inspections and the NPDES storm water permit and legal requirements. The Industrial Facilities Training Brochure also contains information on allowable non-storm water discharges, storm water monitoring, general BMPs, and facility Storm Water Pollution Control Plans (SWPCPs). The brochure also describes conditions to be reported to the appropriate environmental point of contact such as any allowable emergency non-storm

water discharges and any illicit discharges or connections to the JBPHH Small MS4. JBPHH personnel are also trained as needed during the semi-annual storm water inspection visits at the industrial facilities.

2.3.3 NRH Storm Water Webpage

The NRH Storm Water Program webpage (*http://www.cnic.navy.mil/storm_water*) is available to the general public and provides a program overview and general information on storm water and storm water pollution. Links and documents posted on the webpage include information related to storm water pollution prevention, storm water pollutant controls, BMPs, and applicable storm water rules and regulations, including:

- Educational materials aimed at residents and commercial tenants, such as good housekeeping practices, disposal of household hazardous wastes, and Base policies addressing pollution prevention including "A Guide to Understanding Storm Water" brochure);
- Links to storm water related documents including drafts of this SWMP and facility SWPCPs (security redacted) for public review and comment prior to plan finalization;
- Contact information for the NAVFAC Hawaii Public Affairs Office (PAO) to provide written comments for the draft storm water plans during the public comment period;
- Public meeting notices regarding storm water policies, regulations, and/or the SWMP, including locations and time, as applicable;
- Procedures for reporting illicit discharges; and
- Contact information for the NAVFAC Hawaii EV office to request a copy of NRH's current SWMP, NPDES Permit, or Storm Water Annual Report.

2.3.4 NRH and NAVFAC Hawaii Facebook Pages

Both NRH and NAVFAC Hawaii both have Facebook pages and frequently post updates several times each month. Past posts include a storm water awareness article about storm drain marking. The article was also distributed to all NAVFAC Hawaii employees. The NRH and NAVFAC Hawaii Facebook pages also feature information about public participation activities like cleanup events.

https://www.facebook.com/NavyRegionHawaii

https://www.facebook.com/NAVFAC-Hawaii

2.3.5 Newspaper Articles

The Hookele is a monthly digital publication primarily for the Navy and Air Force members and their families in Hawaii. The magazine is published by NRH Public Affairs and includes command information, human-interest stories, and community photos. The Hookele publishes articles on a wide range of environmental issues and storm water pollution prevention awareness including:

- Water quality;
- Pollution prevention;
- Pesticides, herbicides, and fertilizer use;
- Promotion of water conservation;
- Proper disposal of green waste;
- Hazardous materials/waste awareness and disposal;
- General good housekeeping practices; and

- The NRH storm water hotline.

  https://www.cnic.navy.mil/regions/cnrh/news/ho-okele-magazine-2021.html

2.3.6 Personnel Training

New personnel arrivals receive orientation training and materials, which address storm water pollution prevention, general good housekeeping practices, and BMPs.

For industrial facilities, a separate storm water brochure "Stormwater Pollution Prevention for Industrial Facilities on Joint Base Pearl Harbor-Hickam" is handed out during storm water inspections which explain the NPDES storm water permit background and requirements in more depth. The brochure (see Appendix 2-2) contains information on allowable non-storm water discharges, storm water monitoring, and general BMPs. JBPHH personnel are also trained as needed during the semi-annual storm water inspection visits at the industrial facilities.

JBPHH personnel with project design and construction responsibilities receive annual classroom training on BMPs and storm water protection via a PowerPoint presentation and a question-and-answer session. This training includes construction engineers, design engineers, and field inspectors, and is conducted by EV personnel. The purpose of the training is to improve awareness of storm water pollution and its effects. The classroom training includes information on storm water regulations regarding construction storm water permits and construction BMPs.

Shipyard personnel also receive annual training, which includes BMPs and storm water protection.

The Navy has an internal web-based training system, Environmental Compliance Assessment, Training, and Tracking System (ECATTS), that provides basic environmental awareness training including pollution prevention, hazardous waste, and pesticides. ECATTS contains a storm water module with in-depth information on storm water pollution prevention. ECATTS is required for construction contractors who work on NAVFAC construction contracts at JBPHH.

2.3.7 Pesticide Applicators Training

Application of pesticides and synthetic fertilizers is done by Navy in-house certified pesticide applicators and contractors under Government contract who are required to be properly trained. The Navy conducts annual pesticide training and has strict supply system requirements which prohibit the purchase of pesticides by unqualified personnel. Contractor employees and grounds maintenance personnel shall be Hawaii State-certified. The Integrated Pest Management Plan (IPMP) documents the training requirements for Department of Defense (DOD) and commercial contract applicators. Navy entomologists review pesticides authorized for use including contract specifications and contractor work plans.

2.3.8 Good Housekeeping Training

Good housekeeping training is the responsibility of each facility within JBPHH. Maintaining good housekeeping practices and conducting periodic inspections is emphasized in the "Stormwater Pollution Prevention for Industrial Facilities on Joint Base Pearl Harbor-Hickam" brochure. "A Guide to Understanding Storm Water" details ways to practice good housekeeping including keeping dumpster lids closed and keeping chemicals, paints, fuel, and oils away from drain inlets. Base-wide pollution prevention, good housekeeping and trash reduction measures are discussed in Chapter 6, Debris Control

BMPs Program. Trash reduction and recycling initiatives are presented to Base personnel and residents through informational brochures in new arrival orientation packets and annual inspections.

2.3.9 Military Housing Residents Handbook

A residential community handbook for Navy neighborhoods is available to all on-base residents and is made part of the housing informational package for new residents and is available on the Ohana Military Communities Navy Hawaii website (*http://www.ohananavycommunities.com*) and the Lend Lease Hickam Communities website (*http://www.hickamcommunities.com*). Hickam residents receive a Hickam Communities Resident Handbook managed by the Lend Lease Community. All other JBPHH Residents not managed by Hickam Communities are managed by Ohana Military Communities and receive an Ohana Community Handbook. Both residential guides have a storm water section with an instruction to not dump anything down a storm drain.

The residential guides contain information regarding storm water pollution prevention and general good housekeeping practices. BMP tips to residents address various topics including:

- Sweeping sidewalks and driveways;
- Not hosing debris into storm drains;
- Repairing vehicle leaks;
- Avoiding overuse of fertilizers;
- Picking up animal waste, litter and debris from yards;
- Not overwatering lawns or landscaping;
- Using only biodegradable, ammonia free and phosphate-free soaps when washing cars on residential property;
- Proper disposal of hazardous waste
- How to report illegal dumping;
- How to report blocked storm drain inlets; and
- Contact information for the NAVFAC Hawaii and NRH Environmental Office for assistance concerning storm water pollution prevention and reporting illicit discharges.

"Ohana Military Communities Community Handbook"

https://www.ohananavycommunities.com/document/community-handbook

"Hickam Communities Resident Guide"

https://winnmilitary.entrata.com/media_library/12710/6019a5716691c9.86656218414.pdf

2.3.10 Household Hazardous Materials

Residents are kept informed about proper household hazardous materials, including pesticide and fertilizer application, via a resident handbook, brochures, and other outreach/education material, as noted in Section 2.3.10 above. Hickam Communities flyers and Ohana Military Communities newsletters define household hazardous materials and waste and direct residents to the City and County of Honolulu's household hazardous waste website (*http://www.honolulu.gov/opala/quick-links/hhw.html*) for disposal options.

Ohana Military Communities provides residents with information regarding the base household reuse room at the JBPHH Hazardous Material Minimization Center. The reuse room accepts residents' excess household cleaning products, paints, garden supplies and propane tanks and reissues the items as needed.

2.3.11 Earth Day Events

The Navy Morale, Welfare and Recreation's Earth Day event at Hickam Marina is a free family-friendly event that is open to military and civilians with Base access. The event featured eco-friendly exhibits and activities that help raise environmental awareness and educate families on ways to protect and preserve Hawaii's fragile land and ocean environments. At past Earth Day events, a storm water booth was set up and NRH informational brochures are handed out, including the NRH "A Guide to Understanding Storm Water," along with other handouts from the EPA storm water website. The Navy partners with various other agencies at the Earth Day celebration to promote environmental and conservation awareness to the community.

Additional Earth Day events are held at the Naval Exchange (NEX) Outdoor Living Center and Hickam Communities. Storm water program representatives attend these fairs, distribute brochures, and answer questions to engage the public and increase storm water awareness. Displays at these events include informational posters, games, and brochures.

2.4 Public Involvement/Participation

As with Public Education and Outreach, there is great value in allowing the public to play an active role in both the development and implementation of the Storm Water Management Program. An active and involved community will help develop a large public support base for the program with a broader base of expertise and allow for shorter implementation schedules due to fewer obstacles in the form of public challenges.

2.4.1 Review, Update, and Implementation of the SWMP

In accordance with the Permit, all plans related to the development of the draft and final revised SWMP shall be made available to the public for review and comment. The availability of plans shall be posted on the NRH webpage (*http://www.cnic.navy.mil/storm_water*) during the review period. The public review period is a minimum of 30 calendar days, and all comments/responses will be submitted to DOH along with the submittal of each document.

An informational meeting shall be conducted prior to finalizing the SWMP to solicit further comments from the public. The meeting is tentatively scheduled for Wednesday, April 13, 2022; final date and location to be announced on the webpage. The final SWMP shall incorporate any questions from the public.

Following the completion of the final SWMP, NRH will make the document available upon request via the webpage and at the EV office.

2.4.2 Base Beautification Projects

NRH personnel conduct routine cleanup and beautification projects. Base cleanups are conducted several times a year at JBPHH, with special focus at waterfront and high visibility areas.

Since 2016, NAVFAC Hawaii has hosted monthly volunteer events to restore the ʻĀhua Reef Wetland. The ʻĀhua Reef Wetland is a four-acre coastal wetland with adjacent mudflats and near shore reefs located near Hickam Harbor. The events are open to all military, civilian, contractors, dependents, and guests with access to JBPHH. The volunteers are invited to help restore the wetland and create habitat for native plants and birds by removing trash and invasive vegetation.

The Loko Pa'aiau Fishpond is one of the original 22 fishponds in the Pearl Harbor area. Shoreline fishponds made of rock or coral walls were used by the ancient Hawaiians to farm fish. The Loko Pa'aiau Fishpond is adjacent to the McGrew Point Navy housing area. The Navy has worked with members of local Hawaiian civic clubs and Aiea community members to restore the Loko Pa'aiau Fishpond since 2014. The objective of the restoration project is to educate the local community on ancient Hawaiian farming practices and to preserve and protect cultural resources. The first phase included clearing dense mangrove trees that were obstructing the pond. A preservation plan documenting short- and long-term goals was drafted with input from the Office of Hawaiian Affairs and the Ali'I Pauahi Hawaiian Civic Club and received concurrence from the State Historic Preservation Division. In November 2020, the walls of the fishpond were stabilized and the construction of a Hawaiian healing center hale began. The open shelter hale serves as a healing and educational center for visitors. The Navy will continue working with local community groups to preserve the Loko Pa'aiau Fishpond.

2.4.3 Community Clean-up Events

NRH conducts and participates in several clean-up events, which help to raise public awareness about the impacts of trash and illicit discharges on storm water runoff quality.

NRH personnel participate in various community clean-up events, working with members of the community to clean up trash, green waste, and debris to help keep pollutants from entering the receiving waters. Activities include trash pick-up and beautification projects like beach clean-ups and the Adopt-a-Stream and Adopt-a-Block programs. Past events also include wetland and marsh cleanups to remove invasive vegetation, implement weed control, and replant native species to minimize erosion.

EV is responsible for documentation of participation numbers, amount of trash collected, and any observed trends or correlations to the other SWMP activities.

2.4.4 Storm Drain Marking

The ongoing Storm Drain Marking Program on the base promotes increased public awareness about storm water pollution and discourages illicit discharges to the MS4. Markers include both stenciling and permanent placards. The Permit requires that all storm drains receiving runoff from industrial and/or commercial facilities be marked as part of the Public Outreach component of the SWMP. Priority shall be given to major streets and areas with pedestrian traffic. Additional information about the placard requirements is included in SWMP Chapter 6. NAVFAC Hawaii personnel resumed a storm drain marking program in 2021. The objective of the program was to label storm drain inlets in the vicinity of industrial sites and facilities. Storm drain marker medallions were attached adjacent to 86 storm drain inlets. Storm drain stencils were used to label 3 storm drain inlet structures within the NAVFAC Hawaii compound and on the Ford Island. The NAVFAC Hawaii EV Office will continue the Storm Drain Marking Program and when possible, coordinate volunteer activities to place markers or stencil storm drains.

2.4.5 Partnerships

Past community clean-up activities have included various members of the community, including:

- City and County of Honolulu Department of Environmental Services
- State Department of Transportation
- State Department of Education
- Honolulu Police Department
- Hawaiian Electric Company
- Lions Club
- Boys and Girls Club
- State Department of Land and Natural Resources
- Hawaii Nature Center
- National Oceanic and Atmospheric Administration
- United States Coast Guard
- Community Colleges
- Community Associations
- Civic Clubs
- Navy Hale Keiki School
- Boy Scouts
- Waianae Mountains Watershed Management Partnership
- AmeriCorps

NRH will continue to investigate the possibility of partnering with other MS4 permit holders, nonprofit organizations, and other interested community organizations to raise awareness, implement BMPs, reduce pollutant loads, and improve storm water runoff quality.

2.4.6 Promoting Public Participation

There are a variety of other methods to involve the public in the NRH Storm Water Management Program, however, success of such programs is largely dependent on community interest. EV will continue to offer ideas, guidance, and/or opportunities to public groups that have shown interest in participating in storm water pollution prevention programs.

In 2020, NAVFAC Hawaii focused on increasing student awareness of storm water impacts. During the February 2020 Science, Technology, Engineering and Mathematics (STEM) Expo: Exposing Elementary Students to Engineering Careers, NAVFAC Hawaii presented information about storm water impacts, oysters, wildlife, and other local natural resources. NAVFAC Hawaii conducted a classroom presentation on storm water and coastal pollution at the Next Generation Science Standards/STEM Showcase in March 2020. The presentation used an interactive model of a watershed to demonstrate the sources, accumulation, and dispersal of runoff and pollutants.

2.4.7 Annual Survey

EV is developing an annual survey to evaluate the progress of the public education and outreach program. The annual survey will measure the storm water awareness and knowledge of JBPHH employees, tenants, residents, and contractors. In 2016, NRH conducted meetings to develop a process to properly conduct the annual survey. Federal laws and Navy policies restrict the distribution of

surveys. Therefore, NRH is developing a survey that will assess the effectiveness of training and educational material by soliciting feedback from NAVFAC new employee training sessions.

Due to constraints on in-person training during the past two years, the new employee training was shifted online and surveys were not conducted. NRH is exploring an online survey method to receive feedback from online training participants. Information from the surveys conducted for the new employee training will be used to expand the annual survey to other target groups including residents, contractors, and other JBPHH tenants and employees. An annual survey of JBPHH tenants and contractors may require considerable time before implementation because the survey will need several approvals by the Navy and licensing by the Office of Management and Budget due to the Paperwork Reduction Act of 1995. The annual survey and survey methods may be revised pending the response rate from the previous year.

2.4.8 Program Points of Contact

For questions regarding the storm water program or to request a copy of the current Permit, SWMP, or Storm Water Annual Report, contact:

NRH Storm Water Program, NAVFAC Hawaii Environmental Office, (808) 471-4680

To report a questionable discharge into the storm drain system or nearby waters, base personnel should contact the following:

For observations in JBPHH Family Housing, contact the Area Housing Manager

For all other areas, contact

JBPHH Installation Environmental Compliance Office, (808) 449-3184, or

NRH Storm Water Program, NAVFAC Hawaii Environmental Office, (808) 471-4680

2.5 Evaluation Methods

A summary of each year's efforts toward public and targeted group outreach will be included in the annual report. See SWMP Chapter 13, Reporting Requirements and Appendix 13-1, Program Effectiveness Assessment Plan for additional information.

This page left intentionally blank.

2.6 Summary of Public Education, Outreach and Participation

Table 2-1 Summary of Public Education, Outreach and Participation

Outreach Activity	Targeted Group												Measurable Goals
	Military Residents and Dependents	Military and Civilian Workers	Construction and Maintenance Contractors	Landscaping Personnel and Contractors	Industrial Facilities	Commercial Businesses	Schools	Recreational Facilities	Pesticide Applicators	Environmental Consultants	Health and Safety Consultants	Custodians	
Storm Water Brochures	X	X	X	X	X	X	X	X	X	X	X	X	Number distributed
Industrial Facilities Training Brochure		X	X	X	X				X	X		X	Number distributed
NRH Storm Water Webpage	X	X	X	X	X	X	X	X	X	X	X	X	Number of visits
NRH Facebook Page	X	X	X	X	X	X	X	X	X	X	X	X	Number of visits, friends
Newspaper Articles	X	X	X	X	X	X	X	X	X	X	X	X	Publications per year
Personnel Training		X	X	X	X	X	X	X	X	X	X	X	Number of attendees
Pesticide Applicator Training		X	X	X	X		X	X	X	X			Number of attendees
Good Housekeeping Training	X	X	X	X	X	X	X	X	X	X	X	X	Number of attendees
Military Housing Residents Handbook	X												Number of new residents
Household Hazardous Materials	X												Number of residents
Earth Day Events	X	X	X	X	X	X	X	X	X	X	X	X	Annual

Outreach Activity	Targeted Group												Measurable Goals
	Military Residents and Dependents	Military and Civilian Workers	Construction and Maintenance Contractors	Landscaping Personnel and Contractors	Industrial Facilities	Commercial Businesses	Schools	Recreational Facilities	Pesticide Applicators	Environmental Consultants	Health and Safety Consultants	Custodians	
Base Beautification Projects	X	X	X	X	X	X	X	X	X	X	X	X	Ongoing; number events per year, number of participants per event
Community Clean-up Events	X	X	X	X	X	X	X	X	X	X	X	X	Ongoing; number events per year, number of participants per event
Storm Drain Marking	X	X	X	X	X	X	X	X	X	X	X	X	Number of storm drains completed per year
Annual Survey	X	X	X	X	X	X	X	X	X	X	X	X	Number of participants
Storm Water Hotline	X	X	X	X	X	X	X	X	X	X	X	X	Number of complaints/requests received

3 Illicit Discharge Detection and Elimination

Per the Permit, Part D.1.c, Navy Region Hawaii (NRH) is required to implement its Illicit Discharge Detection and Elimination (IDDE) program to detect and eliminate illicit connections and illegal discharges into its Municipal Separate Storm Sewer System (MS4). The upgraded IDDE program includes:

1. Review and approval process for drain connections;
2. Compilation of non-storm water discharges and measures to prevent these discharges;
3. System mapping;
4. Field screening and data tracking;
5. Subsurface oil investigation, cleanup, and interim control measures;
6. Public reporting;
7. Complaint investigation;
8. Spill prevention and response;
9. Handling and disposal of used oil, toxic materials, and other household hazardous wastes;
10. Enforcement; and
11. Training.

The IDDE Program is administered in accordance with the Permit requirements, as follows:

Permit Reference	SWMP Section
Part D.1.c. Illicit Discharge Detection and Elimination (IDDE) *The Permittee shall implement the IDDE program to detect and eliminate illicit connections and illegal discharges into its MS4. Future activities shall be based on information collected during past activities and an assessment of their effectiveness. The IDDE program shall include:*	Section 3
Part D.1.c.(i) Require Connection Approval. *The Permittee shall require approval for connection to the Small MS4 for facilities not under the direct control of the Permittee and maintain a database of all approved connections to the Small MS4. The SWMP shall specify requirements for issuing connection approval for facilities not under the direct control of the Permittee.*	Section 3.2
Part D.1.c.(ii) Identify Non-Storm Water Discharges. *The Permittee shall compile a list of non-storm water discharges that are considered to be significant contributors of pollutants to the system and measures to be taken to prevent these discharges into the Permittee's Small MS4, or reduce the amount of pollutants in these discharges.*	Section 3.3
Part D.1.c.(iii) System Mapping. *The Permittee shall maintain an up-to-date and accurate storm sewer system map showing the location of storm water drainage systems, outfalls and the names and locations of all waters of the U.S. that receive discharges from those outfalls. The map shall be in an electronic form within a geographic information system (GIS).*	Section 3.4

Part D.1.c.(iv) Field Screening and Tracking. *The Permittee shall implement a storm water collection system surveillance program to monitor all outfalls and the collection system for evidence of illicit discharges during wet and dry weather.* *(a) The program shall designate priority areas for screening, specify the frequency for screening, identify the procedures to be followed if a discharge is observed, and include upstream tracking components. If any outfall locations are submerged, or under piers or wharves at the time of inspection, the monitoring personnel shall inspect the discharge line (or contributing tributary lines), at the closest location(s) upstream of the discharge location and outside tidal influence.* *The Permittee shall maintain an illicit discharge monitoring and tracking database which tracks outfall and collection system inspections and illicit discharges and spills. For each illicit discharge or spill, the database shall record the location, receiving water, type of discharge, responsible party, naval response, and resolution of the discharge to the Small MS4.* *At least once every five (5) years, the Permittee shall conduct a survey of all identified commercial and industrial facilities to identify illicit discharges due to new connections, or the implementation of new practices by the tenants that may result in illicit discharges. The Permittee shall pay particular attention to the use of hose bibs to wash down pavement and work areas, and for vehicle washing.*	Section 3.5
(b) Subsurface Oil Investigation, Cleanup, and Interim Control Measures. The Permittee shall develop and implement a subsurface oil investigation, cleanup, and interim control measures. At a minimum, the Permittee shall ensure: *1. File an annual notification with the National Response Center to cover releases caused by subsurface oil seepage.* *2. If oil seepage is observed, notify the Facility Response Team, as designated in the NRH Integrated Contingency Plan (ICP) and/or the Oil or Hazardous Substance (OHS) Spill Contingency and Emergency Response Plan, who at a minimum shall:* *i) Minimize the migration into Pearl Harbor by using oil booms, when appropriate, and properly clean up and dispose of any collected oil and use absorbent booms if oil sheen continues to be visible.*	Section 3.6

ii) Investigate to ensure that the discharge is not caused by current facility operations or activities. *iii) If the problem is caused by current operations or activities, the following shall be conducted.* *a) Immediately correct the operations or activities that caused the pollution incident.* *b) Implement BMPs within the first working day after the source of discharge has been identified to ensure that potential for further discharge into the storm sewer system is eliminated.* *c) Document results of the investigation and submit with the Annual Report.*	
Part D.1.c.(v) Public Reporting. *The Permittee shall implement a program to facilitate public reporting of illicit discharges (i.e., environmental hotline, email address, or website). The environmental hotline and email shall be clearly posted on its website at all times.*	Section 3.7
Part D.1.c.(vi) Investigate Complaints. *The Permittee shall promptly investigate observed, suspected, or reported illicit flows and pursue enforcement actions, as appropriate. All complaints shall be responded to as soon as practicable, not to exceed 12 hours. If more than 12 hours passes between a complaint and follow up investigation, the Permittee shall record the reason for the delay.*	Section 3.7
Part D.1.c.(vii) Spill Prevention and Response. *The Permittee shall implement a program to prevent, respond to, contain, and remediate all wastewater and other spills that may enter into its Small MS4 from any source. Spill response teams shall minimize the entry of pollutants from spills into the Small MS4, and contamination of surface water, to the maximum extent practicable.* *The Permittee shall implement a procedure whereby DOH is notified of all wastewater spills or overflows from private laterals and failing septic systems into its MS4. The Permittee shall prevent, respond to, contain, and clean up wastewater from any such notification.*	Section 3.8
Part D.1.c.(viii) Proper Disposal. *The Permittee shall facilitate the proper management and disposal or recycling of used oil, vehicle fluids, toxic materials, and other household hazardous wastes. Such a program shall include educational activities, public information activities, and identification of collection sites or methods.*	Section 3.9

Part D.1.c.(ix) Enforcement. *The Permittee shall implement policies for enforcement and penalties when in noncompliance with its requirements including for persons discharging prohibited wastes and pollutants to its Small MS4. The Permittee shall pursue enforcement actions against military and civilian personnel, and commercial and industrial tenants whom illegally discharge pollutants to its Small MS4. Additionally, the Permittee shall ensure the elimination of all identified illicit discharges via structural or nonstructural implementation, or through permitting/authorization and the implementation of appropriate BMPs.*	Section 3.10
Part D.1.c.(x) Training. *The Permittee shall provide annual training to staff responsible for the implementation the conditions of this SWMP on identifying and eliminating illicit connections, illegal discharges, and spills to its Small MS4. This training shall be consistent with the requirements of the SWMP, and incorporate findings from historic monitoring (i.e., types of illicit discharges that are most common).*	Section 3.11

3.1 Illicit Discharges

The United States Environmental Protection Agency (EPA) defines an illicit discharge as "…any discharge to an MS4 that is not composed entirely of stormwater…," with the exception of those that are specifically permitted by a National Pollutant Discharge Elimination System (NPDES) Permit.

3.1.1 Conditionally Allowable Non-storm Water Discharge

Permit Specified Discharge Limitations

Part B.2. of the Permit includes a list of conditionally allowable non-storm water discharges, provided the discharge is not determined to be a source of pollution by NRH. In the event that any of the listed discharges or any individual discharge is observed or expected to be a significant source of pollutants to the MS4, the discharge will no longer be allowed.

- Water line flushing;
- Steam line condensate and flushing;
- Landscape irrigation;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated ground water infiltration (as defined in 40 CFR §35.2005(20));
- Uncontaminated pumped ground water, foundation and footing drains, not including construction related dewatering activities;
- Discharges from potable water sources including but not limited to, waterline flushing, emergency eye wash basins and showers, drinking water fountains, and foundation drains;
- Air conditioning condensate;
- Irrigation water, excluding runoff from commercial agriculture;
- Springs;

- Water from crawl space pumps and footing drains
  (including discharge from buildings with basements, and crawl space pumps used by utility companies to dewater utility manholes and other maintenance and operations substructure facilities);
- Water from individual residential car washing;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Residual street wash water (water only), including wash water from sidewalks, plazas, and driveways, but excluding parking lots; and
- Discharges or flows from firefighting activities and training.
  (including discharges from fire hydrant and fire sprinkler testing if the source is potable water)

Additional Allowable Non-storm Water Discharges

Part B.2. of the Permit also authorizes NRH to develop a list of other similar occasional incidental non-storm water discharges that will not be addressed as illicit discharges. These non-storm water discharges must not be reasonably expected (based on the information available to NRH) to be significant sources of pollutants to the MS4, because of either the nature of the discharges or conditions established for allowing these discharges to the MS4 (e.g., controls required for frequency, required Best Management Practices (BMPs), proximity to sensitive water bodies, etc.). The controls or conditions placed on these discharges must be documented in the Storm Water Management Plan (SWMP). In the event that any of the listed discharges or any individual discharge is observed or expected to be a significant source of pollutants to the MS4, the discharge will no longer be allowed.

Therefore, in addition to the list of non-storm water discharges specified in the Permit and listed above, NRH has determined that the following may be considered an allowable non-storm water discharge under the specified conditions:

- <u>Boat Rinsing</u>
  - The intent of the rinsing activity is salt removal.
  - Rinsing must be limited to water only.
  - No soaps, detergents, or chemicals are allowed.
  - No high pressure washing.
  - Engine maintenance/degreasing activities must be conducted at designated locations with appropriate controls and cannot be discharged directly to the MS4.
  - No discharge of bilge water to the MS4.
- <u>Dive Gear Rinse and Dry</u>
  - The intent of the rinsing activity is salt removal.
  - Rinsing must be limited to water only.
  - No soaps, detergents, or chemicals are allowed.
- <u>Parachute Rinse and Dry</u>
  - The intent of the rinsing activity is salt removal.
  - Rinsing must be limited to water only.
  - No soaps, detergents, or chemicals are allowed.

- Aircraft Rinsing
  - The intent of the rinsing activity is salt removal.
  - Rinsing must be limited to water only.
  - No soaps, detergents, or chemicals are allowed.
  - No high pressure washing.
- Water from Building Exterior Rinsing
  - The intent of the rinsing activity is dust removal.
  - Rinsing must be limited to water only.
  - No soaps, detergents, or chemicals are allowed.
  - No high pressure washing.
- Water from Charity Car Washes
  - Washing shall only occur in areas designated by the NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV).
  - Prior approval must be obtained from the Joint Base Commander (JBC).
  - Fundraiser Car Wash Policies and BMPs established by EV shall be signed and followed.
  - BMPs per Appendix 3-1 must be implemented.
- Condensate
  - Condensate from ice machines and air compressors.
  - Source of water is from potable sources or natural humidity similar to air conditioning condensate.
- Unpolluted saltwater
  - Unpolluted saltwater from saltwater distribution lines, but not dewatering.
  - No additives are allowed.

A table of allowable discharges and required BMPs is included in Appendix 3-1.

3.2 Review and Approval Process for Drain Connections

NRH is establish a new application process for new connections and discharges to the Joint Base Pearl Harbor-Hickam (JBPHH) Small MS4. With assistance from EV, JBPHH Public Works Department Facility Management Division (FMD) is establishing a formal tracking system for new drain connections. FMD is building up the existing application process into a new connection review, approval and tracking system for facilities not under direct control of NRH that connect to the MS4. In general, the process will include the following steps:

- New construction projects are required to submit an MS4 connection application and design plans to FMD for review and approval.
- Approved connections will be logged into a tracking database maintained by FMD.
- NAVFAC Hawaii Asset Management will require new lease agreements to include a requirement for tenants to submit a connection application if they are connected or planning to connect to the JBPHH Small MS4.

The connection request form will be integrated into the Environmental Design and Construction Specifications to ensure that all new connections and discharges to the MS4 are reviewed and subject to

the approval process. New connection and discharge permitting will be added as a step in the JBPHH Work Induction Board (WIB) process. The WIB reviews and approves all proposed construction projects on JBPHH. During the WIB review process, EV provides input to address any potential environmental impacts of the project. The storm water subject matter expert for construction projects has an opportunity to review projects during the planning stage and advise project teams on storm water compliance. The new connection and discharge permit will be included in future WIB project reviews for projects that will connect or discharge to the JBPHH Small MS4.

Currently, a spreadsheet is used to track storm drain inlets, conduits, and channels. NRH is reviewing database options for tracking approved MS4 connections along with other components of the project approval process including inspections and compliance of completed connections to the JBPHH Small MS4. FMD will create and maintain a database of all approved connections. EV will assist FMD with any changes and updates to the MS4 connection application and tracking database.

3.3 Significant and Common Non-storm Water Discharges

EV has identified non-storm water discharges that are considered to be significant and/or common contributors of pollutants to the MS4. Illicit discharge connection surveys have been conducted on Commander, Navy Region Hawaii (CNRH) property since 1999. Several of the significant and common non-storm water discharges were identified based on the results of past illicit discharge surveys. A listing of the significant and common contributors along with measures taken or to be taken to prevent discharges are presented in Table 3-1 below.

Table 3-1
Non-storm Water Discharges and Control Measures

Non-storm Water Discharge Type	Control Measure
Illicit discharge from facility process	Identify process stream and determine required treatment. Design and construct industrial wastewater treatment system with disposal to sanitary sewer system or other off-site disposal facility.
Illicit vehicle washing	Limit vehicle washing to designated vehicle wash racks only. Conduct training for facility personnel to stress the importance of washing vehicles only at designated wash racks.
Illicit wash down of facility work areas	Implement good housekeeping BMPs. Acceptable methods of cleaning shall be employed (i.e., dry sweeping, mopping with discharge of wash water to utility sink, etc.). Conduct BMP training with facility personnel.
Illicit discharge of oil and grease from commercial food facilities.	Limit washing and rinsing to designated sinks that discharge to a grease trap prior to the sanitary sewer system. Conduct BMP training with facility personnel.
Illicit discharge of chemicals, materials, and wastes due to improper storage.	Implement good housekeeping BMPs. Wastes shall be stored in proper containers and under cover. Spill pallets will be used beneath waste drums. Chemicals and materials shall be stored in proper containers or areas to prevent exposure to storm water. Conduct BMP training with facility personnel.
Illicit discharge of oil and other fluids from leaking equipment and vehicles.	Conduct routine preventive maintenance to prevent leaks. Perform regular inspections of equipment and vehicles to detect leaks. Use drip pans beneath leaking equipment and vehicles. Complete maintenance of equipment and vehicles in designated areas under cover. Conduct BMP training with facility personnel.

The most cost-effective method to eliminate prohibited non-storm water discharges, including unauthorized disposal and illicit connection discharges, is to prevent prohibited liquids and materials from entering the storm water system. This can best be accomplished by adopting the following BMPs on a Facility-wide basis, as appropriate. These BMPs are described fully in Appendix 11-3.

BMP 009	Train Employees to Properly Dispose of Wastes
BMP 010	Permanently Seal Floor Drains that Discharge to the Storm Drain System
BMP 011	Confirm that No Industrial Sinks Are Connected to the Storm Drain System
BMP 022	Permanently Seal Drains Within Critical Areas that Discharge to the Storm Drain
BMP 026	Routinely Clean Catch Basin
BMP 027	Stencil Signs on Storm Drain Inlets
BMP 055	Use Overpack Containers or Containment Pallets to Store One-Pint to 55-Gallon Drums or Containers Outside of Storage Areas
BMP 113	Conduct Personnel Training Regarding the Storm Water Pollution Control Plan (SWPCP)
BMP 117	Do Not Pour or Deposit Waste into Storm Drains
BMP 118	Routinely Report Any Observed Non-Storm Water Discharges

In addition, proper disposal of waste materials and/or contaminated water will help to prevent non-storm water discharges. BMPs for disposal of waste materials and contaminated water are presented in Appendix 3-2.

3.4 System Mapping

Maps have been created that show the location of storm water drainage systems, outfalls and the names and locations of all waters of the United States (U.S.) that receive discharges from the outfalls. Navy personnel maintain a desktop Geographic Information System (GIS) of the storm water system for planning and inspections. In 2021, NAVFAC Hawaii Utilities Management contracted a project to survey storm water features and create a comprehensive storm water map and new complete GIS of the JBPHH Small MS4. The project is scheduled to be complete in September 2022. Completion of this project will allow NRH to document and manage the components of the JBPHH Small MS4, assist project design, facilitate tracking system information, and prioritize maintenance efforts.

FMD will be responsible for maintaining the geodatabases and maps. As new drain connections are approved or system components are modified, FMD will update the GIS information.

3.5 Field Screening Plan and Tracking

NRH has implemented a storm water collection system surveillance program to monitor all outfalls and the collection system for evidence of illicit discharges during wet and dry weather. Routine illicit connection inspections are performed to identify storm water discharges that are not identified as allowable in the Permit. Commercial and industrial areas are inspected to identify illicit discharges due to

new connections or the implementation of new practices by the tenants. Illicit discharge surveys are funded and contracted approximately every five years with the surveys conducted over a span of several years. Particular attention is paid to the use of hose bibs to wash down pavement and work areas and for vehicle washing. In 2021, NRH awarded a contract for an illicit discharge survey to identify and categorize non-storm water discharges and illicit connections to the JBPHH Small MS4. Over 800 facilities will be surveyed, prioritizing facilities that have not been surveyed since 2017.

Illicit discharges are currently tracked in a spreadsheet. EV is developing a comprehensive IDDE database to monitor and track illicit connections, illicit discharges, suspected/reported illicit flows, oil spills, wastewater spills, and outfall inspection observations and investigation results. The non-storm water discharges and illicit connections identified by the illicit discharge survey will be added to the IDDE database. For each illicit discharge, the location, receiving water, type of discharge, responsible party, Navy response, and resolution of the discharge to the Small MS4 will be recorded in the database. EV will maintain the IDDE database by inputting the results, response actions, and status of outfall and collection system inspections, illicit discharges, illicit connections, and spills.

Outfall and collection system inspections are conducted by FMD, JBPHH Public Works Department Environmental Division (PRJ4), or EV during routine inspections completed throughout the year. In 2021, NRH completed a draft priority designation for outfall and IDDE inspections based on existing storm water data from 2016 to 2021. Inspection of outfalls and collection systems associated with commercial or industrial areas will be prioritized. During the process, JBPHH was divided into regions based on watershed and land use. Then storm water permit exceedances within each region were used to prioritize locations for inspections. The Bishop Point/Vickers Avenue and Manuwai Canal were determined to be the regions of highest priority. The prioritization process will undergo an internal review to verify that the priority areas are designated appropriately. The designations will be used to prioritize outfall and IDDE inspections in 2022 and in future years. Outfalls that have been designated as "unable to locate" in past outfall inspection surveys are also prioritized for inspections in 2022. Recent field assessments in 2021 and 2022 determined that many of these outfalls are located in overgrown portions of the tidal zone or beneath pier faces. If any outfall location is submerged or under piers or wharves at the time of inspection, the discharge line (or contributing tributary lines) at the closest location upstream of the discharge location and outside tidal influence will be inspected. This methodology is currently being used for outfall and collection system inspections and will continue to be followed in the future.

Outfall inspections include a visual survey of the physical conditions at each site. Observations are documented, including photographs. If any outfall location is submerged or under piers or wharves at the time of inspection, the monitoring personnel will inspect the closest upstream storm drain structure or contributing tributary line outside of tidal influence. Many of the outfalls at JBPHH are located in the tidal zone or beneath piers. Tidally influenced outfalls are surveyed at the outfall and each storm drain inlet upstream until dry conditions are encountered. In the case of multiple storm drainages entering an outfall, storm drain inlets are surveyed in each incoming drainage until dry conditions are encountered. Generally, during dry weather inspections, there should be no flow coming from an outfall. If dry weather flow is observed, the flow is visually examined for characteristics such as color, odor, sheen, or suds. If such characteristics indicate the presence of non-storm water discharges, the survey will be expanded to

track the flow upstream and determine the location of the discharge to initiate corrective actions. Dry weather flows encountered during past surveys of JBPHH were found to originate from allowable discharges, primarily air conditioning and ice machine condensate.

A list of pollutant indicators that may be observed in the MS4 inlets and outlets are included in Table 3-1 to assist in identifying their possible sources and associated activities.

In-depth investigations shall occur at each priority area outfall at least once per permit term. In the event that an illicit discharge is identified, the inspector would notify the facility building manager of the discharge, explain the route to compliance, and coordinate with the facility to verify corrective actions have brough the facility into compliance. If illicit discharges are observed at the outfall, EV is responsible for the investigation of the contributing drainage basin, including industrial inventory and activities within the area. EV personnel shall conduct additional inspections during dry weather conditions, and walkthrough inspections at industrial and commercial facilities to review existing BMPs and compliance with SWPCPs, as applicable.

For outfall and collection system inspections, the date and time, location, physical conditions, flow characteristics, and any pollutant indicators will be recorded by EV in the IDDE database. The results and status of in-depth investigations will also be tracked in the database.

3.5.1 Residential Housing Areas

NRH Residential areas are managed by two Public-Private Venture (PPV) Housing entities, Ohana Military Communities (OMC) and Hickam Communities. OMC maintains a storm water management plan for its miliary neighborhoods. The plan requires documentation and reporting of any illicit connection or discharge to the JBPHH Small MS4 by OMC personnel. Housing residents are required to contact the neighborhood Resident Service Office to report a spill in the housing area.

Hickam Communities addresses illicit connections and discharges in a storm water section of the Hickam Communities Resident Handbook. The handbook directs residents to their Maintenance Office for neighborhood storm drain maintenance issues. Phone numbers for the JBPHH Security are listed to report illegal dumping. The phone numbers for PJR42 and the NRH Storm Water Program Manager are listed for reporting storm water related issues occurring anywhere on JBPHH.

Both OMC and Hickam Communities report illicit discharges, illicit connections, and any other environmental issues to NRH through direct communication with the JBPHH Public Works Department Environmental Storefront Branch (PRJ42). PRJ42 responds with a site investigation, documentation of findings and recommending corrective actions. Additional outreach materials have been developed and will be distributed to all residential housing offices and residents in 2022. This outreach effort will be conducted by Navy personnel to confirm that all military housing residents, employees, and contractors are aware of proper illicit discharge detection methods and to ensure residents have updated points of contact to report illicit discharges.

Table 3-2
Possible Sources of Pollutant Indicators

Indicators	Possible Sources
Ammonia	Broken sanitary wastewater lines, lawn/agricultural runoff
Bacteria/algae	Decomposing organic matter
Cloudy/opaque water	Metal fabrication, disturbed soils, roadway debris
Cloudy appearance	Erosion
Copper	Pesticides, plating, paint shops, or spills, brake dust, tire tread
Discolored sediments	Metal fabrication, painting operations
Floatable solids	Trash and debris
Gray color, sewage odor	Cross connection between sanitary and storm sewer
High chlorine	Swimming pools
High or low pH	Plastic/fiberglass shops, metal plating, masonry wastes
Inhibited vegetation	Various
Metal/concrete corrosion	Metal plating
Multicolor water	Construction sites
Oil, grease, fuel	Gas stations
Oily sheen	Auto repair shops/salvage yards
Phenols	Wood preservatives, pesticides
Pungent/burning odor	Chemical industry
Sediment deposits	Construction site
Soapy film, detergents	Laundries, vehicle, vessel, and/or equipment washing
Unusual colors/odors	Various

Indicators	Possible Sources
Volatile chemical odor	Painting, vehicle/equipment repair, metal plating

3.6 Subsurface Oil Investigation, Cleanup, and Interim Control Measures

During heavy rain, subsurface oil may infiltrate into the drainage structures of the Pearl Harbor Naval Complex, though efforts have been made to line and fix drains to prevent this from occurring. In addition, it appears that subsurface oil occasionally leaches into the harbor as a result of tidal influence in areas within the Pearl Harbor Naval Complex and Hickam with no defined storm water outfalls.

The Navy has ongoing investigation and remediation activities for the source of this oil under the Installation Restoration Program. Specifically, the Navy is evaluating environmental conditions on the entire Pearl Harbor Naval Base Sub Area and taking remediation actions as needed.

The subsurface oil is due to historic releases of fuel and not linked to a current industrial activity. The subsurface oil conditions are addressed in this section instead of being subject to the BMPs set forth in other sections of this SWMP. The Navy implements BMPs to the maximum extent practicable (MEP). Specifically, the Navy places booms in the vicinity of the storm water outfalls where significant sheens have been observed to control and minimize the migration of subsurface oil discharges into the harbor. In addition, the Navy is investigating the feasibility of other technologies that may mitigate infiltration of the subsurface oil into the drainage system.

Pursuant to Section 311 of the Clean Water Act, 33 U.S.C. 1321, and 40 CFR 300.300 of the National Oil and Hazardous Substances Pollution Contingency Plan, the Navy is required to notify the National Response Center of a “discharge of oil.” The National Response Center acts as the central clearinghouse for all pollution incident reporting. Specifically, per 40 CFR 110.3, the regulations provide that a notice must be filed when there has been a discharge of oil that causes a film or sheen upon or discoloration of the surface water. As noted above, an oily sheen appears in Pearl Harbor after heavy rain and in areas surrounding closed pipe storm drain discharge points from subsurface contamination. The Navy has discussed this matter with the U.S. Coast Guard and the State of Hawaii Department of Health (DOH) and it was agreed that an annual notification will be made to cover these subsurface discharges. However, if it is determined that the source of the discharge is not from this subsurface contamination then the Navy will file a separate notification.

Due to the nature of the subsurface oil conditions, the Navy has been carefully evaluating the situation and selecting and implementing long-term remedies. Primary studies included a Remedial Investigation/Feasibility Study Report drafted in 1994, which contains the results of soil sampling and limited groundwater monitoring. This was followed by a 2008 Shipyard Remedial Investigation for Subsurface Fuel, Shipyard Geographic Study Area that investigated several sites and underground storage tank locations in addition to multiple other studies around the base. Several recovery systems were installed in the northern part of the Naval Station Sub-Area and barrier walls have also been constructed in a few locations. For most locations around the base, there have been no recent recorded incidents of fuel getting into the harbor. There is one area where barriers and a recovery system are in place, but there is still a slow leak of oil. The release is contained by absorbent booms and pompoms. Further

studies are underway at localized plumes. There is no known incidence of subsurface oil plumes or fuel at Hickam reaching fuel to receiving waters.

NRH is continuing the Installation Restoration Program (IRP) efforts at all Navy and Marine installations in Hawaii per the regulatory framework provided by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), National Oil and Hazardous Substance Pollution Contingency Plan, and Hawaii Revised Statutes Chapter 128D, Hawaii Environmental Response Law.

The IRP, overseen by the NAVFAC Hawaii Environmental Restoration Department, continues to address historic releases of hazardous substances, pollutants, or contaminants in order to protect human health and safety and the environment at JBPHH. The department manages over 300 restorations sites that are in various phases of the CERCLA process. In 2021, no new IRP sites were identified.

3.7 Public Reporting and Complaint Investigation

Each building on JBPHH has a designated building manager whose responsibilities include routine inspection for environmental compliance. The building managers conduct routine sweeps and inspections of their areas. PRJ42 and EV are responsible for regular compliance inspection for storm water under other programs in the SWMP and other environmental media. PRJ42 and EV are also responsible for responding to complaints received via phone by people who live and work on base.

To report a questionable discharge into the storm drain system or nearby waters, base personnel should contact the following:

For observations in JBPHH Family Housing, contact the Area Housing Manager.

For all other areas, contact the

JBPHH Installation Environmental Compliance Office, (808) 449-3184, or

NRH Storm Water Program, NAVFAC Hawaii Environmental Office, (808) 471-4680.

PRJ42 receives and responds to spill complaints from the public and housing areas. Contact information for EV will be clearly posted on NRH's Storm Water Program website (*http://www.cnic.navy.mil/storm_water*) at all times and provided during new arrival orientation and various storm water training with JBPHH personnel.

If an illicit discharge is observed, EV and PRJ42 will work with the responsible party to correct the violation as soon as possible. All reported illicit discharges and corrective measures will be tracked through the IDDE database described in Section 3.5. NRH is developing an Enforcement Response Plan (ERP) with policies and procedures for illegal discharges and other storm water violations. The draft ERP is contained in Appendix 3-3.

EV and PRJ42 will promptly investigate observed, suspected, or reported illicit flows and pursue enforcement actions, as appropriate. NRH is developing a standardized checklist to document complaint information, response and timeline. The date/time of the observation, date/time of the report, location, receiving water, type of discharge, responsible party, response action, and status will be recorded. The data for each complaint will be stored on a portion of the Navy network accessible to all NRH personnel

to facilitate efficient reporting, documentation and review. All complaints will be responded to as soon as practicable, not to exceed 12 hours. If more than 12 hours passes between a complaint and follow up investigation, EV will record the reason for the delay in the database.

There are two hotlines to report emergency oil or hazardous substance (OHS) spills on JBPHH:

To report an OHS release on land, contact the

Regional Dispatch Center (RDC), 911, or (808) 471-1171

To report an OHS release on water, contact the

Port Operations Control Tower (POCT), (808) 474-6262, or Marine VHF Channel 69

NRH will continue distribution of outreach materials to further educate JBPHH residents, personnel and contractors on the spill response hotlines in 2022.

3.8 Spill Prevention and Response

NRH has completed a Spill Prevention, Control and Countermeasures (SPCC) Plan and an Integrated Contingency Plan (ICP). The SPCC Plan and ICP contain response procedures in the event of an OHS release. NRH maintains six updated regional SPCC plans to prevent and control the discharge of oil from non-transportation-related onshore facilities into navigable waters of the U.S. or adjoining shorelines. The SPCC plans establish the minimum spill prevention and containment procedures, methods, appropriate containment and/or diversionary structures or equipment and other requirements necessary to prevent and to contain discharge of oil from facilities. The SPCC plans contain facility descriptions, spill history, potential discharge direction and volumes, preventative measures and prescribe inspection and security provisions to maintained for each region. These plans help to ensure that oil storage facilities are equipped with proper spill prevention and spill response tools. There is a dedicated SPCC plan for each of the following regions:

- Naval Supply Systems including Command Fleet Logistics Center Pearl Harbor, Defense Fuel Supply Center Pearl Harbor, and Bulk Terminal
- Hickam Airfield
- Naval Magazine (NAVMAG) including West Loch Annex, NAVMAG Lualualei Annex, Beckoning Point, Kalaeloa
- Pearl Harbor Naval Station including Ford Island
- Naval Computer and Telecommunications Area Master Station Pacific, including Wahiawa Annex, Radio Transmitting Facility Lualualei Annex, Pearl City Peninsula, Manana Fire Station
- NAVFAC Hawaii

The Spill Response Program responds to releases of oil or hazardous substances originating from NRH's area of responsibility. This Program ensures compliance with all federal, state, and local laws and regulations pertaining to Oil Pollution Act of 1990 Facility Response Planning, Spill Contingency Planning, Resource Conservation and Recovery Act Contingency Planning, and Risk Management Planning. Properly trained personnel conduct spill assessment and hazard identification and follow strict spill response procedures and protocol. The Naval Inactive Ship Maintenance Office continues to implement the OHS

Spill Contingency and Emergency Response Plan in the event of an OHS release, and contractors at the facility also have a written Emergency Contingency Plan.

The Spill Response Program is responsible for planning, training, mobilizing personnel and assets to respond to spills, and for partnering with federal/state/local emergency planning agencies.

The Spill Response Program:

- Maintains the Region's ICP that serves as a mechanism to ensure that CNRH's Spill Management Team is adequately prepared to respond to an emergency OHS incident.
- Conducts annual Facility Response Team Training and Incident Response exercises using Incident Command System principles, establishing a Unified Command, and using a wide range of equipment and assets.
- Provides the Navy representative to the Honolulu Area Planning Committee, the Local Emergency Planning Committee, the State Emergency Response Commission, the Natural Resources Damage Assessment Restoration and Rehabilitation Sub-Committee, the Marine Oil Spill Ephemeral Sampling Work Group, and the Risk Assessment and Nearshore/Shoreline Protection Sub-Committee.
- Protects the marine environment, Wildlife Management Areas, wetlands, base property, surrounding communities and human health by planning, preparing, and exercising response to worst-case discharge scenarios.

NRH also maintains an ICP to ensure a coordinated response to an emergency oil or hazardous substance spill to minimize life-threatening situations and damage to the environment. The ICP is intended for use in the event of larger spills, not for small incidental spills that may occur at the shop level. The ICP addresses potential discharges for a small/average most probable discharge (2,100 gallons), medium/maximum most probable discharge (36,000 gallons), and worst-case discharge (6.3 million gallons). The plan details procedures for mobilizing personnel and mitigation assets in response to an emergency OHS incident and designates the RDC and POCT hotlines which are manned 24 hours a day. The ICP also designates the Navy On-Scene Coordinator Representative document, coordinates spill response from calls to the RDC or the POCT, and outlines the activities to be carried out by facility personnel once a discharge is detected or emergency incident reported. Upon notification of a release, the dispatcher shall mobilize the Federal Fire Department for land spills or the POCT for waterborne spills.

In regards to wastewater spills, an instruction is in place for wastewater spill/bypass reporting procedures and responsibilities. NAVFACHIINST 5090.2B and COMNAVREGHIINST 5090.2C outline the reporting procedures, provides contact information, and identifies the various entities responsible for spill response and abatement, execution of internal notifications, and external regulatory reporting (Appendix 3-4) [Redacted due to national security concerns]. Reportable discharges include any spill entering surface water or storm drains, any release to public or private property and/or poses a threat to public health and safety, and 1000 gallons or more contained on land. Internal notification procedures and requirements for notification to regulatory agencies are also detailed. At JBPHH, facility level oil and hazardous substance spills that are less than 25 gallons are managed by facility operators. Spills larger than 25 gallons require coordination with the Federal Fire Department.

3.9 Used Oil and Toxic or Hazardous Materials/Waste Disposal

NRH has a Hazardous Waste Management Plan to facilitate the proper management of hazardous materials and hazardous wastes throughout JBPHH. The plan identifies applicable Federal, State, and local regulations pertaining to hazardous waste and describes training requirements, management procedures, and assigns responsibilities to personnel regarding the generation, designation, handling, treatment, disposal, and documentation of hazardous waste. Hazardous materials are received from suppliers and stored appropriately at the Hazardous Materials Pharmacies until distribution to the users. Hazardous material and hazardous wastes (including hazardous waste, universal waste, used oil, and solvent containing wipes) are stored appropriately at individual facilities.

3.9.1 Household Hazardous Materials/Waste

In military housing areas, resident handbooks are distributed to all residents. The handbooks contain information addressing household hazardous materials and hazardous waste. The handbook identifies the various types of household hazardous materials including paints, thinners, turpentine and other spirits, glue, gasoline and petroleum products, batteries, pesticides, herbicides, fertilizers and other soil additives, household chemicals including bleach, and fluorescent light bulbs as items that are not allowed in household waste and require disposal as household hazardous waste. Residents are required to contact the Resident Service Office to coordinate proper disposal of these items. Operation of a home business that generates hazardous waste is prohibited. The resident handbooks also provide information regarding the base household reuse room at the JBPHH Hazardous Material Minimization Center. The reuse room accepts excess household cleaning products, paints, garden supplies and propane tanks.

3.9.2 Privately Owned Vehicle Maintenance

Vehicle repairs, engine cleaning, and oil changes are conducted at approved locations, including a commercial business or the Auto Skills Center. These facilities are trained and equipped to deal with the proper management and disposal or recycling of used oil, vehicle fluids, etc. Information regarding vehicle maintenance is distributed by the PPV Housing to all residents.

3.9.3 Industrial Vehicle Maintenance

Maintenance of industrial vehicles primarily occurs at dedicated industrial facilities on Base, including boat, vehicle, and aircraft maintenance shops. Refer to the various facilities' SWPCPs (Appendix 11-2) for additional information about specific hazardous materials and BMPs associated with vehicle maintenance.

3.9.4 Hazardous Waste Accumulation Point

Proper hazardous materials handling and waste management at industrial and commercial locations is the responsibility of all personnel, with oversight by PRJ4 and EV. Hazardous Waste Accumulation Points (WAPs) have been established at industrial and commercial locations throughout JBPHH. WAPs are operated by trained managers and are inspected weekly. EV trains personnel and routinely inspects WAPs. Hazardous waste turn-ins are coordinated with the JBPHH Public Works Department Environmental Services Branch (PRJ41) for pickup by the JBPHH Central Accumulation Area or the Conforming Storage Facility personnel. These facilities categorize, profile, and store hazardous waste while awaiting final disposal. Final disposal is done by a Navy contractor. To minimize generation of hazardous waste, unused or unopened hazardous materials can be certified for reuse and redistribution.

3.10 Enforcement

To ensure compliance with the Permit requirements, NRH is developing enforcement procedures in its ERP. NRH shall pursue enforcement actions against military and civilian personnel, contractors, and commercial and industrial tenants who illegally discharge pollutants to its Small MS4. NRH will ensure the elimination of all identified illicit discharges via structural or nonstructural measures or through permitting/authorization and implementation of appropriate BMPs. The draft ERP is included in Appendix 3-3. The draft ERP will be revised to recommend appropriate forms of penalties that meet the requirements of the Permit. NRH is currently determining reasonable penalties for all affected divisions, departments, and contractors. The final ERP will include methods of enforcement action based on the party in violation and will be enforced through the party's chain of command or Contracting. In the interim, the enforcement policy is to issue verbal and/or written notices for non-compliance with the requirements of the SWMP. Any unresolved issues are forwarded to the Clean Water Branch at DOH.

NRH is unique from most MS4s in that within its property boundary, it owns the property and almost all of the facilities and provides funding for a majority of work. Due to the nature and internal structure of NRH, the most effective means for enforcement is escalation of unaddressed violations to the next higher authority.

NRH is conducting follow-up inspections at facilities noted with observed illicit connections or illicit discharges in the 2021 IDDE Study and from the monthly zone inspections. NRH personnel will continue to coordinate follow-up with Building Managers and Assistant Public Works Officers as needed to confirm that all corrective actions are completed. As discussed in Section 3.5 , a new IDDE survey was awarded in 2021. The new survey prioritizes facilities with documented unresolved illicit discharge issues and facilities that have not recently been inspected. In addition to the IDDE contract, NAVFAC Hawaii conducts monthly zone inspections of NAVFAC Hawaii facilities. During zone inspections, EV inspectors have been instructed to be aware of and note any illicit discharges. Observed illicit discharges noted during a zone inspection are reported to the Storm Water Program Manager for follow-up actions.

If an observed deficiency is not addressed within the allotted mitigation period, the issue will be brought to the attention of the EV director. The party in violation will receive a written notice and deadline for compliance. If the issue remains unresolved, it will be escalated to the next higher authority.

The penalty for non-compliance of the Permit regulations is at the discretion of the Joint Base Commander (JBC). CNRH has ultimate authority for Permit policies and enforcement actions.

In the event that NRH has been unable to resolve an observed deficiency within its authority, or otherwise deems the site to pose an immediate or significant threat to water quality, EV shall provide an e-mail notification to DOH within one (1) week of such determination. EV will follow-up with written notification and include a copy of all inspection checklists, notes, and related correspondence in pdf format (300 minimum dpi) within two (2) weeks of the determination. All written notifications submitted via email will be directed to:

cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor

3.11 Training

EV will provide annual training to staff responsible for the implementation of the conditions of this SWMP on identifying and eliminating illicit connections, illegal discharges, and spills to the MS4. EV has developed a training brochure that contains details on the regulatory framework, spill prevention, allowable discharges, common illicit connections and discharges on JBPHH, and spill reporting contact information. Distribution of the brochure began in 2022. Personnel routinely involved in the detection of illicit connections and discharges include commercial facility inspectors, industrial facility inspectors, zone inspection personnel, Navy contractors conducting IDDE surveys, and construction site inspectors.

EV and PRJ4 conduct on-site training of personnel responsible for WAPs during facility inspections. The inspections occur annually, at a minimum. Military, civilian, and contractor personnel who generate, package, handle, store, transport, manage, and/or supervise those who manage hazardous waste in the performance of their duties at JBPHH are required to follow the requirements of the Hazardous Waste Management Plan. Training records are to be kept at the site and be available upon request.

NRH incorporates BMPs to prevent illicit discharges into its training for personnel responsible for construction management of NRH projects. Storm water pollution prevention has been incorporated into training for new arrivals at NAVFAC Hawaii.

Personnel that work on Waterfront Operations are trained on the SPCC Plan and the ICP so that they can promptly respond to any spills. Shipyard personnel also receive annual training, which includes BMPs and storm water protection. NRH has developed training material in the ICP for personnel responsible for larger oil and hazardous material spill response. The ICP contains routine large-scale exercises undertaken by NRH spill personnel and the Navy Supply Systems Command (NAVSUP) Fuels Department to train for spills of varying sizes. The ICP plan and documentation process for spill reporting was revised and updated extensively in November 2021.

4 Construction Site Runoff Control Program

Per the Permit, Part D.1.d, Navy Region Hawaii (NRH) is required to implement a Construction Site Runoff Control Program as part of its construction site management. The primary goal of the Construction Site Runoff Control Program is to reduce the discharge of pollutants from construction sites to the Navy's Small Municipal Separate Storm Sewer System (MS4) to the maximum extent practicable (MEP). This Construction Plan applies to all construction sites within Joint Base Pearl Harbor-Hickam (JBPHH) and annexes covered by the Permit, which include both in-house and contract construction and maintenance projects. All sites are required to comply with applicable NRH policies and standards.

The objectives of this Construction Site Runoff Control Program are to:

1. Require proposed construction projects to implement Best Management Practices (BMPs) and to standardize implementation and maintenance of the BMPs.
2. Maintain an inventory of construction projects and track project information.
3. Standardize and administer the plan review and approval of construction project plans and permits to ensure that BMP measures are implemented to the MEP prior to, during, and after construction.
4. Conduct inspections using standard inspection forms and track inspections in databases.
5. Establish enforcement policies and penalties for projects in non-compliance with NRH policies, standards, and project-specific requirements and permits and develop and implement an Enforcement Response Plan (ERP).
6. Provide annual construction BMP training to staff and contractors with construction storm water responsibilities.
7. Provide educational material to project applicants, contractors, and other responsible parties.

The Permit describes the requirements for the Construction Site Runoff Control Program as follows:

Permit Reference	SWMP Section
Part D.1.d. Construction Site Runoff Control *The Permittee shall implement a construction site management program to prevent the discharge of pollutants from construction projects disturbing one (1) acre or more, including construction activities less than one (1) acre that are part of a larger common plan of development that would disturb one (1) acre or more and smaller projects that have the potential to discharge pollutants to the Navy's Small MS4. Only projects meeting these criteria are required to be covered under this program. The construction site management program shall consist of installation-wide instructions, directives, or other regulatory mechanism, including enforcement procedures and actions that require erosion and sediment control, and to ensure compliance. The construction site management program shall include the following minimum elements:*	Section 4

Part D.1.d.(i) Requirement to implement BMPs *– The Permittee shall execute and enforce policies to require proposed construction projects to implement BMPs and standards to minimize the discharge of pollutants within storm water, including erosion and sediment control BMPs. Further the Permittee shall implement requirements to control non-storm water wastes (i.e., discarded building materials, truck washout, chemicals, litter, and sanitary waste) from contacting storm water or otherwise impacting water quality.* *These standards shall be reviewed annually and, as necessary, revised to include descriptions of new, modified, or revised BMPs, including permanent BMPs and Low Impact Development (LID) practices. Any revisions shall be discussed within the Annual Report and the documents included within its SWMP Plan. All documents shall be made available to Facility staff, contractors, and consultants, as appropriate.*	Section 4.2
Part D.1.d.(ii) Inventory of construction sites *– The Permittee shall implement a system to track all construction projects occurring on the facility. This system shall track information on the project and contain, at a minimum:* *(a) The basic site information including location, status, size of the project and area of disturbance;* *(b) Permit or file number, if available;* *(c) Relevant contact information for each project (e.g., names, address, phone, email, etc. for the site operators and contractor);* *(d) Status of design and BMP Plan review and approval, inspection dates, and if applicable, enforcement actions and whether the project has applied for coverage under HAR, Chapter 11-55, Appendix C, NPDES General Permit Authorizing the Discharge of Storm Water Associated with Construction Activity (a.k.a. General Construction Activity Storm Water permit) (unless the project will disturb less than one acre of land) and satisfied any other applicable requirements of the NPDES permit program (i.e., an individual NPDES permit);* *(e) The location of the project with respect to all waterbodies, waterbodies listed as impaired under the CWA Section 303(d) and approved by EPA;* *(f) Project threat to water quality;* *(g) The required inspection frequency;* *(h) The project start and anticipated completion dates; and*	Section 4.3

(i) The date the Permittee approved the erosion and sediment control plan in accordance with this section.	
***Part D.1.d.(iii) Plan Review and Approval** – The Permittee shall:* *(a) Prior to approval of the construction plans and specifications, unless where the contractor is responsible for preparing the site-specific BMP Plan, the Permittee shall review the appropriate site-specific BMP Plan and other pollution prevention measures (e.g., for erosion and sediment control, grading, post-construction BMP and landscaping) or similar plan(s)/document(s) to verify that they are consistent with the requirements of this permit, implement appropriate BMPs, are protective of water quality, and that the implementation of measures to ensure that the discharge of pollutants from the site will be reduced to the maximum extent practicable, and will not cause or contribute to an exceedance of water quality standards. Where the contractor is responsible for preparing the site-specific BMP Plan or other pollution prevention measures, the Permittee must review and approve the plan or other pollution prevention measures prior to the start of construction activities.* *(b) The Permittee shall not allow construction to commence on any project until it has verified that the project has been issued all relevant JBPHH permits (e.g., drainage connection, discharge of surface storm water runoff permit, etc.) and received from DOH a Notice of General Permit Coverage for the discharge of storm water associated with construction activities (unless the project will disturb less than one (1) acre of land), hydrotesting and/or dewatering effluent and satisfied any other applicable requirements of the NPDES permit program (i.e., an individual NPDES permit).* *(c) The Permittee shall update and submit for review and acceptance with the SWMP, a plan review checklist that its reviewers shall use in evaluating the plans and BMPs or other similar document(s) which have been implemented pursuant to this Part. Copies of this plan review checklist shall be provided to applicants for connection, discharge, and encroachment permits and authorization to perform work at the facility; and to consultants and contractors for their use in developing the Plans or other similar document(s) for contracted construction projects. The plan review checklist shall include, at a minimum, but not be limited to comments on any deficiencies and the date when comments were addressed to the satisfaction of the Permittee. A system shall be implemented to ensure all comments, identified during the review process has been properly addressed.*	Section 4.4

Part D.1.d.(iv) Inspections *– The Permittee shall:* *(a) The Permittee shall implement a standard inspection form(s) and reporting and corrective procedures for inspections, including use of an inspection checklist, or equivalent, and the Permittee shall track inspection results in a database or equivalent system. The inspection checklist shall, include at a minimum, but not be limited to identifying any deficiencies and the date of the corrective actions. If allowable due to security concerns, photos shall accompany the inspection checklist to document the deficiencies. The inspection form(s), inspection checklist, reporting and corrective procedures shall be submitted to DOH for review and acceptance with the SWMP.* *(b) Prior to the initiation of ground-disturbing activities, except for activities associated with the installation of BMPs at a site, an engineer or qualified inspector shall inspect the site to verify BMPs as required by the BMP Plan and/or other documents have been installed correctly and in the correct locations prior to the commencement of ground-disturbing activity. The inspector shall be employed or retained by the Permittee and familiar with the project's site-specific BMP Plan and/or other equivalent document(s). Inspections shall include a review of site Erosion and Sediment Controls, good housekeeping practices, and compliance with accepted erosion and sediment control plans, construction BMPs Plans, and other similar documents and approved permits. The inspector shall also identify any site conditions having the potential for erosion and sediment runoff, including other pollutant discharges which may occur as a result of the project's construction activities and ensure that they are remedied by the appropriate party.* *(c) Construction projects shall be inspected at least quarterly by a qualified construction inspector who is independent (i.e., not involved in the day-to-day planning, design, or implementation) of the construction projects to be inspected. The Permittee may use more than one qualified construction inspector for these inspections. The reporting procedures shall include, at a minimum, notification of any critical deficiencies to the Small MS4 Coordinator and site personnel overseeing the project. The Permittee shall implement written procedures for conducting inspections, identifying and requiring appropriate corrective actions, and follow-up inspections when deficiencies had been identified at an inspected project.*	Section 4.5

(d) The Permittee shall identify construction projects for which more frequent inspections may be appropriate, and perform such inspections as necessary to ensure the correct implementation of BMPs and the protection of water quality. Prior to the initiation of ground-disturbing activities, the minimum inspection frequency and inspection priority shall be identified for each construction project. *The Permittee shall implement written procedures for evaluating prioritization of construction sites. Prioritization criteria shall be based on project threat to water quality. Project threat to water quality includes soil erosion potential, site slope, projects size and type, sensitivity of receiving water bodies, proximity to receiving water bodies, and non-storm water discharges. Inspection frequencies shall be conducted based on the prioritization criteria described above.* *(e) At the conclusion of all construction projects, the Permittee shall inspect the project to ensure that all disturbed areas have been stabilized and that all temporary erosion and sediment control measures that are no longer needed have been removed.*	
Part D.1.d.(v) Enforcement *– The Permittee shall:* *(a) Implement policies for enforcement and penalties for those in non-compliance with the requirements of the construction site management program, and* *(b) Implement an Enforcement Response Plan to include written procedures for appropriate corrective and enforcement actions, and follow-up inspections when an inspected project is not in full compliance with its requirements, other permits, and any other applicable requirements under the NPDES permit program.*	Section 4.6
Part D.1.d.(vi) Process to refer noncompliance and non filers to DOH *– In the event the Permittee has exhausted its use of sanctions and cannot bring a construction site or construction operator into compliance with its policies, standards, or this permit, or otherwise deems the site to pose an immediate and significant threat to water quality, the Permittee shall provide e-mail notification to cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor within one (1) week of such determination. E-mail notification shall be followed by written notification in accordance with Part A.7. and include a copy of all inspection checklists, notes, and related correspondence in pdf format (300 minimum dpi) within two (2) weeks of the determination. In instances where an inspector identifies a site that has not applied for permit coverage under*	Section 4.6.1

the NPDES permit program, the Permittee shall provide written notification in accordance with Part A.7. to DOH within two (2) weeks of the discovery.	
Part D.1.d.(vii) Training *– The Permittee shall provide annual training on the Construction BMPs to facility personnel and contractors with responsibilities directly related to construction storm water, including construction engineers, construction and maintenance inspectors, and plan reviewers. This training shall be specific to facility activities (including the proper installation and maintenance of accepted BMPs), policies, rules and procedures.*	Section 4.7
Part D.1.d.(viii) Education *– The Permittee shall implement an education program as part of its ongoing SWMP to ensure that project applicants, contractors, and other responsible parties have an understanding of the storm water requirements they need to implement.*	Section 4.8

4.1 Program Organization

As a military installation, JBPHH has several different types of construction projects and the department that handles the oversight of each one depends on the nature of the work and the source of funding. The program organization of the Construction Site Runoff Control Program is dependent on the department responsible for the design and construction of the project. The overseeing department has the most immediate authority over the day-to-day activities at each construction site. As such, the Construction Site Runoff Control Program is structured to place responsibility for implementation of NRH's Storm Water Management Plan (SWMP) policies at construction sites to each of these corresponding departments. The Joint Base Public Works Department (JB4) and the NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV) are responsible for managing the overall Construction Site Runoff Control Program and updating policies as deemed necessary to improve the effectiveness of the program. Although typically any issues observed with regard to SWMP implementation or non-compliance with the MS4 Permit are resolved at a lower level of authority, the Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Construction Site Runoff Control Program. Commander, Navy Region Hawaii (CNRH) has ultimate authority for Permit policies and enforcement actions. Enforcement procedures are described in more detail in Section 4.6, Enforcement.

The types of execution methods for construction and maintenance projects and the corresponding department responsible for oversight are summarized in the organizational chart presented in Figure 4-1. Typically, construction projects are categorized as either:

(i) *In-house Maintenance and Construction*– These are projects that are typically less than 5,000 square feet (SF) and/or related to emergency repair work. They are usually managed by the Production Division (PROD) and Utilities Management (UM). Some in-house projects are accomplished and managed by military personnel (e.g., Seabees). If needed, project planning is accomplished by NAVFAC Hawaii Asset Management

Department (AM) and design is accomplished by NAVFAC Hawaii Facility Engineering and Acquisition Division (FEAD) Project Management and Engineering Branch (PMEB).

(ii) *Contract Maintenance and Construction* – These projects are usually contracted to an outside contractor to construct. Construction management and oversight are typically accomplished by FEAD for NRH projects. Project planning is accomplished by NAVFAC Hawaii or NAVFAC Pacific Asset Management Departments. The project design is accomplished by NAVFAC Hawaii Design and Construction (DC), PMEB, or NAVFAC Pacific DC. Construction for tenants may be accomplished by FEAD or other contracting agencies (e.g., PPV Housing, Ford Island Ventures, Hawaii Air National Guard, Army Corps of Engineers, etc.). Planning, design, construction management and O&M of these other contracted projects are by these other agencies.

Due to the nature of certain in-house maintenance and construction projects, the potential risk of storm water pollution is minimal or projects are needed to address public health and safety. Therefore, certain projects may be exempt from the requirements of the Construction Site Runoff Control Program. Exemptions will be decided upon on a case-by-case basis. Such projects may include:

- Routine maintenance to maintain the original hydraulic capacity or the original purpose of the facility (only upon review of the JBPHH Public Works Department, Environmental Division (PRJ4);
- Emergency construction activities required to immediately protect public health and safety; and
- Interior remodeling that involves no outside exposure of construction materials/waste to storm water.

These qualifying characteristics are subject to the discretion of the overseeing department and EV and may be revised as determined necessary and/or justifiable. All projects that do not meet these exemption criteria will be referred to herein as *"non-exempt"* construction projects.

This page left intentionally blank.

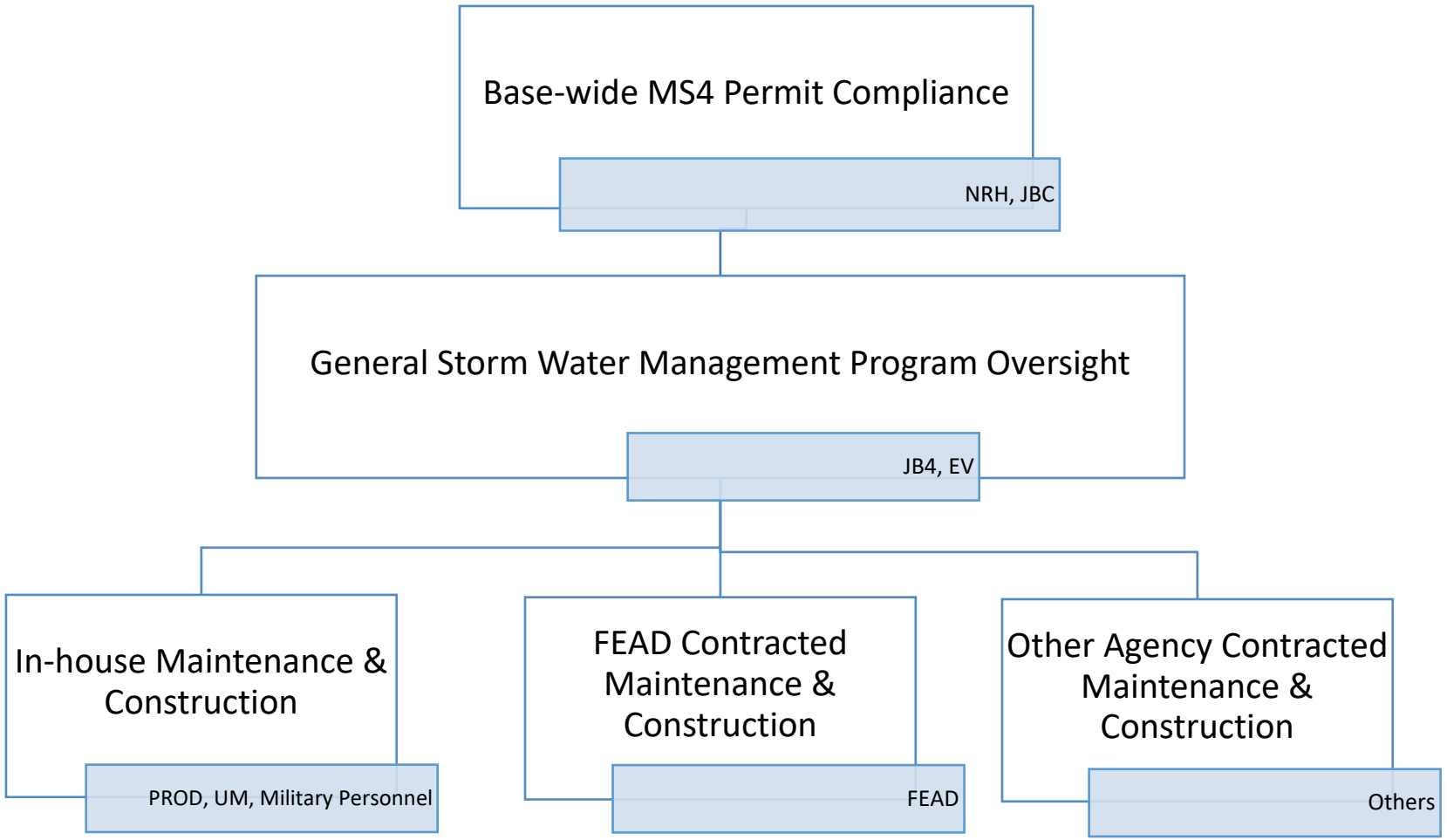


Figure 4-1 Construction Site Runoff Control Program Organizational Chart

This page left intentionally blank.

4.2 BMP Implementation

This SWMP establishes the requirement to implement BMPs on construction projects to minimize the discharge of pollutants with storm water, including controls for erosion and sediment and non-storm water. JB4, NAVFAC Hawaii DC, and EV are responsible for establishing policies and standards that need to be met on contracted construction projects. These policies are incorporated as requirements into the construction contracts. For example, the Initial BMP Site Inspection Checklist (Appendix 4-1) is included in construction contract documents as a site requirement. Tenants and other contractors working on base are required to comply with all applicable laws and regulations and JBPHH instructions and permits. In-house construction projects will be required to implement BMPs per the requirements of this SWMP. In addition, there are specific requirements for handling, storage, and disposal of wastes generated during construction. These standards and requirements will be reviewed annually and, as necessary, revised to include descriptions of new, modified, or revised BMPs, including permanent BMPs and Low Impact Development (LID) practices. Any revisions will be discussed within the Annual Report and the documents included within this SWMP. All Storm Water Management Program documents will be made available to facility staff, contractors, and consultants, as appropriate.

4.3 Inventory of Construction Projects

There are three general categories of construction projects at NRH; (1) In-house Maintenance and Construction, (2) NAVFAC Hawaii FEAD Contract Construction and Maintenance, and (3) Other Contracting Agency Contract Maintenance and Construction. Several construction projects are likely to be on-going at any given time. The benefits of maintaining an inventory of construction sites include:

- Ensuring that construction and BMP plans have been reviewed;
- Tracking potential points of discharge of pollutants into the JBPHH MS4;
- Attaining project data and point of contacts to address issues; and
- Maintaining records of projects to verify that applicable inspections are conducted and necessary enforcement actions are implemented.

Maintaining and managing this information will enable NRH to identify and address compliance issues as well as recognize recurring issues within the Construction Site Runoff Control Program or repeat offenders of violating Permit requirements. Being able to identify and address issues will promote the continual improvement of the Construction Site Runoff Control Program and facilitate its effectiveness in reducing storm water pollution from construction sites.

The information to be tracked as part of the inventory for construction projects consists of the following.

- Basic site information including location, status, size of the project and area of disturbance;
- Permit or file number, if applicable;
- Relevant contact information for each project (e.g., names, address, phone, email, etc. for the site operators and contractor);
- Status of design and BMP Plan review and approval
- Inspection dates, and if applicable, enforcement actions

- If a Notice of Intent (NOI) has been filed, or a Notice of General Permit Coverage (NGPC) received for project-specific National Pollution Discharge Elimination System (NPDES) permit coverage if required.
    - If the project disturbs one or more acre of land or is part of a larger common plan of development that disturbs one or more acre of land, coverage under Hawaii Administrative Rules (HAR), Chapter 11-55, Appendix C, NPDES General Permit Authorizing the Discharge of Storm Water Associated with Construction Activity
    - If the project will involve discharges of non-storm water (e.g., hydrotesting/disinfecting water, dewatering effluent, wastewater, etc.), coverage under the applicable general permit in HAR, Chapter 11-55
    - Or if an individual permit application has been applied for or received, or any other requirement of the NPDES permit program has been satisfied
- Location of the project with respect to all waterbodies, and whether waterbodies are listed as impaired under the Clean Water Act (CWA) Section 303(d) and approved by the United States Environmental Protection Agency (EPA);
- Project threat to water quality;
- Required inspection frequency;
- Project start and anticipated completion dates; and
- Date the Permittee approved the erosion and sediment control plan in accordance with this section.

An inventory of applicable construction sites is maintained as required by the Permit, by the responsible agency displayed in Table 4-1. All records are kept at the responsible agency's office and will be made available, when necessary, upon request by EV or the State of Hawaii Department of Health (DOH). NRH has combined project inventory spreadsheets and begun tracking all necessary parameters for non-exempt projects. NRH is currently coordinating with the responsible agencies to track required inspection frequency, document approval of erosion and sediment control plans, and track small projects that do not require NPDES permitting. The resulting standardized spreadsheet will be utilized consistently for all future projects.

Table 4-1 Construction Project Types and Responsible Agencies

Type of Construction Project	Agency Responsible for Site Management
In-house Maintenance and Construction	JB4, PROD, UM, DC, Military agency responsible for construction
NAVFAC Hawaii Contract Construction and Maintenance:	JB4, Facility Management Division (FMD), Assistant Public Works Officers (APWOs), FEAD
Other Contracting Agency Contract Construction and Maintenance:	Other Contracting Agencies

To prevent overburdening the tracking systems and procedures in place, in-house maintenance and construction projects (*exempt* or *non-exempt*) that (1) disturb an area of less than 5,000 SF, ***and*** (2) can reasonably be considered to hold a negligible potential for discharging pollutants via storm water (with concurrence from PRJ4/EV), will not be included in the inventory of construction sites. By eliminating the tracking efforts required by these smaller tasks, NRH will be able to direct more of its resources towards the management of projects that have a greater potential to impact storm water quality. However, *exempt* projects (such as emergency repair projects) are considered for tracking if these criteria are not met because tracking can be instrumental in identifying recurring or resultant issues in the future.

4.4 Plan Review and Approval

As a part of the design process, designers will consider requirements of this Construction Site Runoff Control Program as well as those of the Permit. NRH/JB4 will perform a review of all non-exempt construction project plans developed to ensure applicable requirements are met.

The National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental effects of their proposed actions and project. As required by NEPA, construction projects are subject to an environmental review. This review involves the preparation of a Record of Categorical Exclusion, Environmental Assessment, or an Environmental Impact Statement. Project planners and design engineers typically contact NAVFAC Hawaii or NAVFAC Pacific Environmental to discuss construction projects before or during the design process. NAVFAC Hawaii or NAVFAC Pacific Environmental review and comment on construction plans and specifications before the documents are finalized. This review process ensures that appropriate environmental controls are incorporated into the project design.

Review of all storm water pollution prevention plans (SWPPPs) and supporting documents will be conducted by the department responsible for overseeing the project. Table 4-1 lists the types of construction projects at JBPHH and the associated department responsible for project oversight. Reviews may also be done by PRJ4/EV. The Storm Water Pollution Prevention Plan Content Review Checklist in Appendix 4-2 will be used to guide the plan review process. Plan review is conducted for all types of projects and the approval process includes the following steps:

- Document the process whereby all proposed construction projects are required to implement measures to ensure that the discharge of pollutants from the site will be reduced to the MEP and will not cause or contribute to an exceedance of water quality standards.
- Review and approve of the applicable Site-Specific SWPPP/BMP Plan to verify that it fully meets all requirements of the Permit and the checklist prior to approval of construction plans and specifications for SWPPPs/BMP Plans prepared prior to contract award or prior to the start of construction activities for SWPPPs/BMP Plans prepared after contract award;
- If applicable to the project, ensure that there is proof of filing an NOI or NGPC and that a Construction BMPs Plan has been prepared; and
- Not allow construction to commence on any project unless and until it is verified that the project has been issued all relevant JBPHH permits (e.g., drainage connection, discharge of surface storm water runoff permit, etc.), received from DOH all applicable NGPCs for the discharge of storm water associated with construction activities or other discharges (e.g.,

hydrotesting/disinfecting water, dewatering, etc.), and satisfied any other applicable requirements of the NPDES permit program (e.g., individual NPDES permit).

If a plan submittal does not meet the requirements outlined by the plan review process, all deficiencies will be noted on the project's Plan Review Checklist. The applicant must resubmit the checklist, with comments describing how each deficiency has been addressed. At a minimum, the responsible department will keep a record of deficiencies/comments noted and the date on which revisions were made to the satisfaction of the reviewer. Other relevant information may be tracked at the discretion of the department.

Prior to commencement of construction, the Navy Project Manager or contractor is responsible for ensuring that necessary approvals, including documentation of any revisions made to satisfy deficiencies and/or comments, have been received and updated in the project record.

Any pertinent revisions to the SWPPP and supporting documents following review approval, including but not limited to design or concept changes, shall be resubmitted to the appropriate department for review. As necessary, EV will oversee or provide assistance during the plan review process. EV will also review, update, and distribute the Plan Review Checklist as needed.

4.4.1 Approval to Discharge or Connect to MS4

Following review of the project SWPPP and all other pertinent documents, some projects may be required to obtain additional approval from JB4. Approval to discharge or connect to the MS4 is required for connection to the MS4 for facilities not under the direct control of the JBC, or certain project-related discharges to the MS4 (e.g., dewatering or hydrotesting, surface storm water runoff associated with construction activities that disturb one or more acres of land or that are part of a larger common plan or development that would disturb one or more acre of land). The connection application process is described in Section 3.2. JB4 will work with the Facility Management Division (FMD) to determine if the storm drain system has adequate capacity to accept a connection request. They will also work with EV as needed to address any technical issues or concerns.

4.4.2 Commencement of Construction

Prior to any construction, a project owner must receive notice of the completion and acceptance of a SWPPP review and revised dig permit, if applicable. All construction activities, for in-house, military or contract projects, will also be prohibited until it is verified that the project has received all applicable permits (e.g., NGPC under HAR, Chapter 11-55, Appendix C) and has satisfied all other requirements of the NPDES program.

4.5 Inspections

Routine site inspections are conducted and include a review of site erosion and sediment controls, good housekeeping practices, and compliance with approved erosion control plans or construction BMPs plans. Inspectors use the inspection checklist provided in Appendix 4-3. Inspection results are tracked by the department responsible for the construction and made available to EV/JB4 upon request.

There are three construction inspection requirements that must be met for all applicable maintenance and construction projects. They are as follows:

- ***Initial Site Inspection:***
  - *Purpose*: To ensure that BMPs are correctly installed, in the right locations, and in accordance with all approved SWPPP related documents.
  - *Inspector*: An engineer or qualified inspector familiar with the project's site-specific BMP Plan and related documents.
  - *Frequency*: Once, prior to any earth-disturbing activities (except to install BMPs).
- ***Quarterly Site Inspections:***
  - *Purpose:* To ensure the continued performance of BMPs throughout the life of the project, that SWPPP related documents are available to workers onsite, and to make sure that appropriate adjustments are made to BMPs that are found to be deficient. These inspections will be conducted for all projects.
  - *Inspector*: A qualified, independent inspector, with no involvement in the day-to-day planning, design, or implementation of the project.
  - *Frequency*: Quarterly.
- ***Other Frequencies of Inspections:***
  - *Purpose:* To ensure that, for construction projects where more frequent inspections are appropriate, performance of BMPs continues throughout the life of the project, that SWPPP related documents are available to workers onsite, and to make sure that appropriate adjustments are made to BMPs that are found to be deficient. Prior to beginning any ground-breaking activities, the minimum inspection frequency and priority will be identified for each construction project.
  - *Inspector*: A qualified, independent inspector, with no involvement in the day-to-day planning, design, or implementation of the project.
  - *Frequency*: As determined prior to the beginning of the project and may be adjusted through the duration of the project.

Each construction project is assigned a priority level of high, medium, or low in the master inventory of construction projects. The priority level is based on if excavation is involved in the project and on the distance from the site to the nearest State waters. More frequent inspections will be conducted if any problems are identified during construction. FEAD construction projects require erosion and sediment control inspections, inspections by Navy personnel involved with the project, and regular quality control reports. More frequent inspections may be required for non-FEAD projects located in close proximity to water bodies.

EV will be responsible for periodically reviewing and distributing updates to the inspection checklist and prioritization process as needed.

Critical Deficiency: A deficiency that poses an immediate risk of discharge of pollutants to a storm drain MS4, or water body, or observed violation of regulations. Critical deficiencies include, but are not limited to, the following examples:

- Any evidence or observed discharge of non-storm water to the storm drain system, or water body generated by construction activity;
- No SWPPP or BMP document;
- No required NPDES permit;

- Absence of perimeter controls and/or linear barriers required by the SWPPP document;
- There are identified storm drain inlets, surface waters, or State waters within or adjacent to the project site in close proximity to disturbed soil areas without control measures in place so there is an immediate threat of untreated storm water discharges;
- Work in an active stream channel or other surface water body without proper implementation of required BMPs; and
- Any presence of any spilled oil or hazardous materials near unprotected storm drain inlets, swales, ditches, or water body.

4.5.1 Initial Inspections

Prior to the initiation of non-exempt construction activities, the site will be inspected by a qualified inspector for BMPs.

As a part of the initial inspection, the inspector will review the site's BMP plan and applicable permits and verify that BMPs have been installed as required, correctly and in the correct locations prior to the commencement of ground-disturbing activity. Specifically, the inspector will review erosion and sediment controls, good housekeeping practices, compliance with site plans, construction BMP plans, and other similar documents and approved permits. If the inspector identifies any site conditions that have the potential to result in the discharge of pollutants, corrective actions and re-inspection will be required prior to the commencement of construction activities. Prior to this re-inspection, a contractor may only disturb the soil to the extent that is required to install BMPs.

4.5.2 Quarterly and Other Frequency Inspections

All non-exempt construction projects will be inspected quarterly to ensure that all BMPs specified in the SWPPP are properly maintained and continue to be sufficient in preventing storm water pollution resulting from construction activities through the duration of the project. All inspections will be conducted by independent (i.e., not involved in the day-to-day planning, design, or implementation of the construction project) qualified inspectors.

Inspections will also be conducted upon complaints from citizens or concerned groups. Unannounced and follow-up inspections may be conducted as deemed necessary. EV will coordinate with the overseeing department if violations are documented. If violations are observed during general inspections, either the construction manager, tenant and EV will be notified. EV will direct the issue accordingly. Adjustments to inspection frequency will be made at the discretion of the overseeing department and EV, in accordance with the Permit requirements.

4.5.3 Corrective Action and Reporting Procedure

Critical deficiencies will be reported immediately to EV and the construction manager. Failure to address identified critical deficiencies can be the escalated to the next higher authority and enforcement conducted through the contract or tenant lease agreement, as necessary.

4.5.4 Tracking Inspection Results

As a part of the inspection, all the documentation for the site must be produced by a project representative (e.g., BMP plan, applicable permits, site inspections, and training records). Inspectors will then verify that site conditions match those required in site documents. The inspector will ensure that BMPs are properly maintained and effective in containing potential pollutants. Any deficiencies noted

during these inspections shall be promptly corrected by the contractor. The inspection results, corrective actions, and follow-up inspection results will be tracked by the overseeing departments and will be available for review by EV.

4.6 Enforcement

To ensure compliance with the Construction Site Runoff Control Program and the Permit requirements, NRH is in the process of finalizing enforcement procedures for all maintenance and construction projects. The Enforcement Response Plan (ERP) will include policies and written procedures for appropriate corrective and enforcement actions, including penalties as appropriate, for projects found to be in non-compliance with the Construction Site Runoff Control Program. The ERP will also include follow-up inspections when an inspected project is not in full compliance with its requirements, other permits, and any other applicable requirements under the NPDES permit program. The draft ERP is contained in Appendix 3-3. NRH is in the process of revising the draft ERP to recommend appropriate forms of penalties that meet the requirements of the Permit. NRH is currently determining reasonable penalties for all affected divisions, departments and contractors. The final ERP will be enforced through the party's chain of command or Contracting.

4.6.1 Referral of Non-compliance and Non-filers to DOH

In the event that NRH has been unable to resolve an observed deficiency within its authority, or otherwise deems the site to pose an immediate or significant threat to water quality, EV shall provide an e-mail notification to DOH within one (1) week of such determination. EV will follow-up with written notification and include a copy of all inspection checklists, notes, and related correspondence in pdf format (300 minimum dpi) within two (2) weeks of the determination.

In the event that NRH identifies that a construction site has not applied for permit coverage under the NPDES permit program, EV will provide written notification to DOH within two (2) weeks of the discovery.

All written notifications submitted via email will be directed to:

cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor

4.7 Construction BMP Training

Employees whose jobs or activities are engaged in construction will be trained regarding the requirements of the Construction Site Runoff Control Program. Positions with Construction Site Runoff Control Program responsibilities include construction engineers, construction and maintenance inspectors and plan reviewers, and any other staff responsible for managing the Construction Site Runoff Control Program. These JPBHH personnel receive annual classroom training on BMPs and storm water protection via a PowerPoint presentation and a question-and-answer session. The training is conducted by EV personnel and its purpose is to improve awareness of storm water pollution and its effects. The classroom training includes information on storm water regulations regarding construction storm water permits and construction BMPs. Additional training materials have been developed as part of the Construction Site Runoff Control Program to improve storm water inspection. Annual NPDES permit compliance training will continue to be an annual requirement for Navy Construction Managers.

Construction contractors are required to take storm water training using the Navy's web-based training system, Environmental Compliance Assessment, Training, and Tracking System (ECATTS). The environmental awareness training for construction contractors contains modules on pollution prevention, hazardous waste, pesticides, and storm water pollution prevention. Upon the issuance of a NPDES permit or NGPC, EV sends training slides to the project's Construction Manager. The requirement for erosion and sediment control training has been included in the Design and Construction Environmental Specifications for all relevant contractor to receive annual training and provide training documentation prior to the start of the project.

NRH and NAVFAC Hawaii are developing additional training materials related to specific facility construction activities with information on proper installation and maintenance of approved BMPs, Construction Site Runoff Control Program policies, rules, procedures, and resolution of any issues observed during the previous year. NRH will increase the use of ECATTS to assign and record training completion for project review personnel and construction site inspection contractors.

EV is responsible for ensuring that updated information, current inspection forms, and any other updates to the Construction Site Runoff Control Program policy, procedures, etc. are made available to personnel and contractors working in construction.

4.8 Education

As part of the effective management of its Construction Site Runoff Control Program, NRH is in the process of implementing an ongoing education program directed at all parties subject to the requirements of the Construction Site Runoff Control Program, including project applicants, contractors, and other responsible parties.

The program will promote a general understanding of the SWMP, and more specifically of the requirements that they must meet as participants of the Construction Site Runoff Control Program. Part of this education involves knowledge of the proper procedures and approvals necessary to begin construction, as well as knowledge of how to remain in good standing throughout the construction process, and where to go for additional information and assistance.

5 Post-Construction Storm Water Management

Per the Permit, Part D.1.e, Navy Region Hawaii (NRH) is required to implement and enforce a Post-construction Storm Water Management Program. The purpose of the program is to address storm water runoff from all new development and redevelopment projects that result in a land disturbance of one (1) acre or more and smaller projects that have the potential to discharge pollutants to the Municipal Separate Storm Sewer System (MS4).

The Post-construction Program implements the following control measures to minimize storm water impacts to the maximum extent practicable (MEP) and ensure permanent controls are in place for applicable projects:

1. Implement and enforce revised standards and feasibility criteria for requiring post-construction permanent best management practices (PBMPs), including Low Impact Development (LID) measures that will effectively reduce pollutants, including foreseeable potential future pollutants, to NRH's MS4.
2. Review and accept plans for projects to ensure that appropriate PBMPs have been included in the project design and bid package.
3. Develop, operate, and maintain an Asset Management System (AMS) database to track PBMP installation including inspection, operation and maintenance, and inspection frequency of PBMPs.
4. Provide education and outreach materials on the selection, design, installation, operation, and maintenance of storm water best management practices (BMPs), structural controls, PBMPs, and LID practices.
5. Provide annual training for staff and contractors responsible for inspecting PBMPs and LID practices.

The Post-construction Program is administered in accordance with the Permit requirements, which state:

Permit Reference	SWMP Section
Part D.1.e. Post-construction Storm Water Management in New Development and Redevelopment *The Permittee shall implement and enforce a Post-Construction Storm Water Management program to address storm water runoff from all projects that result in a land disturbance of one (1) acre or more and smaller projects that have the potential to discharge pollutants to the facility's Small MS4.* *The Permittee's program must ensure that permanent controls are in place to prevent or minimize water quality impacts to the MEP. Review and update, as necessary, the criteria defining when types of permanent post-construction BMPs (i.e., LID techniques), must be included in a project design to address storm water impacts and pollutants of concern. For State waters on the State CWA Section 303(d) list or State established and EPA*	Section 5

approved TMDLs, the pollutants of concern to be targeted shall include the parameters causing impairment. The program shall include, at a minimum, the following elements:	
Part D.1.e.(i) Standards *– The Permittee shall implement standards for addressing postconstruction BMPs, including Low Impact Development (LID) requirements. LID refers to storm water management practices which seek to mimic a site's predevelopment hydrology by minimizing disturbed areas and impervious cover and then infiltrating, storing, detaining, evapotranspiring, and/or biotreating storm water runoff close to its source. The standards shall be applicable to all construction projects disturbing at least one (1) acre and smaller projects that have the potential to discharge pollutants to the Permittee's Small MS4. LID employs principles such as preserving and recreating natural landscape features and minimizing imperviousness to create functional and appealing site drainage that treats storm water as a resource, rather than a waste product. LID treatment measures include harvesting and use, infiltration, evapotranspiration, or biotreatment. The plan for the implementation of LID provisions in the Permittee's standards shall include at a minimum the following:* • *Criteria for requiring implementation.* • *Investigation into the development of quantitative criteria for a specific design storm to be managed by LID techniques. Examples of design storm requirements include: 24-hour, 85% storm through infiltration; on-site management of the first inch of rainfall within a 24-hour period; retention of the 100-year, 2-hour storm; or on-site management of the 24-hour, 95% storm.* • *Feasibility criteria for circumstances in which a waiver could be granted for the LID requirements.* • *When a LID waiver is granted, alternatives such as offsite mitigation and/or non-LID treatment control BMPs could be required.*	Section 5.2
Part D.1.e.(ii) Review of Plans for Post-Construction BMPs *– For design-bid-build projects, the Permittee shall include in all requests for proposals (RFPs), a requirement to ensure that appropriate permanent post-construction BMPs, which include LID practices, have been included in the project design and are included in the bid package to ensure compliance with this part of the permit. Projects shall be reviewed and approved prior to implementation. For design-build projects, the Permittee shall review and approve the project design prior to implementation. No project shall proceed without the inclusion of appropriate permanent post-construction BMPs unless a waiver is granted by the Permittee based on specific documentation demonstrating that such post-construction BMPs are not feasible. Project documents for projects that will include installation of*	Section 5.3

permanent post-construction BMPs shall also include appropriate requirements for their future continued maintenance.	
Part D.1.e.(iii) BMP, Operation and Maintenance, and Inspection Database *– The Permittee shall operate and maintain all Post construction BMPs to the design OR operational optimized specifications. The Permittee shall ensure that the post-construction BMP effectively reduces discharges of pollutants and is protected from degradation not accounted for within its designed lifespan. The Permittee shall implement a computer-based tracking system (i.e., Asset Management System) to track the frequency of inspections and maintenance of post-construction BMPs (Permanent BMPs). The tracking system shall contain a complete inventory of all Permanent BMPs. In addition to standard information collected for all projects (e.g., project name, owner, location, start/end date, etc.), the tracking system shall also include, at a minimum:* *1) Type and number of LID Practices;* *2) Type and number of Source Control BMPs;* *3) Type and number of Treatment Control BMPs;* *4) Latitude/Longitude coordinates of controls using Global Positioning Systems (GPS) and NAD83 or other Datum as long as the datum remains consistent;* *5) Photographs of controls if allowable due to security;* *6) Operation and maintenance requirements;* *7) Frequency of inspections;* *8) Inspection results, necessary follow up actions, and response; and* 9) *Frequency of maintenance.*	Section 5.4
Part D.1.e.(iv) Education and Training *(a) Project Proponents – The Permittee shall provide education and outreach material for those parties with project design and construction storm water responsibilities on the selection, design, installation, operation and maintenance of storm water BMPs, structural controls, post construction BMPs, and LID practices. The outreach material may include a simplified flowchart for thresholds triggering specified requirements, a list of required permits, implementing agencies, fees, overviews, timelines and a brief discussion of potential environmental impacts associated with storm water runoff.*	Section 5.5

(b) *Inspectors – All Permittee personnel and contractors responsible for inspecting permanent post-construction BMPs and LID practices shall receive annual training.*	

5.1 Program Organization

Joint Base Pearl Harbor-Hickam (JBPHH) has several different types of construction and maintenance projects. The department responsible for oversight of a project depends on the nature of the work and the source of funding. The program organization for the Post-construction Storm Water Management Program is dependent on the department responsible for design and construction of the project. The departments responsible for overseeing that all Post-construction Storm Water Management Program requirements are met for the various types of construction projects are identified in Figure 5-1. The Post-construction Storm Water Management Program includes planning, design, and a long-term maintenance component. The maintenance phase is coordinated by the Facility Management Division (FMD), under the overall direction of the JBPHH Public Works Department (JB4).

Figure 5-1 outlines the organization of the Post-construction Storm Water Management Program. The blue boxes indicate the department responsible for general oversight of each phase.

The Naval Facilities Engineering Systems Command (NAVFAC) typically accomplishes project management, planning, design, and construction for most NRH and tenant projects. Construction for tenants and non-NAVFAC projects may be accomplished by other contracting agencies. Work contracted by other agencies would be planned, designed, and managed by the agencies responsible for the project. Operation and maintenance (O&M) for the PBMPs would be responsibility of the tenant. NRH and JB4 would be responsible for compliance oversight and tracking for O&M. The types of execution methods for construction and maintenance projects and corresponding responsible agencies are described below.

Typically, NAVFAC construction projects at NRH are categorized as either:

(i) In-house Maintenance and Construction– These are projects that are typically less than 5,000 SF and/or related to emergency repair work. They are usually managed by the Production Division (PROD) and the Utilities Management (UM). Some in-house projects are accomplished and managed by military personnel (e.g., Seabees). If needed, project planning is accomplished by NAVFAC Hawaii Asset Management Department (AM) and design is accomplished by NAVFAC Hawaii Facilities Engineering and Acquisition Division (FEAD) Project Management and Engineering Branch (PMEB). FMD is responsible for O&M of Navy PBMPs and tracking following completion of construction. O&M may be accomplished by in-house (PROD) or contracted personnel.

(ii) Contract Maintenance and Construction – These projects are contracted to an outside contractor to construct. Construction management and oversight are typically accomplished by FEAD for NRH projects. Project planning is accomplished by NAVFAC Hawaii or NAVFAC Pacific Asset Management Departments and design is accomplished by NAVFAC Hawaii or NAVFAC Pacific Design and Construction (DC) or PMEB. FMD is responsible for O&M and

tracking following completion of construction. O&M of Navy PBMPs may be accomplished by in-house (PROD) or FEAD contracted personnel. Construction for tenants may be accomplished by FEAD or other contracting agencies (e.g., Public-Private Venture Housing, Ford Island Ventures, Hawaii Air National Guard, Army Corps of Engineers, etc.). Planning, design, construction management, and O&M of these other contracted projects are by these other agencies.

To address the Permit requirements, construction projects subject to the requirements of the Post-construction Storm Water Management Program are those that disturb one (1) or more acres, or smaller projects that have the potential to discharge pollutants into NRH's MS4. This program covers all new development and redevelopment projects.

For the purpose of this Storm Water Management Plan (SWMP) and the Post-construction Storm Water Management Program, the following construction activities are ***not*** considered for classification as "redevelopment" projects:

- Routine maintenance to maintain the original hydraulic capacity, line and grade, or the original purpose of the facility;
- Trenching and pavement resurfacing activities related only to utility work;
- Resurfacing or replacement of damaged pavement;
- Emergency construction activities required to immediately protect public health and safety;
- Interior remodeling that involves no outside exposure of construction materials/waste to storm water; and
- Exterior building renovations that do not disturb ground or increase the footprint of impermeable surfaces.

Those projects classified as exempt projects are subject to the discretion of the overseeing department and NRH/NAVFAC Hawaii Environmental Department (EV).

The Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants/agencies. Commander, Navy Region Hawaii (CNRH) has ultimate authority for Permit policies and enforcement actions. In 2022 and beyond, NRH will continue to expand the Post-construction Storm Water Management Program and improve the program.

This page left intentionally blank.

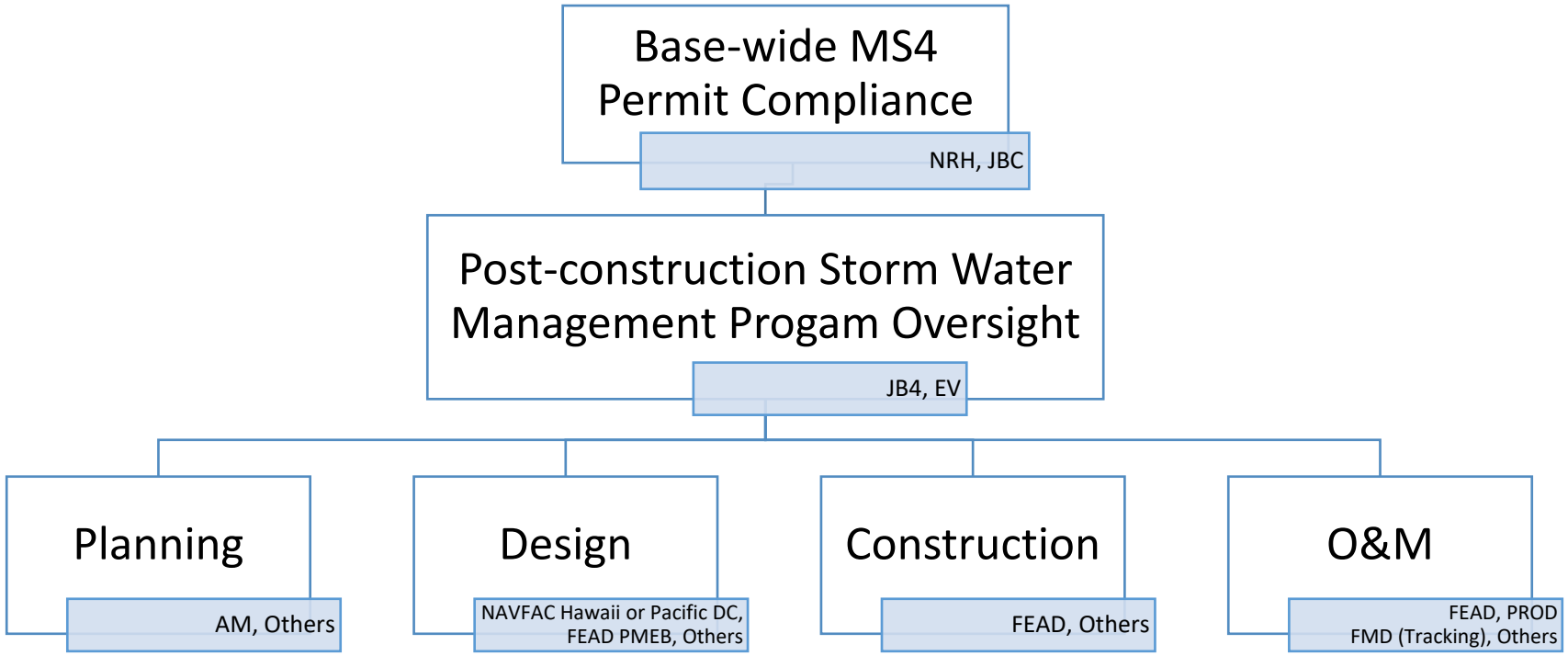


Figure 5-1 Post-construction Storm Water Management Program Organizational Chart

This page left intentionally blank.

5.2 Standards

In accordance with the Permit, Part D.1.e.(i), NRH uses existing Navy and Department of Defense (DOD) policies for implementing LID. LID aims at preserving or mimicking the site's predevelopment hydrology. This is achieved by minimizing ground disturbance and use of impervious cover, and infiltrating, storing, detaining, evapotranspiring, and/or biotreating storm water runoff as close to its source as reasonably possible. Ideally LID measures are based on the concept of preserving or recreating the natural landscape features, minimizing imperviousness, and treating storm water as a resource rather than a waste product. NRH's LID design standards are intended to prioritize management practices that favor harvesting and use, infiltration, evapotranspiration, or biotreatment, followed by other practices to treat and release storm water. Moving forward, NRH will also review projects according to the State of Hawaii LID requirements and policies.

NRH has implemented the required LID standards for its projects in accordance with updated LID Standards. These standards are outlined in Section 438 of the Energy Independence and Security Act of 2007 (EISA) and establish strict storm water runoff requirements for federal development and redevelopment projects with a footprint of 5,000 SF or more. The Under Secretary of Defense released a policy memorandum on January 19, 2010, for DoD Implementation of Storm Water Requirements under Section 438 of EISA, which identified the design storm criteria as the 95th percentile storm. This policy memorandum also includes a flow chart that includes examples of on-site design options and technical constraints. NAVFAC projects are required to follow the requirements of the Unified Facilities Criteria (UFC) 3-210-10, Low Impact Development, which provides design criteria for LID and technical feasibility criteria.

The National Pollutant Discharge Elimination System (NPDES) General Permits require projects that disturb one or more acres to return the infiltration capacity of the project area to pre-hydrologic conditions. As part of the National Environmental Policy Act (NEPA) process, Categorical Exclusion (CATEX) reviews are performed and require EV review and comment. NAVFAC Hawaii or NAVFAC Pacific Environmental advise whether LID features are required for a particular project. The actual LID requirements and planning process are overseen by the Regional Engineer and Designer of Record. NRH is developing a Categorical Exclusion comment template to require LID features for all projects over 1 acre, even for projects that the Navy's LID policy would not require LID features.

NRH is revising internal Navy policies and checklists to ensure that LID provisions or waiver implementation is documented and coordinated between JBPHH and NAVFAC Hawaii departments. NRH is in the process of incorporating LID requirements and PBMP maintenance requirements earlier in the project design review process. NRH will ensure that permanent controls are in place to prevent or minimize water quality impacts to the MEP for projects of any size that have the potential to impact water quality. The standard language used in the pre-construction NEPA review process for the CATEX reviews has been revised to reference NRH's NPDES permit requirements as the trigger for including LID features in a project. NAVFAC Hawaii will coordinate with NAVFAC Hawaii Design and Construction to ensure that project managers will follow both the CATEX requirements and Navy policy (UFC 3-210-10). In addition to the updated CATEX review, the standard contract specification language will be revised to include LID feature requirements.

The Navy LID policy includes a waiver process to be used in the rare instances when LID is not appropriate for the project site. The Regional Engineer must review and approve the LID/EISA Constraints Review and Waiver Request form and process. Refer to Appendix 5-1. The reason that LID cannot be achieved at the site must be justified with supporting documentation such as plans, specifications, and storm water calculations.

5.3 Review of Plans for Post-construction BMPs

A primary goal of the Post-construction Storm Water Management Program is to ensure that no applicable construction project will proceed without the inclusion of the appropriate PBMPs and documentation outlining future PBMP maintenance requirements. To achieve this goal, all projects, design-bid-build and design-build, must be reviewed and accepted for suitable use of PBMPs. This review and acceptance process will be conducted by the overseeing department shown in Figure 5-1 and will incorporate all LID standards that have been developed for the Permit.

All project owners have access to the criteria for requiring LID. NRH is developing a "Low Impact Development Planning and Design Checklist," (LID Design Checklist). No non-exempt project shall proceed without the inclusion of appropriate PBMPs unless a waiver has been granted based on specific documentation demonstrating that PBMPs are not technically feasible. Refer to Section 4.1 for additional information on exempt and non-exempt construction projects. Criteria for technical feasibility include restrictions imposed by State or local regulations on types of LID features (e.g., green infrastructure, rain harvesting). Economics may be a factor but should not be considered the only constraint to justify technical infeasibility.

As discussed in Section 4.4, review of all storm water pollution prevention plans (SWPPP) and supporting documents is conducted by the department responsible for overseeing the project. The SWPPP/BMP Plan Content Review Checklist (Appendix 4-2) are based on the type of project (in-house or contract) and whether it requires coverage under the NDPES General Permit Authorizing the Discharge of Storm Water Associated with Construction Activity. The applicable checklist is guide for the plan review process. The plan review process ensures that SWPPP contains all the required elements including selection of the most effective PBMP measures. See Figure 5-2 for the PBMP selection process. At the time of review, the project owner must also submit documentation of required maintenance activities. These will also be reviewed for long-term feasibility and may require reviewers to collaborate with FMD.

To assure the implementation of adequate PBMPs, no construction shall begin or be awarded until the plans have been appropriately reviewed and accepted by the overseeing department. The applicant must also submit a description of the alternative measures or non-LID PBMPs that will be implemented should the LID waiver be granted by NRH due to technical constraints.

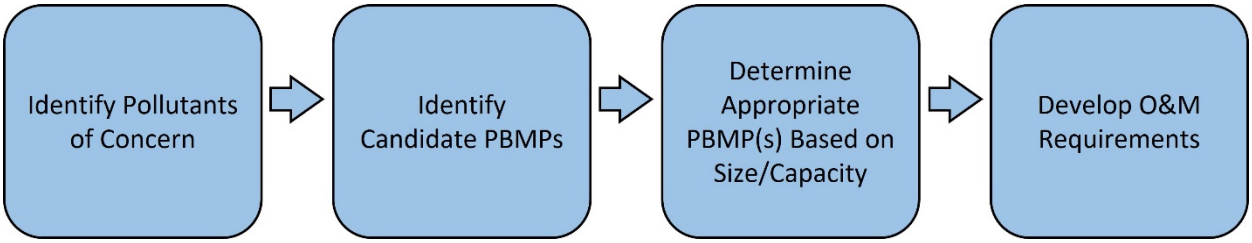


Figure 5-2 PBMP Selection Process

5.4 PBMP, Operation and Maintenance, and Inspection Database

Adequately operating and maintaining PBMPs is an important factor in ensuring their long-term effectiveness. A successful maintenance program relies on routine inspection, accurate tracking, and recordkeeping. In 2021, NRH contracted a project to evaluate BMPs for JBPHH storm drains. The project will evaluate and implement BMPs in compliance with this SWMP and the Storm Water Management Program. BMPs including storm drain marking, placing labels on dumpsters, and distributing educational material to increase public awareness of storm water impacts will be assessed.

When vegetated PBMPs are installed there is a stabilization period over which the contractor is responsible for their maintenance. This stabilization period can be helpful in identifying design problems, or oversights during installation. When non-vegetated structural PBMPs are installed, they are required to be functional and clean when turned over to the Base. To facilitate the turnover of PBMP ownership to NRH, the contractor may document any observed maintenance baseline or other information that may be useful to JB4. The process for a contractor to turn over ownership of a new or redeveloped facility to NRH includes:

- Submittal of as-built plans, with clear distinction of all PBMPs (supplemental written documentation may be submitted for additional clarification);
- Submittal of all relevant documentation outlining PBMP/LID specifications and required future maintenance; and
- Submittal of proof of PBMP stabilization (photos, prior maintenance records, etc.), if applicable.

These documents are to be submitted to JB4 who will distribute them to FMD, PROD, EV, and others as necessary. Once proof of stabilization has been accepted, maintenance of the applicable PBMPs will fall under the responsibility of FMD. It is up to the project owner/contractor to ensure that all relevant information is provided to NRH.

A copy of the as-built plans will also be provided to JB4 to be used to update NRH's existing Geographic Information System (GIS) file and overall storm drain system database, which is used primarily for tracking and scheduling of maintenance work. At a minimum, the PBMP Database will include:

- General Project Information: Name, owner, general location, start/end date of construction, date of acceptance by JB4;
- Type and number of LID practices;

- Type and number of Source Control PBMPs;
- Type and number of Treatment Control PBMPs;
- Latitude/Longitude coordinates of controls using Global Positioning Systems and NAD83 or other Datum as long as the datum remains consistent;
- Photographs of controls (as allowable due to security);
- O&M requirements;
- Frequency of inspections (or contact information for inspection records);
- Inspection results, necessary follow up actions, and responses; and
- Frequency of maintenance (or contact information for maintenance records).

NRH continues to develop the PBMP Database to include the above information required by the Permit. There is an ongoing effort including a review of GIS databases and interviews with tenant commands and JBPHH personnel to collect data on PBMPs and required maintenance. To date, the investigation has resulted in the identification of 36 potential PBMPs. Currently, permanent features that require routine maintenance are maintained by tenant commands, landscape contractors, and FMD on an as-needed basis. Developing the PBMP Database is the first step to implementing a consistent, base-wide O&M program.

NRH will continue to inventory of all post-construction PBMPs across JBPHH to track maintenance requirements and establish a PBMP Database. In 2022, NRH will issue a contract to complete a comprehensive PBMP database and create an O&M manual for PBMPs. NRH will also develop checklists and schedules for PBMP inspections based on the feature type and associated maintenance needs. JB4's maintenance program will allocate resources and prioritize the O&M of facilities with the maximum potential to affect storm water quality. The PBMP Database will be used to ensure that all PBMPs, including LID features, are met. This requires that inspections be conducted on a routine basis for each PBMP, with maintenance performed as necessary to retain its function.

Routine maintenance activities will also be conducted to the MEP, but priority will be given to PBMPs that have been identified by inspection or public notification as malfunctioning. Inspection and maintenance records will be tracked via work orders generated by FMD and by field notes documented by maintenance personnel. All inspection/maintenance records will be maintained by FMD and made available to EV andPRJ4 upon request.

5.5 Education and Training

5.5.1 Project Proponents

As part of its Post-construction Storm Water Management Program, NRH is implementing an ongoing education program directed at those parties with project design and construction storm water responsibilities on the selection, design, installation, operation, and maintenance of storm water BMPs, structural controls, PBMPs, and LID practices. NRH awarded a contract to revise the Navy BMP and PBMP plan with an anticipated completion date of December 2022. Education of all participating parties promotes consistency and efficiency within the Post-construction Program.

NRH is developing educational materials to train JBPHH personnel (project designers, project reviewers, and inspection personnel) and contractors on LID practices and PBMPs including thresholds triggering

specific requirements, required permits, implementing agencies, structural controls, storm water BMPs, and potential environmental impacts associated with storm water runoff.

EV is responsible for oversight of NRH's post-construction education and outreach program, including the contents and circulation method. Outreach material will be developed, revised, and distributed at the discretion of EV. These materials will be used to address observed issues or general program policy updates.

5.5.2 Inspectors

EV will oversee and document, at a minimum, annual training for all staff and contractors conducting inspections or maintenance on PBMPs and LID features. NRH will develop training materials on proper installation and maintenance of approved PBMPs, Post-construction Program policies, procedures, and resolution of any issues observed during the previous year.

EV will be responsible for updating and ensuring that current resources are available to NRH staff and contractors tasked with managing any portion of the Post-construction Storm Water Management Program. In addition, NRH will revise the existing draft Enforcement Response Plan (ERP), contained in Appendix 3-3, with enforcement procedures to address projects that fail to install required post-construction BMPs.

6 Debris Control BMPs Program Plan

A crucial component of the Navy Region Hawaii (NRH) Storm Water Management Plan (SWMP) is its Base-wide Pollution Prevention and Good Housekeeping Program (Storm Water Pollution Prevention Program). This is a multi-faceted system maintenance program aimed at reducing discharge of pollutants to the maximum extent practicable (MEP) from all NRH-owned property. NRH-owned property includes facilities, roads, parking lots, sites for commercial or industrial activities, and its Small Municipal Separate Storm Sewer System (MS4). NRH's Storm Water Pollution Prevention Program is separated into five main components including:

1. Debris Control Best Management Practices (BMPs) Program Plan (Chapter 6);
2. Chemical Applications BMP Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8);
4. Maintenance Activities BMPs Program Plan (Chapter 9); and
5. Commercial Activities Discharge Management Program (Chapter 10).

Each of these components is described in detail in individual chapters as noted above. This chapter focuses on NRH's Debris Control BMPs Program Plan (Debris Control Program).

Per the Permit, Part D.1.f.(i), NRH is required to implement a Debris Control Program as part of the System Maintenance Program. As described above, the Debris Control Program applies to all NRH-owned property, including structural and vegetated BMPs, and related appurtenances. For the purposes of this plan, "trash" will be considered analogous to "litter" as defined below by the Hawaii Revised Statutes §339-1.

> *"Litter" means rubbish, refuse, waste material, garbage, trash, offal, or any debris of whatever kind or description, whether or not it is of value, and includes improperly discarded paper, metal, plastic, glass, or solid waste.*

A distinction is made that trash is not inclusive of natural materials, such as branches, leaves, and other vegetation, which is deposited into waterbodies naturally.

The main objective of the Debris Control Program is to reduce the discharge of pollutants from NRH facilities, especially sediment and trash, to the MEP. The Debris Control Program will identify and track problem areas and prioritize maintenance efforts to maximize removal of debris once captured within the MS4.

Main components of the Debris Control Program include:

1. Use of an Asset Management System (AMS), in conjunction with mapping of the Small MS4, to maintain an inventory of Small MS4 facilities and any related appurtenances (including maintenance equipment). The AMS is also used to facilitate scheduling and tracking of prioritized inspection and maintenance efforts.
2. Prioritized inspection and maintenance efforts for the Small MS4 and a preliminary schedule outlining how work will be completed.
3. A prioritized storm drain marking program for commercial and industrial areas that also incorporates an element of Public Outreach.

4. A Base-wide *Action Plan for Maintenance of Structural Controls* (Appendix 6-2)
5. A Base-wide *Trash Reduction Plan* (Appendix 6-1)

This Debris Control Program is outlined in accordance with the Permit requirements, as follows:

Permit Reference	SWMP Section
Part D.1.f Pollution Prevention/Good Housekeeping *The Permittee shall implement a system maintenance program to reduce to the MEP the discharge of pollutants from all facility roads, parking lots, maintenance facilities, sites with industrial activity, and the Permittee's Small MS4. At a minimum, the program shall include:*	Sections 6-10
Part D.1.f.(i) Debris Control BMPs Program Plan *– The Permittee shall implement a Debris Control BMPs Program Plan. The Debris Control BMPs Program Plan shall be implemented as part of the System Maintenance Program, and at a minimum include:*	Section 6
Part D.1.f.(i)(a) Asset Management System and Mapping *– The Permittee shall implement a comprehensive Asset Management System and map of its Small MS4, including structural and vegetative BMPs; and inventory of related appurtenances including maintenance equipment, to ensure appropriate debris removal and system maintenance. The asset management system shall, at a minimum, assign an identification number for each drain inlet, outfall, and BMPs, and map their location on the Geographic Information System (GIS). The Permittee shall use this asset management system to establish priorities and to schedule and track efforts of appropriate system maintenance and debris removal program activities such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal. The asset management system shall include justification of its priorities on the basis of potential impacts to water quality.*	Section 6.2

Part D.1.f.(i)(b) Inspection/Maintenance Schedule *- The Permittee shall include in its SWMP, procedures and a schedule for inspections of major streets, streets in the industrial and commercial areas where storm water runoff discharges into the Small MS4, inlets/catch basins, and other collection system assets (i.e., collection system pipes and BMPs).* *The need for sweeping and/or maintenance/cleaning shall, at a minimum, be determined based upon material accumulation rates and/or potential threat of discharge to State waters that may have an effect on water quality. The schedule shall provide that each major street mile, storm drainage feature, and BMP is inspected at least once during the term of this permit (maintenance/cleaning may be conducted in lieu of inspections to satisfy this requirement). Structural controls that were not previously inspected shall be inspected/cleaned within one (1) year after the effective date of this permit and placed on the priority based schedule. At a minimum all structural controls shall be inspected/cleaned once per permit term. The priority-based schedule shall be annually reviewed; updated as necessary; and the changes, along with explanations of the changes submitted within the Annual Report.*	Section 6.3
Part D.1.f.(i)(c) Storm Drain Marking *- The Permittee shall evaluate the effectiveness of its storm drain marking (stenciling or placards) and revise it as necessary to meet its purpose. This program shall be a part of the Public Outreach component of the SWMP. The purpose of the storm drain markings shall be discussed within the SWMP. Within the term of this permit, the Permittee shall complete marking all accessible storm drains (stenciling or placards) and maintain other markings completed during the previous permit term, where feasible.*	Section 6.4
Part D.1.f.(i)(d) Maintenance of Structural Controls *- The Permittee shall implement an Action Plan to maintain, and improve, as necessary, structural BMPs. The Action Plan shall cover a 5 year period and be updated annually to include additional retrofit projects with water quality protection measures. At a minimum, annual updates to the Action Plan shall consider system inspection results, storm water monitoring data, recent construction, and required operations and maintenance. The annual updates to the Action Plan shall be included in the Annual Report with a description of the project's status. The Action Plan shall include, but not be limited to projects in compliance with any TMDL implementation and monitoring plan.*	Section 6.5

Part D.1.f.(i)(e) Trash Reduction Plan *- The Permittee shall implement, a trash reduction plan which assesses the issue, and identifies and implements control measures, and monitors these activities to reduce trash loads from the Small MS4. The plan shall specify the rationale for specific BMPs considered and implemented by the Permittee, and the method to access the effectiveness of the implemented BMPs. The plan shall include, at a minimum, roadside litter pickup, regularly scheduled litter container servicing, and public outreach.* *The Annual Report shall include a summary of its trash load reduction actions (control measures and BMPs) including the types of actions and levels of implementation, and a summary of the effectiveness of the implemented control measures and BMPs.*	Section 6.6

6.1 Program Organization

Implementation of the Debris Control Program requires collaboration between the NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV) and the Joint Base Pearl Harbor-Hickam (JBPHH) Public Works Department (JB4). JB4 consists of multiple departments, Assistant Public Works Officers (APWOs) who serve as Facility Area Leads, Facility Management Division (FMD), Facilities Engineering and Acquisition Division (FEAD), and Production Division (PROD). These divisions manage the Debris Control Program for the main area of JBPHH and facilities in outlying areas. The Debris Control Program applies Base-wide to all NRH-owned facilities, including those occupied by its tenants.

Much of the Debris Control Program success is related to management of NRH's Base-wide Facilities Maintenance Program. Several good housekeeping practices are currently conducted on JBPHH as part of the Facilities Maintenance Program. These include street sweeping, catch basin cleaning, green waste and accumulated soil removal, regular refuse collection, and storm drain inspections. Building managers at all facilities on base are required to perform routine inspections around their facilities to determine if the area requires cleaning or additional trash removal. If there are any issues that need to be addressed, the building manager will put a request in to FMD to have it addressed.

An overview of responsibilities for each department is as follows:

- EV - General program oversight, development of Debris Control Program standards, and working with the JB4 to ensure that the components of the Debris Control Program meet all Permit requirements. Additional responsibilities include:
  1. Fund and oversee the storm drain marking program.
  2. Annual Reporting of Debris Control Program progress.
- JB4 – Act as a liaison between tenants and its divisions. Delivering instruction to applicable tenants and overseeing implementation of each program component.
  - APWO – Liaison to all major clients and tenants and provide facilities management.
  - FMD – General program development and initiating change to existing standards and instructions. Development, funding, and management of the AMS. Review and update priority-based maintenance schedules.

    - PROD – Responsible for minor maintenance of the Small MS4 and other related projects to maintain facility operations.
    - Base Support Vehicles and Equipment (BSVE) – Responsible for NAVFAC vehicle and equipment maintenance and some maintenance projects for facilities.
- JB4 Environmental Division (PRJ4) Building Managers and Base Inspectors – Conduct routine inspections around industrial/commercial facilities and regional zone inspections to identify problem areas within the storm drain system.

The JBC has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Debris Control BMPs Program. Commander, Navy Region Hawaii (CNRH) has ultimate authority for Permit policies and enforcement actions. This is described in more detail in the draft Enforcement Response Plan (Appendix 3-3).

This page left intentionally blank.

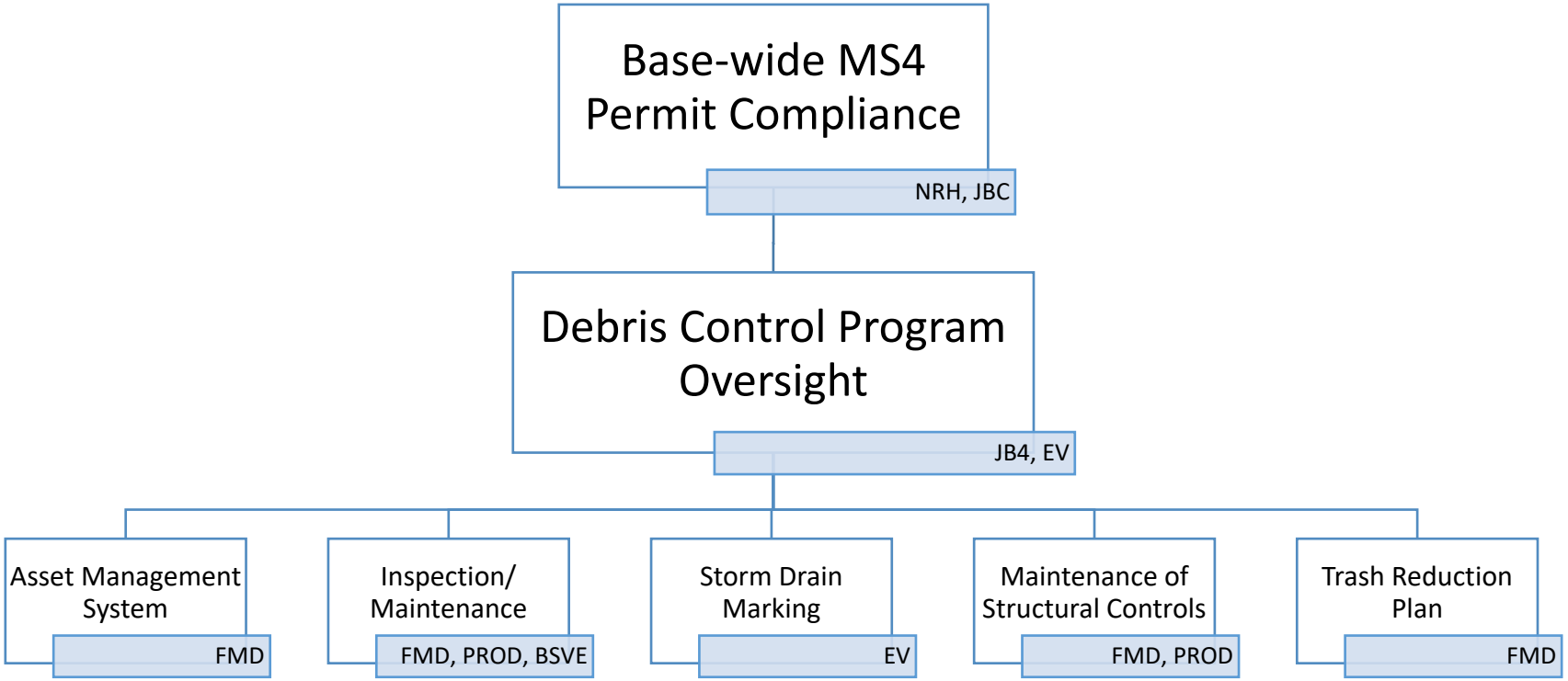


Figure 6-1 Debris Control Program Organizational Chart

This page left intentionally blank.

6.2 Asset Management System and Mapping

NRH is in the process of developing a Base-wide AMS to track and manage inspections and maintenance of the MS4 system. The AMS will serve as an ongoing inventory of facilities and will be used to prioritize inspections and maintenance activities, such that resources are focused on areas that pose the greatest risk to water quality.

The AMS shall, at a minimum, assign an identification number for each drain inlet, outfall, and BMP, and map their location on the Geographic Information System (GIS). The AMS will include an inventory of related appurtenances, including maintenance equipment, to ensure appropriate debris removal and system maintenance. The AMS will be used to establish priorities and to schedule and track system maintenance and debris removal activities such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal. It will include justification of the priorities on the basis of potential impacts to water quality.

In 2021, NAVFAC Hawaii Utilities Management (UM) contracted a project to create a storm water map and GIS of the small JBPHH MS4. NRH also contracted a project to evaluate BMPs for JBPHH storm drains in 2021. The project will evaluate and implement BMPs in compliance with this SWMP and the Base-wide Storm Water Management Program. Required BMPs including storm drain marking to increase public awareness of storm water impacts will be evaluated. Other BMPs including placing labels on dumpsters and distributing education material will be assessed. With the completion of these projects, NRH will have current storm drain maps and GIS for the entire storm drain system. Permanent BMPs (PBMPs) will be added to the AMS for inventory and tracking. The comprehensive AMS will be used to scope cleaning and to update the prioritized inspections and maintenance schedule. The AMS will be managed by FMD or others as determined by JB4. As new construction occurs, as-built construction plans will be provided for entry into the geodatabase.

6.3 Inspection/Maintenance Schedule

As part of the part of the Permit requirements, NRH is required to put together a prioritized inspection/maintenance schedule for specified Small MS4 features. Each of these MS4 elements is inspected and maintained based on sediment and debris accumulation observations. Each feature will be inspected at least once during the Permit term. At a minimum, all structural controls will be inspected/cleaned once per permit term. NRH is permitted to conduct maintenance in lieu of a separate inspection to meet this requirement. The following outlines the facilities subject to the inspection and maintenance requirements for the Debris Control Program:

1. *Major streets* – Any roadway on JBPHH or its outlying areas identified by JB4/NRH as containing heavy traffic or used primarily for accommodating general traffic movement around the base will be subject to routine street sweeping of the roadway, shoulders and/or medians to prevent storm water pollution from debris and sediment.
2. *Streets within Industrial and Commercial Areas where Storm Water Discharges to the MS4* – any roadways on JBPHH or its outlying areas within industrial or commercial areas that contain MS4 features will be prioritized for inspections and maintenance for sweeping and debris control.
3. *Storm Drain System Features*– This includes all MS4 features, including but not limited to catch basins, storm drain inlets, pipes, gutters, open ditches, and trenches.
4. *Major PBMPs* - Any permanent storm water BMP or Low Impact Development (LID) feature.

5. Any street or area outside of the specified areas identified as needing maintenance during a regional zone inspection or as reported by the public.

Priority areas and storm drain features will be categorized into three groups. The groups will be outlined as follows:

HIGH PRIORITY – Features that currently exceed the sediment and debris accumulation thresholds, or that pose a high potential risk to storm water quality or receiving waters.

MEDIUM PRIORITY – Features that do not have a large amount of sediment and debris accumulation but can be reasonably expected to reach or exceed the threshold by the time of the next inspection.

LOW PRIORITY – Features that are currently functioning well, and are not reasonably expected to be significantly impacted by observed sediment and debris loading

High priority areas and storm water features will be inspected most frequently, followed by medium priority areas and items. Low priority features will be inspected at least once during the Permit term and maintained as resources become available. NRH will continue to make necessary modifications to the initial priority requirements as more data become available, or more observations are recorded. Much of this information will be provided as feedback from PROD, FMD, and APWO as maintenance efforts are conducted.

FMD will work with PROD and APWO to develop a priority-based schedule for routine maintenance and debris removal activities, such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal for each area on Base. The current system will be reviewed and revised to address future concerns and priorities. Maintenance and inspections will be grouped into areas that will most effectively utilize available resources at NRH. Any concerns brought to the attention of EV or JB4 by the public or through any inspections will also be investigated.

Currently NRH conducts street sweeping, storm drain cleaning and trash removal to help reduce the accumulation of sediment and debris within its Small MS4. Storm drains near industrial areas are inspected semi-annually. Storm drain maintenance and repair are performed to ensure function of the system and to prevent accumulated debris from being washed into receiving waters. These efforts will be reviewed and redistributed as necessary to comply with Permit requirements.

With the information currently available, an implementation schedule for the Inspection/Maintenance Program is outlined in Table 6-1. The schedule is subject to change, as more information becomes available following completion of the storm drain system mapping and BMP evaluation projects and as the Maintenance Program's achievements and challenges are reviewed on an annual basis. This schedule for maintenance and improvement activities aligns with the schedule specific to structural BMPs in Appendix 6-2, *Action Plan for Maintenance of Structural Controls.* Changes along with explanations of the changes will be submitted within the Annual Report. The schedule is also subject to change based on what is needed to address observed deficiencies of the JBPHH Small MS4 or complaints received throughout the Permit term. These emergency issues will continue to be addressed and given priority for available maintenance resources, when needed.

Table 6-1
Inspections/Maintenance Program Implementation Schedule

Task	***Year 1***	***Year 2***	***Year 3***	***Year 4***	***Year 5***
Establish AMS and Mapping Tools, Update as Needed	*X*	*X*	*X*	*X*	*X*
Establish Inventory/Assessment of Major Roadways, Streets in Industrial and Commercial Areas, Storm Drain System Features and Structural BMPs, Update as Needed	*X*	*X*	*X*	*X*	*X*
Review and Update Prioritized Ranking System for Maintenance and Improvement Projects	*X*	*X*	*X*	*X*	*X*
Address Emergency Maintenance/Repair Issues	*X*	*X*	*X*	*X*	*X*
Appropriation of Funding for Required Inspections/Maintenance Activities: • High Priority • Medium Priority • Low Priority		*X*	*X*	*X*	
Implementation of Inspections/Maintenance Activities: • High Priority • Medium Priority • Low Priority			*X*	*X*	*X*
Identify and Evaluate Potential New or Retrofit Structural BMP Projects	*X*	*X*	*X*	*X*	*X*
Evaluate Implementation Schedule and Overall Debris Control Program, Update as needed (Changes to be Noted in the Annual Report)	*X*	*X*	*X*	*X*	*X*

6.4 Storm Drain Marking

As part of its Public Outreach Program, *Section 2.4.4* and under the Debris Control Program, NRH is required to evaluate the effectiveness of its storm drain marking and revise it as necessary. NRH is required to complete and maintain installation of storm drain stenciling or placards to all feasible storm drains receiving runoff from industrial and commercial areas within the Permit term. The installation of informational storm drain stenciling or placards is intended to create public awareness of the connection of the storm drain system to the ocean and other waterbodies The purpose of outreach activities and storm drain marking is to discourage intentional or negligible behaviors that negatively impact storm water quality. Storm drain placards have already been installed on inlets in industrial areas and some areas of family housing. Efforts to mark storm drain inlets are ongoing and are based on the availability of funds.

NAVFAC Hawaii personnel resumed a Storm Drain Marking Program in 2021. The objective of the program was to label storm drain inlets in the vicinity of industrial sites and facilities. Storm drain marker medallions were installed next to 86 storm drain inlets. Storm drain stencils were used to label three storm drain inlet structures within the NAVFAC Hawaii compound and on Ford Island. NAVFAC Hawaii personnel will continue the Storm Drain Marking Program throughout this permit period. When possible, volunteer activities will be coordinated to place medallions or stencil storm drains throughout the JBPHH Small MS4. The focus of the program will be extended to include the general vicinity of both industrial and commercial facilities.

NRH will continue to evaluate the effectiveness of its existing storm drain markings and revise its efforts as necessary. NRH will assess the effectiveness of the marking by documenting public participation in storm drain stenciling events and noting any observable changes in trash accumulation levels within storm drains before and after storm drain markings are installed, as described in the Public Education and Outreach section of the Program Effectiveness Assessment Plan.) Based on the results, NRH will change the types of markings if needed.

NRH will complete the installation of storm drain markings on all storm drain inlets receiving runoff from industrial and commercial areas subject to the availability of funding. Priority will be given to industrial and commercial areas with pedestrian traffic and areas determined in the initial assessment to be a High Priority for maintenance. As needed, the medallions or stenciling will be replaced during scheduled storm drain inlet maintenance.

An evaluation of effectiveness and justification for future placement of placards will be described in the Annual Report.

6.5 Maintenance of Structural Controls

In accordance with the Permit, NRH has created an *Action Plan for Maintenance of Structural Controls* (see Appendix 6-2). This is a 5-year plan intended to reduce storm water pollution by ensuring the effectiveness of existing Base-wide structural BMPs (used synonymously with the term PBMPs through maintenance and, if needed, improvements.

Key elements of the *Action Plan for Maintenance of Structural Controls* include:

- Existing policies regarding structural BMPs;

- Implementation of a Base-wide inventory of structural BMPs;
- Inspections/Maintenance for structural BMPs;
- Identification of areas for improvement or suitable for retrofit projects with water quality protection measures; and
- 5-year implementation schedule.

Every year, the program status and implementation schedule shall be evaluated and any updates to the *Action Plan for Maintenance of Structural Controls* will be incorporated into the Annual Report. The updates will also consider system inspection results, storm water monitoring data, recent construction, and required operations and maintenance, and new retrofit projects with water quality protection measures, where applicable. These updates will include, but are not limited to, projects in compliance with any Total Maximum Daily Load (TMDL) implementation and monitoring plan.

6.6 Trash Reduction Plan

In accordance with the Permit, NRH has developed a *Trash Reduction Plan* (see Appendix 6-1). The goal of NRH's Trash Reduction Plan will be to reduce its overall debris discharges from its Small MS4 to receiving waters.

The main objectives of the *Trash Reduction Plan* are to:

- Assess the issue of trash generation;
- Identify and implement control measures; and
- Monitor control measures and evaluate overall effectiveness.

Some of the components in the *Trash Reduction Plan* include:

- A definition of "trash" for NRH;
- Existing NRH solid waste programs and policies;
- Existing control measures and BMPs;
- An implementation plan for trash reduction; and
- Methods for measuring program success.

Annual reports will be used to review progress of NRH's *Trash Reduction Plan* including trash load reduction actions taken (control measures and BMPs), levels of implementation, and a summary of the effectiveness of the measures in each year. This annual review will be used to identify any areas of concern and make modifications to the plan, if needed.

7 Chemical Applications BMPs Program Plan

A crucial component of the Navy Region Hawaii (NRH) Storm Water Management Plan (SWMP) is its Base-wide Pollution Prevention and Good Housekeeping Program (Storm Water Pollution Prevention Program). This is a multi-faceted system maintenance program aimed at reducing discharge of pollutants to the maximum extent practicable (MEP) from all NRH-owned property. NRH-owned property includes facilities, roads, parking lots, sites for commercial or industrial activities, and its Small Municipal Separate Storm Sewer System (MS4). NRH's Storm Water Pollution Prevention Program is separated into five main components including:

1. Debris Control Best Management Practices (BMPs) Program Plan (Chapter 6);
2. Chemical Applications BMP Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8);
4. Maintenance Activities BMPs Program Plan (Chapter 9); and
5. Commercial Activities Discharge Management Program (Chapter 10).

Each of these components is described in detail in individual chapters as noted above. This chapter focuses on NRH's Chemical Applications BMP Program Plan.

Per the Permit, Part D.1.f.(ii), NRH is required to implement a Chemical Applications BMP Program Plan as part of the System Maintenance Program.

The main elements of the Chemical Applications Program are:

1. Training requirements for all applicators of chemicals; and
2. Implementation of appropriate requirements for pesticide, herbicide, and fertilizer applications (i.e., BMPs).

This Chemical Applications Program is outlined in accordance with the Permit requirements. The MS4 Permit states:

Permit Reference	SWMP Section
Part D.1.f Pollution Prevention/Good Housekeeping *The Permittee shall implement a system maintenance program to reduce to the MEP the discharge of pollutants from all facility roads, parking lots, maintenance facilities, sites with industrial activity, and the Permittee's Small MS4. At a minimum, the program shall include:*	Sections 6-10
Part D.1.f.(ii) Chemical Applications BMPs Program Plan *– The Permittee shall implement a Chemical Applications BMPs Program Plan. The Chemical Applications BMPs Program Plan shall be implemented as part of the System Maintenance Program, and at a minimum include:*	Section 7
Part D.1.f.(ii)(a) Training – *The Permittee shall review and update its Authorized Use List of the chemicals the facility uses and implement training for facility personnel and commercial applicators, as necessary, to ensure compliance with federal and State laws and regulations, including*	Sections 7.2 and 7.3

certification and training requirements, to minimize or eliminate runoff of potential pollutants to the receiving waters.	
Part D.1.f.(ii)(b) Implement appropriate requirements for pesticide, herbicide, and fertilizer applications *- The Permittee shall implement BMPs to reduce the contribution of pollutants associated with the application, storage, and disposal of pesticides, herbicides, and fertilizers from residential, commercial, and industrial areas and activities to its Small MS4.* *BMPs shall include, at a minimum: (1) training, educational activities, applicable certifications and other measures for commercial applicators; (2) integrated pest management measures that rely on non-chemical solutions; (3) the use of native vegetation; (4) chemical application, as needed; and (5) the collection and proper disposal of unused pesticides, herbicides, and fertilizers.* *The Permittee shall ensure that facility personnel and contractors applying registered pesticides, herbicides, and fertilizers shall work under the direction of a certified applicator, follow the pesticide label, and comply with any other State or government regulations for pesticides, herbicides, and fertilizers. All facility personnel or contractors applying pesticides, herbicides or fertilizers shall receive annual BMP training.*	Section 7.2 and 7.4

7.1 Program Organization

The NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV) is responsible for general oversight and program management of the Chemical Applications BMP Program. The Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Chemical Applications BMPs Program. Commander, Navy Region Hawaii (CNRH) has ultimate authority for Permit policies and enforcement actions. A streamlined schematic of this organizational structure is outlined in Figure 7-1. For additional roles and responsibilities for pesticides, as well as detailed responsibilities for key organizations and personnel, refer to Section 2 of the Integrated Pest Management Plan (IPMP) [Redacted due to national security concerns].

To address the Permit requirements, the Chemical Applications BMPs Program applies Base-wide to all areas of potential chemical application, including but not limited to facilities, right-of-ways, landscaped areas, and areas leased to tenants. Chemical application for pest control for all Joint Base Pearl Harbor-Hickam (JBPHH) properties is performed in-house by the JBPHH Public Works Department (JB4) Environmental Services Branch (PRJ41). Public-Private Venture (PPV) Housing hires licensed contractors for chemical applications within the housing areas. In accordance with their tenant agreements, other tenants are not permitted to apply chemicals themselves and must contact JB4 with pest control-related requests.

7.2 Training

The IPMP requires that any NRH employee, contractor or employees of contractors applying registered pesticides: (i) Work under the direction of a certified applicator, (ii) Follow the pesticide label

information, and (iii) Comply with all other Federal, State, or local regulations for corresponding chemicals. It should be noted that herbicides are considered pesticides under the IPMP.

All pesticide applicators from the facilities pest control shop and the golf course are required to attend pesticide applicator training for pesticide applicator certification or recertification training to ensure that pesticides are applied properly and safely in accordance with DODINST 4150.07 and OPNAVINST 6250.4C.

Any personnel who have not been trained and do not possess a valid Certificate of Competency (DD Form 1826) must have "line of sight" supervision by a certified applicator. Uncertified personnel hired as pesticide applicator trainees must receive certification training within two (2) years of employment. On the job training can range from six to 12 months depending on the proficiency of the new employee, based on written and/or practical exams. Certification Training courses are offered locally and on the mainland. Personnel who fail to obtain a passing grade on the examination must achieve passing grade on the follow-up exam or they will be considered unqualified and action will be taken to remove them from performing pest management functions.

Each pesticide applicator possessing a Certificate of Competency must be recertified every three (3) years through NAVFAC Pacific. Personnel who do not receive a passing grade must retake the exam within 120 days of the original recertification examination but will be allowed to continue their on-the-job training. Pesticide applicators that fail to pass the follow-up examination will be subject to personnel reassignment within the command.

No individual is permitted to apply any pesticides on base prior to completion of the applicable training requirements. Pest Management and BMPs related to chemical application are discussed in the annual standard operating procedure trainings. Additional information regarding training and certification can be found in IPMP Section 2.4.

This page left intentionally blank.

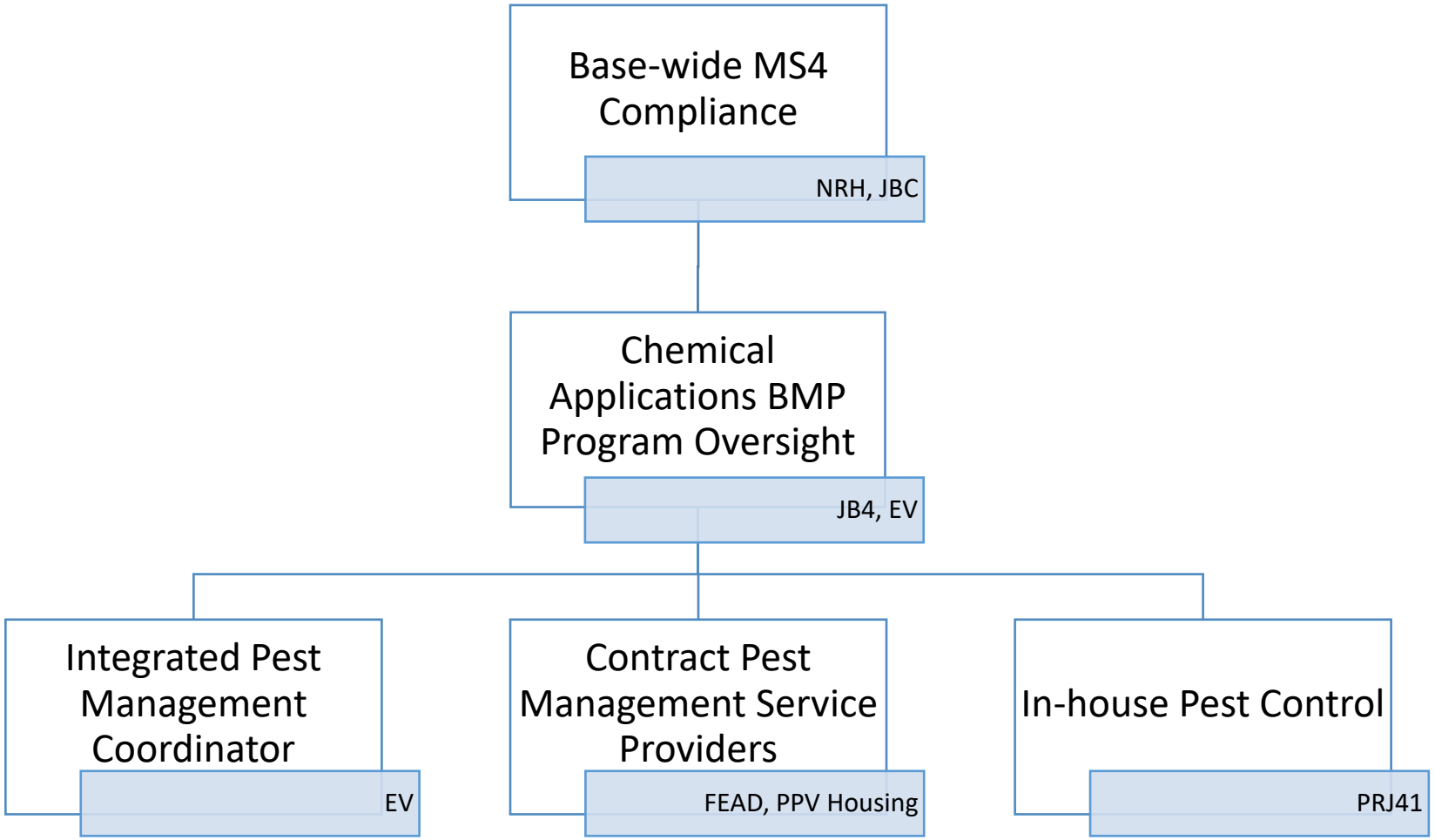


Figure 7-1: Chemical Applications Program Organizational Chart

This page left intentionally blank.

7.3 Authorized Use List

Department of Defense (DOD) and Department of the Navy (DON) directives require installations to submit a list of pesticides that will be used on JBPHH property to the NAVFAC Pacific Professional Pest Management Consultant (PPMC) for review and approval (OPNAVINST 6250.4C). The purpose of this approval process is to ensure that only registered pesticides which are safe, effective, and appropriate for the site will be used on the installation. Requests for pesticide approval will be submitted to the NAVFAC Pacific PPMC via the Installation Pest Management Coordinator (IPMC) using the Navy Online Pesticide Reporting System (NOPRS) (see section 2.6.3.1 of the IPMP) or the Pesticide Approval Spreadsheet. The IPMC is an environmental engineer in EV designated by the JBC to coordinate JBPHH installation pest management activities. The IPMC responsible for ensuring that all Pest Management Service Providers (PMSPs) are using only pesticides approved by the NAVFAC Pacific PPMC as well as submitting new pesticides to the PPMC for review and approval. Only pesticides listed on the Authorized Use List (AUL) may be purchased and used on JBPHH. The AUL of pesticides approved for use on JBPHH property is included in Appendix E of the IPMP. Once a pesticide is approved, it may be used on-site as per the label directions. Navy Policy is to use the least toxic pesticide in the minimum amount required.

A copy of the manufacturer's label and a safety data sheet (SDS) for each pesticide are used to approve pesticides. The Pest Management Performance Assessment Representative and the PMSPs should also maintain copies. The labels and SDSs of pesticides in use at a site shall be present onsite.

The IPMP is reviewed and updated annually by the IPMC. Any modifications to the IPMP will be included in the Annual Report.

7.4 Implement Appropriate Requirements for Pesticide, Herbicide, and Fertilizer Applications

NRH has an ongoing program designed to ensure that pesticides and herbicides are safely and properly applied and to ensure that any pesticide or herbicide application does not affect or enter U.S. waters to the MEP. NRH uses an integrated pest management approach and uses pesticide and herbicide application only when no other non-chemical approaches are practical.

The IPMP implements BMPs to reduce the contribution of pollutants associated with the application, storage, and disposal of pesticides and herbicides from residential, commercial, and industrial areas and activities to the JBPHH MS4. Chemical application BMPs are implemented in the pest management program operations requirements. Contractors are prohibited from mixing, storing, or disposing of pesticides and herbicides on Navy property per contract specifications. Furthermore, only pesticides on the AUL approved by the NAVFAC Pacific PPMC are authorized for use on Navy property.

Section 5.3.1 of the IPMP discusses pollution prevention activities including applying pesticides and cleaning equipment away from storm drains. Examples of BMPs that could be used to provide additional protection for JBPHH's MS4 include mowing and cutting slopes and bottoms of ditches prior to pesticide and herbicide application to ensure that pesticides and herbicides do not reach waters via overspray or runoff; and using a dye based marker applicator attached to a pesticide sprayer for use near ditches to assist pesticide applicators in tracking where the pesticides are being applied and ensure that they are not reaching unintended target areas such as ditches and drain areas.

Regularly scheduled, periodic pesticide applications are not approved for JBPHH. Exemption from this policy is only permitted for situations where the IPMP clearly documents that no other technology is available to protect personnel or property of high value. To prevent pesticide drift, standard work practices outlined in the IPMP include not spraying if wind velocity exceeds 10 mph or spraying in accordance with label requirements to prevent drift into non-target areas. The IPMP also recommends the use of spot spraying and crack and crevice applications instead of a broadcast application.

IPMP Section 5.3.4 addresses spill prevention and management. Spill kits are required at all pesticide storage facilities and on pest control vehicles. Spill response procedures are covered in the pesticide applicator certification training. Contractors are also required to have spill kits and be familiar with emergency response notification procedures which include contacting Navy personnel.

NRH has strict supply system requirements which prohibit the purchase of pesticides and herbicides by unqualified personnel. The inventory and supply system also helps to minimize the ordering of excess pesticides and herbicides, which reduces the need to dispose of excess or expired pesticides and herbicides. The IPMP contains requirements and standard work practices for the collection and proper disposal of unused pesticides and herbicides.

The IPMP addresses the use of fertilizers if they contain pesticides or herbicides. Fertilizers are applied by the various entities responsible for landscape maintenance in accordance with the manufacturer's instructions. EV will be developing BMPs for general use of fertilizers for distribution to landscape maintenance personnel and contractors, and residents. BMPs will include, at a minimum, non-chemical solutions, use of native vegetation (if determined to be appropriate), chemical application (as needed), and the collection and proper disposal of unused pesticides, herbicides, and fertilizers. Training on the use of fertilizers will be incorporated into the general storm water awareness training conducted by EV.

In JBPHH's military housing areas, residents are kept informed about proper household pesticide and fertilizer application via a resident handbook, brochures, and other outreach and educational material. A resident handbook is part of the new resident informational package and available online. Hickam residents receive a Hickam Communities Resident Guide. All other housing is managed by Ohana Military Communities who distribute the Ohana Military Communities Community Handbook. Both resident handbooks contain information on pest control. Terminix is the licensed application provider for residential homes and KN Landscape occasionally applies herbicides and fertilizers for the housing areas. "Partner's Plan for Pest Control" is the management plan for the housing areas that specifies pest control standards, guidelines, techniques and recordkeeping and training requirements. Pest control applications for construction projects are managed through the Site-Specific BMP Plans for each neighborhood and phase, as applicable during construction.

Alternative BMPs such as use of native vegetation to reduce the use and need for pesticide and herbicide applications will be evaluated by JB4 and EV.

7.5 Reports and Records

7.5.1 Records

All PMSPs record pest management operations daily. JBPHH maintains an archive of complete daily operation records of pesticide applications for each building, structure, and outdoor site. Pesticide

reports will be reviewed by the IPMC and NAVFAC Pacific PPMC to provide program oversight to the installation and to generate data for tracking overall DON pesticide usage.

There are two methods to report daily operations: NOPRS and the Pest Management Record System (PMRS). All NRH PMSPs that have Internet access may use NOPRS database to record, report, and manage pesticide and pest management records. The same information can be entered into the PMRS template spreadsheet. An electronic copy must be e-mailed or a hardcopy must be delivered to the IPMC. NOPRS is preferred because it eliminates the need to send hardcopy or electronic records to the IPMC and then to the PPMC. The records are entered directly into a central database that can be accessed by the PPMC and the IPMC and downloaded into a spreadsheet.

Additional information regarding recordkeeping forms and procedures can be found in IPMP Section 2.6.

8 Erosion Control BMPs Program Plan

A crucial component of the Navy Region Hawaii (NRH) Storm Water Management Plan (SWMP) is its Base-wide Pollution Prevention and Good Housekeeping Program (Storm Water Pollution Prevention Program). This is a multi-faceted system maintenance program aimed at reducing discharge of pollutants to the maximum extent practicable (MEP) from all NRH-owned property. NRH-owned property includes facilities, roads, parking lots, sites for commercial or industrial activities, and its Municipal Separate Storm Sewer System (MS4). NRH's Storm Water Pollution Prevention Program is separated into five main components including:

1. Debris Control Best Management Practices (BMPs) Program Plan (Chapter 6);
2. Chemical Applications BMP Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8);
4. Maintenance Activities BMPs Program Plan (Chapter 9); and
5. Commercial Activities Discharge Management Program (Chapter 10).

Each of these components is described in detail in individual chapters as noted above. This chapter focuses on NRH's Erosion Control BMPs Program Plan.

Per the Permit, Part D.1.f.(iii), NRH is required to implement an Erosion Control BMPs Program as part of the System Maintenance Program. The main elements of the Erosion Control BMPs Program are:

1. Implementation of erosion control improvements as necessary, and identification of erosional areas;
2. Implementation of temporary erosion control measures as appropriate when permanent solutions are not immediately possible; and
3. Development of a maintenance plan for vegetated portions of the drainage systems used for erosion and sediment control and Low Impact Development (LID) features.

This Erosion Control BMPs Program is outlined in accordance with the Permit requirements. The Permit states:

Permit Reference	SWMP Section
Part D.1.f Pollution Prevention/Good Housekeeping *The Permittee shall implement a system maintenance program to reduce to the MEP the discharge of pollutants from all facility roads, parking lots, maintenance facilities, sites with industrial activity, and the Permittee's Small MS4. At a minimum, the program shall include:*	Sections 6-10
Part D.1.f.(iii) Erosion Control BMPs Program Plan *– The Permittee shall implement an Erosion Control BMPs Program Plan. The Erosion Control BMPs Program Plan shall be implemented as part of the System Maintenance Program, and at a minimum include:*	Section 8
(a) Implement permanent erosion control improvements as necessary, ensuring that erosional areas with the potential for significant water quality impact, but with limited public safety concerns, are	Section 8.2

also considered a high priority for remediation. Identification of erosional areas with the potential for significant water quality impact shall include areas where there is evidence of rilling, gullying, and/or other evidence of significant sediment transport, and areas in close proximity to receiving waters listed as impaired by either sediment, siltation and/or turbidity.	
(b) Require the implementation of temporary erosion control measures (e.g., erosion control blankets and/or fabrics, gravel bag placement and silt fencing/fiber rolls) on erosional areas with the potential for significant water quality impact if a permanent solution is not immediately possible. Notwithstanding any other implementation provisions, the SWMP shall require the implementation of such temporary erosion control measures on all applicable areas. For projects which require a CWA Section 401 Water Quality Certification (WQC), the WQC application shall be submitted to DOH within one (1) year of the effective date of this permit and be implemented with six (6) months of the WQC or other regulatory permit(s) issuance date.	Section 8.3
(c) The Permittee shall implement a maintenance plan for vegetated portions of the drainage system used for erosion and sediment control, and LID features; including controlling any excessive clearing/removal, cutting of vegetation, and application of herbicide which affects its usefulness. The maintenance plan shall be implemented as part of the Erosion Control BMPs Program Plan.	Section 8.4

8.1 Program Organization

The Joint Base Pearl Harbor-Hickam (JBPHH) Public Works Department (JB4) and the NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV) are responsible for general oversight of the Erosion Control BMP Program. This includes revising erosion control BMPs or policies, as needed, to meet program requirements and to facilitate program implementation. EV is responsible for including a status report of any such revisions and program updates in each Annual Report. Data provided by JB4 through inspections or complaints/ notifications will be used to identify and prioritize areas of erosional concern. For NRH projects, permanent erosion control measures will be designed by NAVFAC Hawaii Design and Construction (DC) or Facilities Engineering and Acquisition Division (FEAD), Project Management and Engineering Branch (PMEB) / NAVFAC Pacific Design Division (DC4) and installed by the Production Division (PROD) or Contractor managed by FEAD. In rare instances, some tenants may have erosion control projects within their leased areas. These projects may be contracted by other agencies that would be responsible for contract management (e.g., Public-Private Venture Housing, Ford Island Ventures, and Hawaii Air National Guard). Maintenance of erosion control BMPs and LID features is discussed in Chapter 6.

The Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Erosion Control BMPs Program. Commander, Navy Region Hawaii

(CNRH), has ultimate authority for Permit policies and enforcement actions. A streamlined schematic of this organizational structure is outlined in Figure 8-1.

This page left intentionally blank.

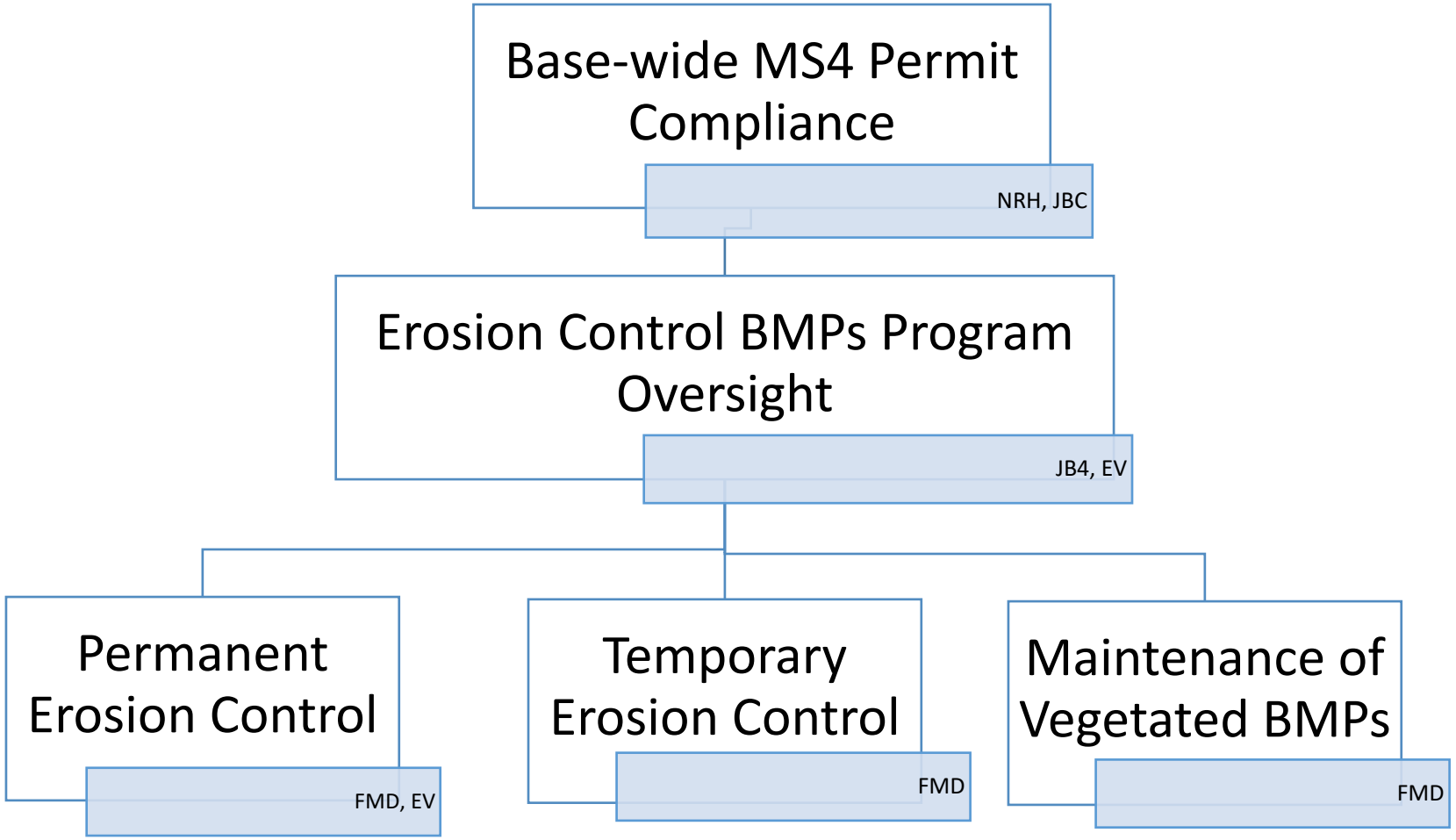


Figure 8-1: Erosion Control Program Organizational Chart

This page left intentionally blank.

8.2 Permanent Erosion Control Improvements

As part of the Permit requirements, NRH is required to implement erosion control improvements as necessary to address impact to water quality. EV and JB4 will implement the following procedure for identifying and implementing construction of permanent erosion control improvements.

Areas with erosional concerns will be identified to EV and the Facility Management Division (FMD) via routine maintenance and inspection of facilities, observations/complaints, or from inspections completed for other programs of the SWMP such as Storm Water Pollution Control Plan (SWPCP) inspections and illicit discharge inspections.

EV and FMD will identify areas that require construction of permanent erosion control improvements. Priority will be based on potential for impact to water quality based on evidence of erosion (e.g., rilling, gullying and/or other evidence of significant sediment transport, and areas in close proximity to receiving waters listed as impaired by either sediment, siltation and/or turbidity). Secondary considerations for prioritization will be based on potential for erosion and proximity to storm drain inlets/swales or receiving waters.

EV and FMD will prioritize the implementation of projects using the following prioritization guidance:

> *High Priority* – Highest priority will be given to areas that affect public health and safety (i.e., direct exposure to dust and runoff) and areas where erosional runoff discharges directly to the MS4 or receiving water.
>
> *Medium Priority* – Medium priority will be given to areas that will eventually discharge to the MS4 or receiving water, but first discharge to a BMP feature (i.e., grassed swale or sedimentation basin).
>
> Low Priority – Low priority will be given to bare areas that will erode, but not discharge to the MS4 or receiving water. These projects will have no impact on the MS4 or receiving waters.

EV will provide the prioritized list of areas to FMD. FMD will determine the responsible party and create projects. NAVFAC Hawaii DC or FEAD, PMEB/NAVFAC Pacific DC4 will be responsible for design and construction of erosion control improvements.

EV and FMD will update the prioritized list of projects, as needed, to include new areas identified during routine maintenance and inspections and remove those projects where erosion control improvements have been completed.

8.3 Temporary Erosion Control Measures

Temporary erosion control measures will be implemented, as soon as possible, to address any erosional areas identified as posing a significant risk to water quality when a permanent solution is not immediately possible. Other projects will be implemented in priority order. FMD will be responsible for installing temporary erosion control measures (e.g., erosion control blankets and/or fabrics, gravel bags, and silt fencing/fiber rolls) on erosional areas. Until permanent control measures are constructed, FMD will be responsible for ensuring that PROD, FEAD, or other contracting agency performs adequate maintenance to maintain the function of these BMPs and to protect the receiving waters.

EV evaluates any newly identified maintenance and/or construction projects to ensure that a Clean Water Act (CWA) Section 401 Water Quality Certification (WQC) and any other National Pollutant Discharge Elimination System (NPDES) requirements are submitted to the State of Hawaii Department of Health (DOH) when applicable. Typically, EV prepares and submits WQC applications for JBPHH projects ensuring that appropriate pollution prevention controls and BMPs are included.

While temporary erosion control measures will be in place, EV and FMD will work toward constructing a permanent erosion control to address the situation as soon as possible.

8.4 Maintenance for Vegetated Best Management Practices

Permanent BMPs and LID features will be incorporated into the Asset Management System (AMS), which will be maintained as various construction projects are completed. Vegetated portions of the drainage system and LID features will be maintained by FMD in accordance with the Maintenance Activities BMPs Program (See Chapter 9). As part of this program, a maintenance activities BMP field manual has been developed (See Appendix 9-2). The Facility-wide Maintenance BMPs field manual addresses controlling any excessive clearing/removal, cutting of vegetation, and application of herbicide which affects usefulness of the erosion control measure or LID feature.

As new vegetated areas and LID features are established, FMD will update their maintenance schedule database to incorporate maintenance of the areas or features per the recommended frequencies.

9 Maintenance Activities BMPs Program Plan

A crucial component of the Navy Region Hawaii (NRH) Storm Water Management Plan (SWMP) is its Base-wide Pollution Prevention and Good Housekeeping Program (Storm Water Pollution Prevention Program). This is a multi-faceted system maintenance program aimed at reducing discharge of pollutants to the maximum extent practicable (MEP) from all NRH-owned property. NRH-owned property includes facilities, roads, parking lots, sites for commercial or industrial activities, and its Municipal Separate Storm Sewer System (MS4). NRH's Storm Water Pollution Prevention Program is separated into five main components including:

1. Debris Control Best Management Practices (BMPs) Program Plan (Chapter 6);
2. Chemical Applications BMPs Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8);
4. Maintenance Activities BMPs Program Plan (Chapter 9);and
5. Commercial Activities Discharge Management Program (Chapter 10).

Each of these components is described in detail in individual chapters as noted above. This chapter focuses on NRH's Maintenance Activities BMPs Program Plan.

Per the Permit, Part D.1.f.(iv), NRH is required to implement a Maintenance Activities BMPs Program as part of the System Maintenance Program. The Maintenance Activities BMPs Program establishes pollution prevention strategies for maintenance activities, including routine maintenance projects. Ensuring the implementation of proper source control measures and spill response procedures can effectively reduce the discharge of pollutants associated with maintenance activities. Appropriate implementation of BMPs is required for all maintenance activities.

The objectives of this program are to:

1. Develop and implement a written procedure to implement minimum BMPs for maintenance activities.
2. Implement and enforce the requirements of the Storm Water Pollution Control Plan (SWPCP) as presented in Chapter 11 and Appendix 11-2.
3. Train staff on proper BMP implementation and pollution prevention strategies.

This Maintenance Activities BMPs Program is outlined in accordance with the Permit requirements. The Permit states:

Permit Reference	SWMP Section
Part D.1.f Pollution Prevention/Good Housekeeping *The Permittee shall implement a system maintenance program to reduce to the MEP the discharge of pollutants from all facility roads, parking lots, maintenance facilities, sites with industrial activity, and the Permittee's Small MS4. At a minimum, the program shall include:*	Sections 6-10

Part D.1.f.(iv) Maintenance Activities BMPs Program Plan *– The Permittee shall implement a Maintenance Activities BMPs Program Plan. The Maintenance Activities BMPs Program Plan shall be implemented as part of the System Maintenance Program, and at a minimum include*	Section 9
Part D.1.f.(iv)(a) Facility-Wide Maintenance Activities *– The Permittee shall develop a written procedure to implement minimum BMPs for routine infrastructure maintenance activities that have the potential to impact the quality of receiving waters, and ensure the implementation of the applicable BMPs. Routine maintenance activities include, but are not limited to: vehicle and equipment maintenance, vehicle or equipment fueling, chemical storage, recycling, paving and road repairs, street cleaning, concrete work, curb and gutter replacement, buried utility repairs and installation, vegetation removal, painting and paving, debris and trash removal, and spill cleanup.* *The procedures shall ensure that appropriate BMPs are verifiable through field inspections (i.e., field inspectors can quickly determine if the appropriate BMPs have been implemented).*	Section 9.2
Part D.1.f.(iv)(b) SWPCPs *– The Permittee shall implement and enforce the requirements of the SWPCPs, as discussed in Part E.1. of this Permit.*	Section 9.3
Part D.1.f.(iv)(c) Training *– The Permittee shall provide annual training for storm water pollution prevention to facility maintenance personnel and contractors with the potential to impact storm water runoff. The training shall identify potential sources of pollution specific to facility-wide maintenance activities, general BMPs that can be used to reduce and/or eliminate potential sources of pollutants, and procedures for establishing and implementing site-specific BMPs. The training shall educate facility maintenance personnel that they serve a role in protecting water quality. Facility maintenance personnel shall be made aware of the NPDES permit, the overall SWMP, and the applicable BMPs Program(s).*	Section 9.4

9.1 Program Organization

The program organization for the Maintenance Activities Program, is shown on Figure 9-1. Military personnel and the Production Division (PROD) is responsible for most general maintenance projects for facilities within NRH, with the exception of some non-Navy tenants (e.g., Hawaii Department of Education, Public-Private Venture Housing, Ford Island Ventures, and commercial tenants). The Utilities Management (UM) is responsible for maintenance projects for utilities, and Base Support Vehicles and Equipment (BSVE) is responsible for NAVFAC vehicle and equipment maintenance and some maintenance projects for facilities. Some facility maintenance is contracted through FEAD. Figure 9-1 shows the departments responsible for overseeing that all Maintenance Activities Program requirements are met. The blue boxes indicate the department responsible for implementation of BMPs at the facilities.

The Joint Base Pearl Harbor-Hickam (JBPHH) Public Works Department (JB4) and the NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV) are responsible for general oversight of the Maintenance Activities Program. This includes revising maintenance activity BMPs or policies, as needed, to meet program requirements and to facilitate program implementation.

9.2 Maintenance Activities Best Management Practices Field Manual

A field manual with BMPs for maintenance activities has been developed as part of this SWMP (see Appendix 9-2). The Facility-wide Maintenance BMPs field manual is a handbook that provides direction, guidance, and procedures for maintenance activities performed by in-house personnel to reduce to the MEP, pollutants from being discharged to the MS4 or receiving waters.

Routine maintenance projects are scheduled or performed on a cycle to preserve the life of a system. The objective of maintenance is to restore the original function or delay the deterioration of an existing asset without substantially increasing its structural capacity. Routine maintenance activities maintain the original line and grade, hydraulic capacity or original purpose of a facility, system, or asset. Land disturbance does not go beyond the original footprint of the previous structure.

The field manual will contain BMPs for the most common activities performed in the field which include:

- Vehicle and equipment maintenance;
- Vehicle or equipment fueling;
- Chemical storage;
- Recycling;
- Paving and road repairs;
- Street cleaning;
- Concrete work;
- Curb and gutter replacement;
- Buried utility repairs and installation;
- Vegetation removal;
- Painting and paving;
- Debris and trash removal; and
- Spill cleanup.

The procedures will ensure that appropriate BMPs are verifiable through field inspections. The Facility-wide Maintenance BMPs field manual will be updated as needed.

This page left intentionally blank.

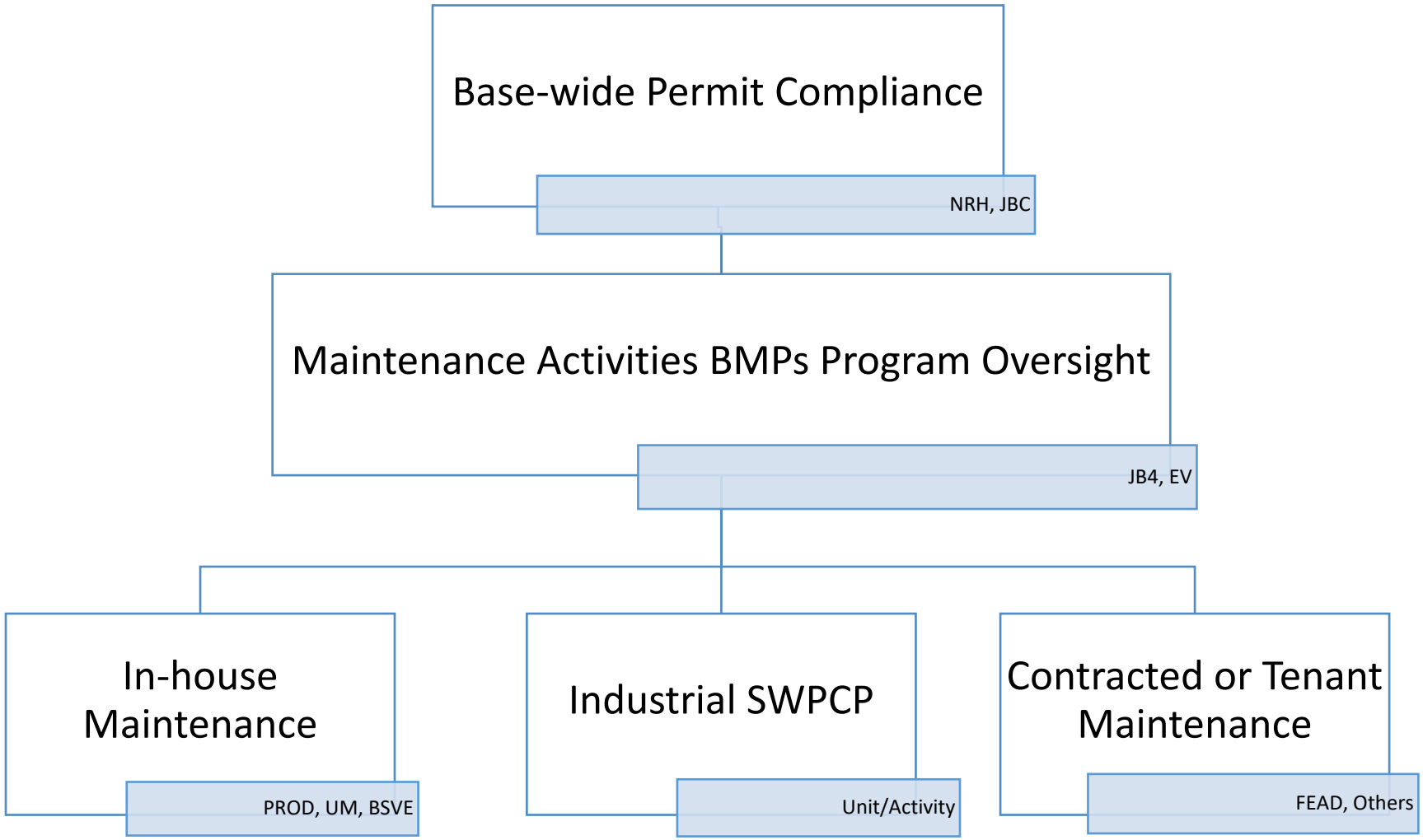


Figure 9-1 Maintenance Activities Program Organizational Chart

This page left intentionally blank.

9.3 Storm Water Pollution Control Plan

NRH has developed SWPCPs for industrial activities identified in the Permit. The components of the SWPCPs are described in detail in Chapter 11, and site-specific SWPCPs are contained in Appendix 11-2. [redacted due to national security concerns]. Copies of the SWPCPs for each of the industrial facilities are available from EV and maintained at each facility.

The SWPCP for each facility contains applicable BMPs designed to reduce the potential for pollutant discharge to the MS4 or receiving water to the MEP using the Best Available Technology Economically Achievable (BAT)/ Best Conventional Pollution Control Technology (BCT).

To ensure that the requirements of the SWPCP are properly implemented and maintained, JB4 Environmental Division (PRJ4) will conduct and document inspections of these facilities on a semi-annual basis. The facility designated person will conduct facility inspections on a periodic basis. The inspections will be documented on a "Semi-annual Facility Inspection Checklist" (see Appendix 9-1) and stored electronically. Updates to the BMPs and SWPCPs will be made as necessary.

9.4 Training

As part of its Maintenance Activities Program, EV will implement annual training for maintenance staff and contractors on proper maintenance activities to prevent storm water pollution. The training will focus on the field manual, identification of potential sources of pollution, general BMPs that can be used to reduce and/or eliminate such sources, and procedures for establishing site-specific BMPs for their activities. The purpose of the training is to educate maintenance personnel on their role in protecting water quality, including but not limited to the Permit and overall SWMP.

EV is responsible for oversight of NRH's maintenance activities education and outreach program, including contents and method of which information is circulated. Outreach material for tenants, personnel, contractors, and facilities will be developed, revised, and distributed at the discretion of EV. These materials will be used to address observed issues or general program policy updates.

10 Commercial Activities Discharge Management Program

A crucial component of the Navy Region Hawaii (NRH) Storm Water Management Plan (SWMP) is its Base-wide Pollution Prevention and Good Housekeeping Program (Storm Water Pollution Prevention Program). This is a multi-faceted system maintenance program aimed at reducing discharge of pollutants to the maximum extent practicable (MEP) from all NRH-owned property. NRH-owned property includes facilities, roads, parking lots, sites for commercial or industrial activities, and its Small Municipal Separate Storm Sewer System (MS4). NRH's Storm Water Pollution Prevention Program is separated into five main components including:

1. Debris Control Best Management Practices (BMPs) Program Plan (Chapter 6);
2. Chemical Applications BMP Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8);
4. Maintenance Activities BMPs Program Plan (Chapter 9); and
5. Commercial Activities Discharge Management Program (CADMP) (Chapter 10).

Each of these components is described in detail in the chapter specified. This chapter focuses on NRH's CADMP.

Per Permit Part D.1.f.(v), NRH is required to develop and implement a CADMP as part of its System Maintenance Program. The focus of this Program is to reduce, to the MEP, the discharge of pollutants from all commercial facilities and activities to the Small MS4.

Main components of the CADMP are summarized below:

1. Program organization;
2. Inventory and map of commercial facilities and activities that discharge directly or indirectly to the Small MS4;
3. Requirement for commercial facilities to implement BMPs, including an approval process for non-JBPHH connections or surface runoff that discharges to the Small MS4;
4. Inspection program for commercial facilities and activities, including:
   - Prioritization of inspections
   - Inspection schedule
   - Inspection procedures
   - Documentation and tracking
5. Annual reporting requirements and assessment of CADMP progress and effectiveness;
6. Enforcement policies and procedures; and
7. Training requirements.

The Permit describes the requirements for the CADMP as follows:

Permit Reference	SWMP Section
Part D.1.f Pollution Prevention/Good Housekeeping *The Permittee shall implement a system maintenance program to reduce to the MEP the discharge of pollutants from all facility roads, parking lots,*	Sections 6-10

maintenance facilities, sites with industrial activity, and the Permittee's Small MS4. At a minimum, the program shall include:	
Part D.1.f.(v) Commercial Activities Discharge Management Program – *The Permittee shall implement a Commercial Activities Discharge Management Program to reduce to the MEP the discharge of pollutants from all commercial facilities and activities which discharge into the Permittee's Small MS4. The Commercial Activities Discharge Management Program shall be implemented as part of the System Maintenance Program, and at a minimum include:*	Section 10
Part D.1.f.(v)(a) Inventory and Map of Commercial Facilities and Activities *– The Permittee shall maintain a commercial facilities and activities inventory (commercial inventory), of commercial facilities and activities discharging, directly or indirectly, to its Small MS4. Additionally, the Permittee shall maintain an updated map of the Small MS4 showing commercial facilities that discharge directly or indirectly into the storm drainage system.* *The commercial inventory shall include the facility name, location, nature of business or activity, SIC/NAICS code(s) that best reflect the facility product(s) or service(s), principal storm water contact, and receiving water.* *At a minimum, the commercial inventory shall include facilities and activities such as shopping centers, restaurants, and any other commercial facility that either the Permittee or DOH determines has the potential to contribute loading to the Small MS4.*	Section 10.2
Part D.1.f.(v)(b) Requirement to Implement BMPs – *Require written approval for drainage connections and discharge of surface runoff into the Small MS4 for non-JBPHH connections and maintain a database of the approvals. The approval shall obligate the facility to implement appropriate BMPs.*	Section 10.3
Part D.1.f.(v)(c) Inspection of Commercial Facilities and Activities – *The Permittee shall implement a commercial inspection program which reflects the findings/outcomes of the investigations.* *The Permittee shall ensure commercial facilities and activities identified in the commercial inventory required under Part D.1.f.(v)(a) are inspected and re-inspected as often as necessary based on its findings to ensure corrective action was taken and the deficiencies are resolved. (continued)*	Section 10.4

(continued) *At a minimum, the Permittee shall inspect commercial facilities with a high priority designation, annually. At a minimum, the Permittee shall inspect all commercial facilities at least once every five (5) years.* *The Permittee shall conduct inspections that at a minimum, appropriately identify deficiencies, assess potential impacts to receiving waters, evaluate the appropriateness and effectiveness of deployed BMPs, and require controls to minimize the discharge of pollutants to the Small MS4. The Permittee is encouraged to conduct the inspections consistent with the applicable portions (e.g., Chapter 11 – Storm Water) of the "NPDES Compliance Inspection Manual" (EPA 305-X-04-001), dated July 2004 to the maximum extent possible. Inspectors shall be properly trained to conduct the inspections, and shall use an inspection checklist, or equivalent, and photographs of significant non-compliance (where allowable) to document site conditions and BMP conditions. Records of all inspections shall be maintained for a minimum of five (5) years, or as otherwise indicated.*	Section 10.4
Part D.1.f.(v)(d) *The Permittee shall submit an annual summary of inspection activities done within the previous period with the Annual Report. At a minimum the annual summary shall identify the commercial facilities inspected, the number of commercial inspections, significant inspection findings that remain unresolved for greater than three (3) calendar months, and an overall assessment of the effectiveness of the Commercial Activities Discharge Management Program.*	Section 10.5
Part D.1.f.(v)(e) Enforcement Policy for Commercial Facilities and Activities – *The Permittee shall implement policies for enforcement and penalties for commercial facilities/activities which have failed to comply. The policy shall be part of an overall escalating enforcement policy and must consist of the following:* • *Conducting inspections.* • *Issuance of written documentation to a facility representative within 30 calendar days of storm water deficiencies identified during inspection. Documentation must include copies of all field notes, correspondence, photographs, and sampling results if applicable.* • *A timeline for correction of the deficiencies.* • *Provisions for re-inspection and pursuing enforcement actions, if necessary.* *In the event the Permittee has exhausted all available sanctions and cannot bring a facility or activity into compliance with its policies and this permit, or otherwise deems the facility or activity an immediate and significant threat to water quality, the Permittee shall provide (continued)*	Sections 10.4 & 10.6

(continued) e-mail notification to cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor within one (1) week of such determination. E-mail notification shall be followed by written notification and include a copy of all inspection checklists, notes, photographs, and related correspondence in pdf format (300 minimum dpi) within two (2) weeks of the determination. In instances where an inspector identifies a facility that has not applied for the General Industrial Storm Water permit coverage or any other applicable NPDES permit, the Permittee shall provide email notification to DOH within one (1) week of such determination.	Sections 10.4 & 10.6
Part D.1.f.(v)(f) Training – *The Permittee shall provide annual training to facility personnel responsible for conducting commercial facilities/activities inspections on how to conduct commercial inspections, BMPs and source control measures for commercial facilities, and inspection and enforcement techniques. The training shall also include being able to identify industrial activities (i.e., to be covered under the NPDES General Permit for Industrial Storm Water discharge) or other activities that are potential sources of pollutants so that they may be covered under this permit. This training shall be specific to facility activities, policies, rules, and procedures.*	Section 10.7

10.1 Program Organization

Commercial activities at Joint Base Pearl Harbor-Hickam (JBPHH) are generally managed by two tenants; Morale, Welfare and Recreation (MWR) and Navy Exchange (NEX). Although tenant responsibilities are specified within tenant agreements, all entities operating on Base are required to be familiar with and follow Base-wide instructions. As such, both MWR and NEX are required to follow the policies and procedures outlined in this SWMP.

Oversight and management of NRH's CADMP implementation is the responsibility of the Joint Base Public Works Department (JB4), with assistance from the NRH/Naval Facilities Engineering Systems Command (NAVFAC) Hawaii Environmental Department (EV). JB4 is supported by the Facility Management Division (FMD), Assistant Public Works Officer (APWO), and JBPHH Public Works Department Environmental Division (PRJ4).

The following is an overview of the responsibilities for each entity (see *Figure 10-1 CADMP Organization*):

- *EV* – General program oversight to ensure Permit compliance, training of personnel involved in implementation and enforcement, annual review of the CADMP and modifications, as needed. EV is also responsible for coordination with the State of Hawaii Department of Health (DOH), in the event of persistent issues with non-compliance or an immediate and significant threat to water quality is identified.
- *FMD/APWO* - Act as the liaison between the Base and tenants, maintain inventory and map of commercial facilities at JBPHH, require written approvals and maintain inventory of drainage connections of non-JBPHH activities, general oversight of CADMP implementation by tenants.

- *PRJ4* – work with EV to implement, track, and enforce the commercial facilities inspection program.

This page left intentionally blank.

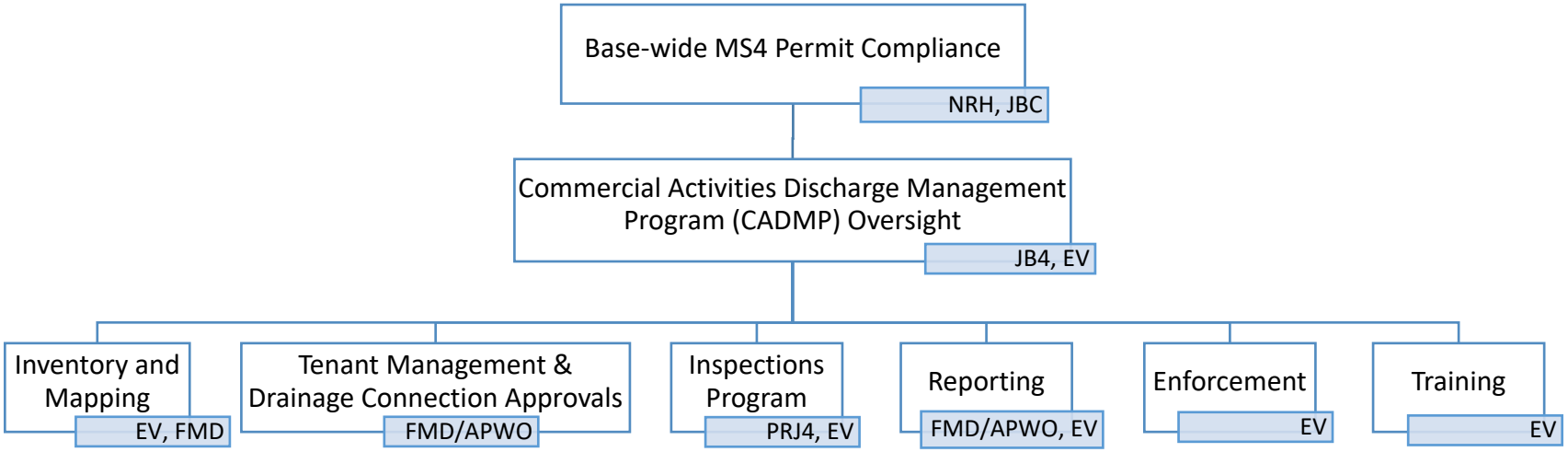


Figure 10-1: CADMP Organizational Chart

Any persistent issues with non-compliance of a tenant will be handled by escalating issues to the next higher level of authority. The Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the CADMP. Commander, Navy Region Hawaii (CNRH) holds ultimate authority in administering Permit policies and enforcement actions.

10.2 Inventory and Map of Commercial Facilities and Activities

As indicated in the Permit, NRH shall maintain a commercial facilities and activities inventory (commercial inventory) for JBPHH. The commercial inventory is to include facilities and activities known to discharge directly or indirectly to the JBPHH Small MS4. At a minimum, commercial facilities and activities include shopping centers, restaurants, and any other commercial facility identified by NRH or DOH as having the potential to contribute loading to the Small MS4.

EV has compiled a list of known commercial facilities and activities in its commercial inventory (see Appendix 10-1 [Redacted due to national security concerns]). The commercial inventory contains the following general categories of facilities and activities within JBPHH:

- Retail and Services (including Shopping Centers) - *required*;
- Food Service (including Restaurants) - *required*;
- Vehicle Maintenance, Repair, and Wash;
- Fueling Facilities;
- Equipment Maintenance;
- Laundry Service;
- Storage;
- Recreation;
- Office *(to be evaluated during initial inspections)*; and
- Other (commercial facilities identified by NRH or DOH as having the potential to contribute loading to the Small MS4).

The locations of these facilities have been identified on maps in Appendix 10-1 [Redacted due to national security concerns]. The following information is specified for each facility identified in the inventory:

- Facility Name;
- Location (Facility No., Subarea, Map);
- Facility Use;
- General Category;
- Standard Industrial Classification (SIC) or North American Industry Classification System (NAICS) code(s) that best reflect products and services;
- Priority Ranking (described in Section 10.4.1);
- Receiving Water;
- Principal Storm Water Contact (i.e., Facility Representative); and
- Notes.

FMD is responsible for maintenance and periodic update, as needed, of the commercial inventory and location maps.

10.3 Requirement to Implement BMPs

All commercial facilities that operate at JBPHH are subject to Base policy and any additional requirements specified in tenant agreements. This updated SWMP becomes effective and enforceable upon its submission to DOH. Commercial facilities and tenants are required to implement appropriate BMPs and comply with the policies outlined in this SWMP.

As detailed in Section 3.2 of this SWMP, FMD is in the process of developing a new connection approval and tracking process with assistance from EV for facilities not under direct control of NRH. This includes facilities that connect to the MS4 through drainage connections or surface runoff. Once approved for connection, commercial facilities will be added to the new connection tracking database. The commercial facilities are required to implement BMPs and will be subject to commercial inspections and CADMP enforcement.

To support the requirement to implement BMPs, NRH has put together lists of activity-specific BMPs for:

- General Commercial Activities & Good Housekeeping
- Activities Related to Material & Waste Storage
- Activities Related to Vehicle, Boat & Equipment Maintenance
- Activities Related to Vehicle & Boat Washing
- Activities Related to Vehicle Fueling
- Activities Related to Restaurants & Food Service

The activity-specific BMP lists are included in Appendix 10-2. The BMPs are made available to JBPHH personnel and tenants through training programs. These BMP lists are intended to serve as guidance for those involved in commercial activities at NRH but are not all-inclusive. Tenants and personnel are encouraged to incorporate these BMPs into their daily operations, and to modify them (as needed) to most effectively minimize the risk of pollutants entering the small MS4.

10.4 Inspection of Commercial Facilities and Activities

NRH has developed inspection program guidelines dependent on findings/outcomes of the investigations, to ensure that the requirements of the CADMP are implemented and that corrective actions are taken, if needed.

At a minimum, inspections will be used to:

- Identify deficiencies, such as illegal connections to the Small MS4, illicit discharges, potential sources of pollution, and deficiencies in BMPs;
- Assess potential impacts to receiving waters;
- Evaluate the suitability and effectiveness of BMPs implemented at each facility; and
- Outline required correctives actions, when deficiencies are identified.

Commercial facility inspections are primarily the responsibility of the tenant command that contracted the commercial facility. Each commercial facility is required to be inspected and re-inspected as often as necessary to ensure compliance with NRH's Storm Water Management Program, as well as other environmental laws and regulations. PRJ4/EV manage the commercial inspection program which includes conducting compliance inspections. PRJ4 will conduct additional inspections, as needed, to

address public complaints or non-compliance issues reported through other Base-wide inspection programs.

The findings and outcomes of commercial inspections will be used to identify areas for improvement within the CADMP. Changes to the commercial facility inventory/inspection schedule will be directed to the attention of EV and FMD, as needed. Revisions to the overall CADMP will be handled by EV.

10.4.1 Prioritization

Each facility identified in the Commercial Inventory (Appendix 10-1 [Redacted due to national security concerns]) has been assigned a priority ranking of 1 (HIGH), 2 (MODERATE) or 3 (LOW). Priority rankings represent the perceived risk to storm water quality associated with a facility's routine operations. These priority rankings are site-specific and based on factors including, but not limited to, type of commercial activity, potential risk to storm water quality if BMP implementation is deficient, severity of potential pollutant concerns, proximity to receiving waters, and results of past inspections. Generally:

Priority 1 (HIGH) – Indicates commercial facilities where routine operations are known to pose an immediate or severe threat to storm water quality if BMPs are deficient. For example:

- Facilities that routinely handle and dispose of large volumes of hazardous materials/wastes. Without adequate employee training and/or BMPs pollutants from these operations could easily be exposed to storm water and discharged to the MS4 (i.e., vehicle maintenance, repair, and wash, or fueling facilities).
- Commercial facilities or activities with past National Pollutant Discharge Elimination System (NPDES) violations or known issues/complaints with non-compliance related to storm water. Tenants demonstrate a lack of resources or knowledge with respect to storm water pollution prevention.

Priority 2 (MODERATE) – Facilities where potential pollutants are at a moderate risk of being exposed to storm water, and BMP deficiencies could pose a moderate risk to storm water quality. These sites include:

- Facilities that handle smaller volumes or less hazardous pollutants on a less frequent but regular basis (i.e., food service, which includes restaurants).
- Commercial facilities found to have major deficiencies in BMP implementation during past inspections.

Priority 3 (LOW) – Commercial facilities that pose a minimal threat to storm water quality, such as:

- Commercial facilities where routine operations require minimal amounts or infrequent use of potential storm water pollutants, or where there is a low risk of pollutants being exposed to storm water. Examples include retail shops and offices.
- Commercial facilities that consistently demonstrate knowledge and understanding of effective storm water pollution prevention, appropriate and effective BMP implementation, and adequate employee storm water/BMP training (at all levels).

Priority rankings are intended to evolve with the CADMP and may be adjusted to reflect findings of inspections, new information, or to address program concerns, as needed.

10.4.2 Inspection Schedule

Inspection requirements vary according to the priority ranking assigned to each commercial facility. The minimum inspection requirements, as specified in the Permit, are as follows:

Priority Ranking	Required Inspection Frequency
1 (HIGH)	Annual
2 (MODERATE) 3 (LOW)	Once every five (5) years

A preliminary inspection schedule has been developed (see Appendix 10-3 [Redacted due to national security concerns]) to facilitate the completion of commercial facility inspections, in accordance with the Permit. The schedule provides an outline of required inspections over the course of the five (5) year Permit term and is subject to change. Based on inspection findings, all commercial facilities are required to be inspected and re-inspected as often as necessary to ensure corrective active is taken and deficiencies are resolved.

10.4.3 Inspection Procedure

Typically, a commercial facility inspection includes interviewing a facility representative (familiar with day-to-day operations) and walking around the facility to see all work and storage areas (especially those used for hazardous materials/waste handling and those exposed to storm water). It is important that inspectors take thorough field notes and photographs to support their findings on site conditions and non-compliance issues for inspection reports. Proper documentation is detailed in Section 10.4.4, Documentation and Tracking.

Storm water deficiencies identified during commercial inspections are classified as either critical, major, or minor, based on the severity and perceived risk to storm water quality. Each deficiency type is defined below:

Critical Deficiencies: A deficiency that poses an immediate risk of discharge of pollutants to a storm drain MS4, or water body, or observed violation of regulations. Critical deficiencies include, but are not limited to:

- Illicit discharges to the storm drain system (e.g., overflowing grease trap, improper disposal of wash water);
- Evidence of spilled oil or hazardous materials near unprotected storm drain inlets, or water body; and
- Illicit connections to the storm drain system.

Major Deficiencies: A deficiency that is a significant issue that could result in discharge of pollutants to a storm drain MS4, or water body. Some examples include, but are not limited to:

- Significant accumulation of sediment or debris in parking lots;
- Hazardous materials or waste stored outside without proper containment or BMPs;
- BMPs in need of maintenance and no longer functional (e.g., overwhelmed with accumulated sediment/debris); and
- Any fluid spills covering more than one square yard and/or adjacent to unprotected storm drain inlets or waterways.

Minor Deficiencies: A deficiency that does not pose a threat of discharge of untreated storm water or pollutants to the storm drain system, surface waters, or State Waters, but does not demonstrate either proper procedure or implementation of BMPs. Examples include, but are not limited to:

- Improper labelling of hazardous materials containers;
- Poor housekeeping (i.e., accumulation of unused items, messy storage areas, uncovered trash bins);
- Fluid spills covering less than one square yard and not in close proximity to storm drain inlets or waterways; and
- BMPs in need of minor maintenance, but still functional.

NRH has developed training brochures (see Appendix 10-4), for distribution during commercial inspections. These brochures are intended to help facility representatives and other personnel understand the importance of the CADMP and how to apply BMPs in their day-to-day operations.

As much as possible, the inspector shall provide verbal notice of deficiencies to a facility representative during the inspection. This gives facility representatives the opportunity to immediately address deficiencies, when possible. Major deficiencies addressed at the time of inspection will be downgraded to a minor deficiency for reporting purposes.

It is important that verbal and written notifications are delivered promptly and are clear to ensure that deficiencies are addressed in a timely manner. To minimize delays and meet Permit requirements, NRH has developed a summary of deadlines to submit notification to responsible parties. These deadlines are triggered upon completion of the initial inspection (see Table 10-1).

Inspection reports shall also identify a timeline for corrective action and follow-up inspection. NRH has outlined general timelines for corrective action and follow-up inspection based on the level of deficiency (see Table 10-2). These timelines are subject to change on a case-by-case basis, at the discretion of PRJ4/EV. All follow-up action or inspections shall be documented and shall document whether requirements for corrective action have been satisfied.

NOTE: If an inspector deems that facility or activity poses an immediate and significant threat to water quality, EV shall be notified the day of the inspection. EV will be responsible for providing e-mail notification to DOH within ***one (1) week*** *with follow-up written notification (including a copy of all inspection checklists, notes, photographs, and related correspondence in pdf format (300 minimum dpi))* ***within two (2) weeks*** *of such a determination. Additional details are provided in Section 10.6.*

All inspection reports will be provided to PRJ4/EV. PRJ4/EV will correspond directly with a facility representative through verbal notification and follow-up email notification. FMD/APWO will be cc'd on these email notifications.

In the event that there are ongoing issues with bringing a facility or activity into compliance, see Section 10.6 Enforcement for further action.

Table 10-1 Deadlines for Inspection Notifications

If the most severe deficiency is:	Deadline to Notify Facility Representative[1] (Notification Type[2])
CRITICAL[3]	• During inspection or by close of business (Verbal) • Within one (1) week (Written) *Note: If deficiency is deemed an immediate and significant threat to water quality, DOH must be notified within one (1) week (Email), and within two (2) weeks (Letter)*
MAJOR	• Within two (2) weeks (Written)
MINOR	• Within thirty (30) days (Written)

Notes:
[1] From date of initial inspection.
[2] Written notification can be provided either via email or letter, unless otherwise specified.

Table 10-2 Timelines for Corrective Action

Deficiency	Requirements*
CRITICAL	• *Corrective Action:* Close of business, the day of the inspection. • *Follow-up inspection:* Within one (1) week of initial inspection. *Note: If it is not possible for a tenant to address the concern within this timeframe, they must work with PRJ4/EV to develop a suitable plan/timeline for corrective action (such as interim BMPs, changes in operations, etc.) and follow-up inspection.*
MAJOR	• *Corrective Action:* Within thirty (30) days of receipt of written notice. • *Follow-up Inspection:* Within three (3) months of initial inspection.
MINOR	• *Corrective Action:* Within thirty (30) days of receipt of written notice. • *Follow-up Inspection:* Within three (3) months of initial inspection, unless sufficient documentation of corrective action has been provided.

Notes:
*As part of each corrective action, facility representatives must submit supporting documentation as proof to PRJ4/EV. This documentation must be provided within the timeline specified.

10.4.4 Documentation and Tracking

Documentation is a critical component of commercial inspections to demonstrate Permit compliance and for tracking purposes. Inspection documentation should always include:

- Field notes - Inspectors shall use the NPDES Compliance Commercial Inspection Checklist (Appendix 10-5), or similar, to document inspection findings. Additional notes or figures may be needed to clearly identify locations of deficiencies, potential pollutants and quantities, or information provided during the interview.
- Photographs (where allowable) - To support significant non-compliance findings and demonstrate site/BMP conditions.
- Correspondence, as needed - Related to inspection findings, corrective action, or follow-up inspection efforts.
- Additional records, as needed - Inspectors and facility representatives, should keep any other records that demonstrate corrective actions and follow-up efforts. This may include sampling results (if applicable).

When compiled, the information above will form the inspection report. The inspection report will be provided to facility representatives and regulators, if needed. Any time storm water deficiencies are identified during an inspection, written notice shall be provided to a facility representative. The written notice shall include:

- Inspection report - Copies of supporting documentation, such as inspection checklists, photographs and other applicable records;
- A timeline for correction of deficiencies;
- Pending plans for follow-up inspection or pursuing enforcement actions, if necessary; and
- Contact information for how and where to obtain additional information to submit proof of corrective action.

It is important that all deficiencies and timelines for corrective action are clearly identifiable.

All documentation shall be submitted to EV for tracking via database. EV uses tracking to ensure corrective action and follow-up inspections are conducted in a timely manner. These timelines for corrective action and follow-up are detailed in Table 10-2 and Section 10.1.3.

Records of all inspections and related documentation (i.e., corrective action, follow-up inspections) are kept at EV and maintained for a minimum of five (5) years.

10.4.5 Reporting Requirements

EV is responsible for submitting an annual summary of the commercial inspection activities conducted during the previous period. This annual summary is provided as part of the Annual Report sent to DOH by January 31st of each year.

The intent of the annual CADMP summary is to provide an overview of program efforts and progress during the previous year. At a minimum the summary shall include:

- Commercial facilities inspected;
- Total number of inspections completed (including follow-up visits);

- Significant findings that remain unresolved for greater than three (3) calendar months;
- An overall assessment of the CADMP; and
- Any revisions to the Commercial Inventory or the CADMP, in response to previous findings, requirements, or other programmatic changes.

A more detailed breakdown of the Annual Report, including the remaining components and how to submit, are provided in Section 13, Reporting Requirements.

10.5 Enforcement Policy

The CADMP applies to all commercial facilities and activities Base-wide, which means that all tenants are responsible for being aware of and complying with its policies. Commercial tenants must also comply with any additional requirements specified in their tenant agreement.

The CADMP enforcement policy consists of:

- Conducting inspections;
- Issuance of written documentation to a facility representative within time frame specified in Table 10-1. Documentation details have been specified in Section 10.4.
- A timeline for corrective action; and
- Provisions for follow-up inspections and pursing enforcement procedures, if necessary.

Base-wide policies are enforced by escalating issues to the next higher level of authority. This means that if a tenant fails to address a significant non-compliance finding, as specified in the written notice, the initial violation will be brought to the attention of the tenant command (i.e., MWR, NEX, etc.). The issue will continue to be brought to the attention of the next higher level of authority until it is resolved.

Historically this has been an effective method of enforcement at JBPHH. Tenants are typically responsive to initial notices of violation, without the need for excessive involvement of higher authorities. In the event that an issue persists to the level of the JBC, the JBC has the authority to adjust policies or direct enforcement actions for tenants/agencies. In the unlikely event that the problem still remains unresolved, CNRH has ultimate authority in enforcement for JBPHH and can have the tenant removed from Base.

NRH is developing an Enforcement Response Plan (ERP) with policies and procedures for violations of CADMP policies. The draft ERP is included in Appendix 3-3. NRH is in the process of revising the draft ERP to recommend appropriate forms of penalties that meet the requirements of the Permit. The final ERP will be enforced through the party's chain of command or Contracting.

Additional enforcement action is triggered when:

1. It is deemed that a non-compliance issue poses an immediate and significant threat to water quality.

<u>or</u>

2. NRH has exhausted all available sanctions and cannot bring a facility or activity into compliance with its policies and the Permit.

Should either of these scenarios be identified, EV shall notify DOH by email within one (1) week of the determination at:

cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor

EV is to follow-up with written notification and include a copy of all inspection checklists, notes, and related correspondence in pdf format (300 minimum dpi) within two (2) weeks of the determination. Written notification shall be submitted in accordance with Part A.7 via the *CWB Compliance Submittal Form for Individual NPDES Permits and Notice of General Permit Coverages (NGPCs)*. This form is accessible through the e-Permitting Portal website at:

https://eha-cloud.doh.hawaii.gov/epermit/View/home.aspx

If an inspector discovers that a commercial facility conducts Permit regulated industrial activities and has not applied for NPDES permit coverage for discharges of storm water associated with industrial activities or any other applicable NPDES permit, EV will be immediately notified. EV will determine if Permit coverage is needed and will provide email notification to DOH within one (1) week of such a determination, also to:

cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor

10.6 Training

To ensure successful implementation of the CADMP, adequate training is critical. This applies to:

1. Facility personnel responsible for conducting commercial inspections (including administration and enforcement of the CADMP);
2. All tenants and personnel that operate commercial facilities and/or conduct commercial activities on Base.

The overall NRH CADMP training program is managed by EV. However, it is the responsibility of tenant commands or other entities that contract commercial facilities and activities (i.e., MWR, NEX) to ensure that these inspectors and personnel are adequately trained.

10.6.1 Inspector Training

A minimum of annual training is required for facility personnel responsible for conducting commercial facility/activity inspections. It is the responsibility of all entities that conduct commercial inspections, to ensure that inspectors are adequately trained. This includes tenant commands that contract commercial facilities/activities (i.e., MWR, NEX), PRJ4 and EV.

Inspector training shall cover the following areas and be specific to routine commercial activities, policies, and procedures:

- How to conduct commercial inspections;
- BMPs and source control measures for commercial activities, including:
    - Identifying potential pollutant sources;
    - Evaluating the appropriateness and effectiveness of BMPs;
    - Identifying BMP deficiencies;
    - Assessing potential impacts to receiving waters;
- Inspection and enforcement techniques;
- Identification of industrial activities (see Appendix 11-1, SIC Codes for Industrial Facilities Requiring Permit Coverage) or other activities that are potential sources of pollutants, so that

they may be appropriately covered under the NPDES Permit for Industrial Storm Water Discharge or the Permit; and

- Forms and procedures for documentation and tracking of commercial inspections.

Commercial facility or activity inspections to be conducted by PRJ4 will be done either in-house or by a third-party contractor. Third-party contractors will be responsible for ensuring adequate training of their personnel. For inspections conducted in-house by PRJ4, inspectors will receive initial orientation training from EV on the items previously listed. This orientation is supplemented by annual refresher training. Refresher training will serve as a review of general inspection policies and procedures and will focus on any updates to the CADMP. This may include a review of inspection findings from the previous year, or changes to Base-wide commercial activities, policies, and regulations.

10.6.2 Personnel Training

Tenants operating commercial facilities on JBPHH are required to maintain compliance with Base-wide policies and procedures, including this SWMP. To do this, adequate training must be provided to employees to ensure that proper storm water pollution prevention and control measures are in place during all commercial activities. Training shall be activity-specific and should cover items such as:

- Identifying potential storm water pollutant sources;
- BMPs and source control measures for commercial activities, including:
    - Good housekeeping
    - Material/waste handling and storage
    - Vehicle, boat, and equipment maintenance
    - Vehicle, and boat washing
    - Fueling
    - Restaurants & Food Service
- Proper implementation and maintenance of BMPs.

EV has also developed training brochures (see Appendix 10-4) for distribution during commercial inspections to help facility representatives and other personnel understand the importance of the CADMP and how to apply BMPs in their day-to-day operations. Tenants are responsible for conducting training as needed, at minimum annually, to ensure employees are aware of proper implementation of BMPs.

11 Industrial Facilities

As part of its SWMP, NRH is required to ensure that specific types of industrial facilities are covered in the Permit, and are in compliance with the Permit and all other State and Federal regulations. The determination of whether industrial facilities need to be covered under this Permit is based on the Standard Industrial Classification (SIC) code of its primary activity. The main regulatory components for these industrial facilities include the Storm Water Pollution Control Plans (SWPCPs) developed for each site; Part 8 of EPA's 2015 MSGP (dated June 4, 2015); and the Permit.

The overall objective of this Industrial Facilities Program is to reduce pollutants from NRH facilities, classified as "industrial" in accordance with Appendix D of EPA's 2015 MSGP and 40 CFR §122.26(b)(14), to the maximum extent practicable (MEP). At a minimum, pollutants are to be reduced to the appropriate discharge limitations subject to the Best Available Technology economically achievable/Best Conventional Pollutant Control Technology discharge requirement, consistent with the Clean Water Act and other applicable federal and state requirements.

Key components of the Industrial Facilities Program are to:

1. Ensure that industrial facilities are covered by the Permit, as required, or that the appropriate measures have been taken to qualify for "No Exposure" Certification or "No Discharge" documentation or similar for qualifying industrial sites;
2. Develop a map of storm water sewer sheds and identify where each industrial activity or facility occurs;
3. Develop, implement and routinely update a facility-specific SWPCP for each industrial facility covered by the Permit;
4. Maintain Permit compliance for all industrial facilities covered by the Permit;
5. Designate an individual from each industrial facility to receive appropriate training and be accountable for ensuring implementation of the facility-specific SWPCP;
6. Develop and implement Facility-wide spill prevention and response procedures;
7. Conduct inspections for identified industrial areas or facilities;
8. Provide annual training to all personnel that work within industrial areas or facilities;
9. Inform DOH of any significant changes and highlight significant changes to SWPCPs in the Annual Report.

As mentioned, the EPA only requires permits for the discharge of storm water for specific types of industrial activities, in accordance with Appendix D of EPA's 2015 MSGP and 40 CFR § 122.26(b)(14). Those industries requiring storm water permits are described in one of two ways - by a narrative description, or by a SIC code.

Requirement to obtain a permit is based on the SIC code for primary site activity. This means that, if the listed activity is not the primary site activity, it does not need a permit. A "primary site activity" is considered to be the principal industrial activity in which a facility or plant engages in. The "site" is considered to be the area or areas immediately surrounding the plant or facility where the industrial activity takes place. Excluded from the term "site" are areas located on facility or plant lands separate from the facility or plant's industrial activities, such as office buildings and accompanying parking lots, as long as drainage from the excluded area is not mixed with storm water drained from the facility or plant

defined as the primary site activity. Permit requirements for activities described by a narrative definition are considerably more stringent because any of the described activity occurring on site would require regulation.

For purposes of this SWMP, five broad categories of industrial activity are described by the narrative definition as an "industrial activity" and are subject to permit for discharges of storm water associated with the facility and need for SWPCPs:

- 40 CFR Subchapter N Industries;
- Landfills;
- Steam Power Generation Facilities;
- Sewage Treatment Plants; and
- Hazardous Waste Treatment, Storage, and Disposal Facilities.

Five general categories of industrial activity are described by SIC codes:

- Heavy Manufacturing;
- Light Manufacturing;
- Mining;
- Recyclers; and
- Industrial Transportation.

A quick reference guide with the SIC codes for industrial facilities that require inclusion in the Permit in accordance with Appendix D of EPA's 2015 MSGP and 40 CFR § 122.26(b)(14) is provided in Appendix 11-1.

The Industrial Facilities Program is outlined in accordance with the Permit requirements. *Part E "JBPHH Industrial Facilities*," of the Permit states:

Permit Reference	SWMP Section
Part E.1. Industrial Storm Water Pollution Control Plans (SWPCPs) *The Permittee shall implement Industrial SWPCPs to prevent the discharge of pollutants specifically from sources identified as Industrial Storm Water Dischargers, as specified in section E.1.a. The SWPCPs shall be incorporated and implemented as part of the SWMP specified in Part D of this permit. The Industrial SWPCPs shall, at a minimum, include the following:*	Section 11.2
Part E.1.a Industrial Areas, Facilities, and Activities *- The Permittee shall identify all Industrial areas, facilities, and activities which discharge storm water to the Small MS4. At a minimum, the identified industrial areas or facilities shall include any activities identified in Part 8 of EPA's 2015 Multi-sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP) and any other area/activity that either the Permittee or DOH determines has the potential to contribute pollutant loading to the MS4.*	Section 11.2
Part E.1.b *- The Permittee shall have a map of the Small MS4's storm water sewer sheds and identify where each industrial activity or facility occurs,*	Section 11.2

and define all potential types of industrial activity that may occur at the specified area or facility. The Permittee shall also identify on the map representative monitoring locations where either the industrial areas or facilities connect to the greater Small MS4 within each storm water sewer shed. These locations are to be used for the Permittee's industrial storm water monitoring requirements to determine whether industrial storm water BMPs are being implemented to the MEP to prevent the discharge of pollutants from the Small MS4 to State waters.	
Part E.1.c *- The Permittee shall implement, for each industrial area or facility, a SWPCP. At a minimum the SWPCP shall include the following:*	Section 11.3
Part E.1.c.(i) *A Site or facility specific map identifying:* • *The locations of drainage structures,* • *Each drainage area, paved areas and buildings and other ground cover within each drainage area,* • *Outdoor storage areas,* • *Areas where there are industrial activities,* • *Material and/or waste disposal areas,* • *Structural measures for the control of storm water,* • *Locations of any treatment devices,* • *Hazardous waste storage or disposal areas,* • *Storm water sampling locations,* • *Outfall locations, and* • *The nearest receiving waters.*	Appendix 11-2
Part E.1.c.(ii) Pollutant Sources. *For each industrial area or facility identified pursuant to Part E.1.a. of this permit, the Permittee shall identify pollutants of concern for each area, including those parameters listed in HAR, Chapter 11-54-4 that the Permittee believes to be present in the storm water runoff from the facility and/or activity. The Permittee shall consider the types of industrial activity that may potentially occur at each site, and the type of materials used and stored at each site. At a minimum, the identified pollutants shall include any pollutants identified in Part 8 of EPA's 2015 MSGP for the applicable industrial activity.*	Appendix 11-2 [Redacted due to national security concerns]

Part E.1.c.(iii) Best Management Practices (BMPs). *The Permittee shall develop BMPs to minimize the discharge of pollutants within storm water. Site specific BMPs shall be incorporated as necessary for identified industrial areas or facilities. A copy of the applicable BMPs for each identified industrial area shall be posted at each industrial location or in a location immediately assessable by all personnel that work within the identified industrial area. The Permittee shall consider the use of containment structures, covering materials by roof or tarpaulin, preventive maintenance, good housekeeping measures, waste minimization, removal of exposed pollutants, and spill prevention practices. The implementation of BMPs shall be sufficient to meet the requirements in Part 8 of EPA's 2015 MSGP for the applicable industrial activity.*	Appendices 11-2 and 11-3
Part E.1.c.(iv) Spill prevention and response procedures. *The Permittee shall develop and implement facility-wide spill prevention and response procedures to prevent and minimize the occurrence of spills, and prevent contact with storm water runoff or the potential to discharge to receiving water. The spill prevention and response procedures shall identify facility personnel responsible for its implementation. Additionally, the SWPCP shall include existing information regarding significant leaks or spills of toxic or hazardous pollutants at the facility that have taken place within five (5) years from when the SWPCP was last updated.*	Specific spill response procedures and responsibilities are located in the CNRH Integrated Contingency Plan (ICP), and the CNRH Spill Prevention Control and Countermeasure (SPCC) Plan
Part E.1.c.(v) Inspections*. The Permittee shall specify the frequency and protocol for inspections that ensure the SWPCP and spill prevention and response procedures are effectively carried out. Inspections for identified industrial areas or facilities shall be conducted at least semi-annually. The SWPCP shall specify that records of the inspections shall at a minimum include: dates on which the inspections were conducted, weather conditions at the time of the inspection, inspection findings, any photo documentation, any impact to receiving waters, timeframes for corrective actions to be performed, and corrective actions taken.*	Section 11.3
Part E.1.c.(vi) Training. *The Permittee shall provide annual training to all facility and military personnel that work within the identified industrial areas or facilities with the potential to impact storm water runoff quality and impact receiving water quality. The training shall be sufficient to ensure the SWPCP will be properly implemented.*	Section 11.3
Part E.1.c.(vii) A list of allowable non-storm water discharges. *The Permittee shall identify all allowable non-stormwater discharges within the industrial areas. Allowable non-storm water discharges shall be limited to those specified in Part B.2 of this permit.*	Section 3
Part E.1.c.(viii) Storm water outfalls and monitoring locations. *The Permittee shall identify all industrial storm water outfalls and industrial storm water monitoring locations for industrial areas and pollutant sources identified pursuant to Part E.1.a. and E.1.b. of this permit.*	Section 12

Part E.1.c.(ix) Monitoring procedures. *The Permittee shall implement monitoring procedures necessary to implement the requirements of Part F of this permit for the discharge of storm water from industrial facilities. The specified monitoring procedures shall at a minimum include a written narrative of the proposed monitoring objectives and description of monitoring activities. The monitoring locations shall be clearly marked on a sampling map with an explanation of why the location was selected and the identification of the pollutants of concern for each of the sampling locations.*	Section 12
Part E.1.c.(x) Rules and regulations. *The Permittee shall implement rules and regulations throughout the facility to prevent the discharge of pollutants into the Small MS4. Where rules and regulations are not sufficient to implement the requirements of this permit, the Permittee shall develop them prior to the finalization of the SWPCP. The SWPCP shall include a summary (or references) of such rules and regulations.*	Section1
Part E.1.c.(xi) Annual review. *The Permittee shall review and update the SWPCP as often as needed to comply with the conditions of this permit. At a minimum, the SWPCP shall be reviewed annually. The Permittee shall document all SWPCP reviews and report any significant changes to DOH within 30 calendar days of when the changes occur. Any significant changes to the SWPCP shall be highlighted within the Annual Report. The term "significant changes" shall include, but not be limited to the size and location of the industrial area or facility, type of industrial activities, BMPs and housekeeping practices, sampling location, and sampling parameters.*	Section 11.3
Part E.2. *An individual at each industrial site shall be charged with ensuring implementation of the SWPCP. This individual shall be trained to implement the SWPCP, including but not limited to, conducting inspections, identifying deficiencies and performing corrective actions. To ensure consistency and provide assistance and oversight, the Permittee shall identify an individual who shall oversee the industrial facilities inspections.*	Section 11.3

11.1 Program Organization

Implementation of facility-specific SWPCPs is primarily the responsibility of the facility manager. An individual at each industrial site is designated for ensuring implementation of the SWPCP, as required by the Permit. EV is responsible for general program oversight and, with help from JBPHH Public Works Department (JB4), for identifying facilities that should be added or removed from Permit coverage. This also involves oversight of the Monitoring Program described in Chapter 12, and providing annual updates of all activities, SWPCP revisions, as required, and status of inspections. NRH will implement the requirements to prevent the discharge of pollutants from industrial facilities into the MS4 via the base instructions. The Joint Base Commander (JBC) has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Industrial Facilities Program. CNRH has ultimate authority for Permit policies and enforcement actions.

This page left intentionally blank.

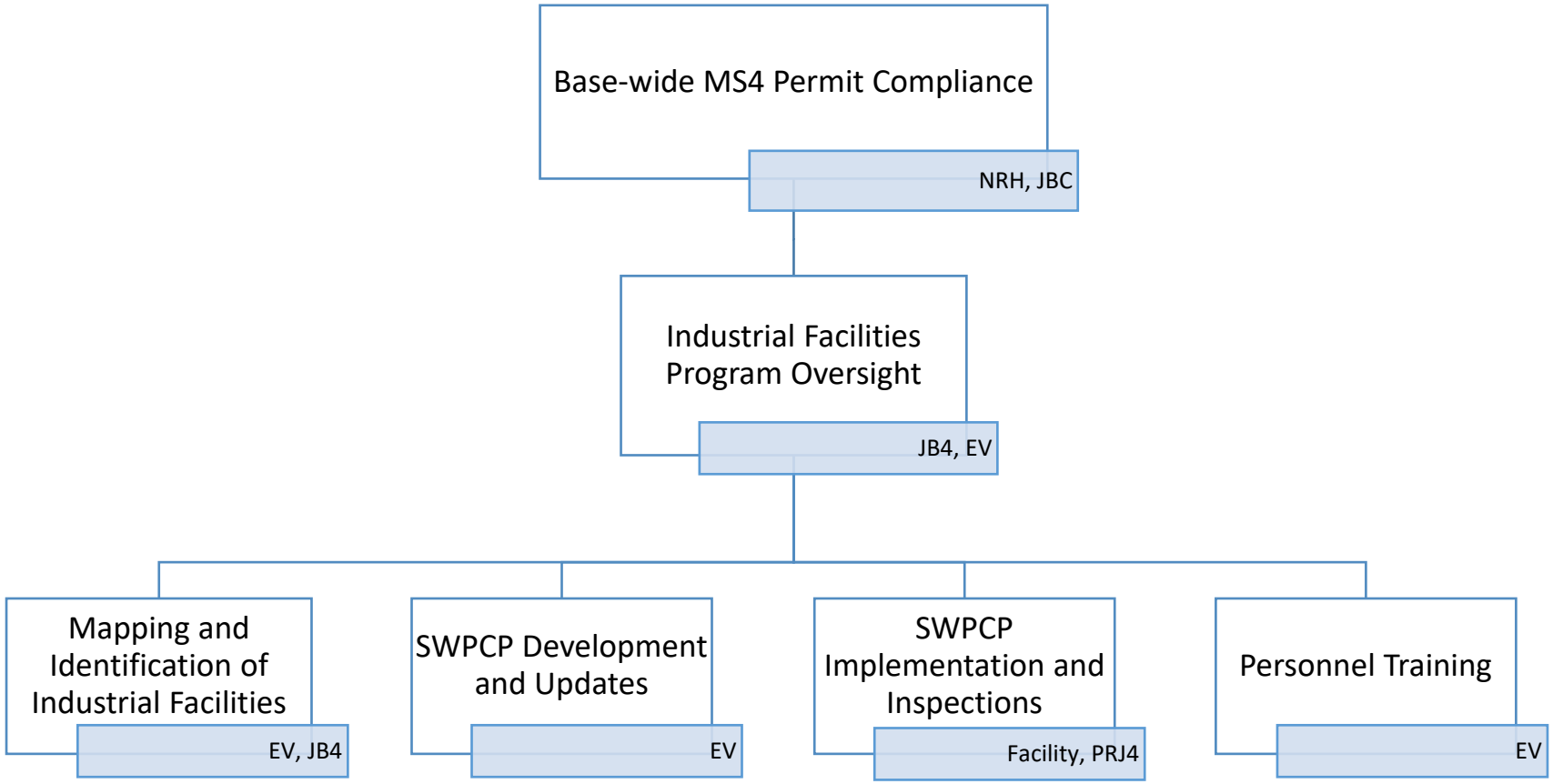


Figure 11-1 Industrial Facilities Program Organizational Chart

This page left intentionally blank.

11.2 Industrial Facility Mapping and Identification

EV has developed a map of the Small MS4's storm water sewer sheds and will be identifying locations of industrial areas, facilities, and activities within each storm water sewer shed which discharge storm water to the Small MS4. EV will continue to evaluate each area, facility, and activity to determine if they require permit coverage. If a facility requires permit coverage, a facility specific SWPCP will be prepared and implemented (see Section 11.3). Updates will be made periodically as activities and facilities change within JBPHH (see Section 11.4).

11.3 Facility-specific Storm Water Pollution Control Plans

NRH conducted site visits for all industrial facilities covered by the Permit. SWPCPs will be updated accordingly to meet the requirements specified in Part E.1.c of the Permit and Part 5 of EPA's 2015 MSGP. A table listing of all the industrial facilities covered by the permit is provided at the beginning of Appendix 11-2 [Redacted due to national security concerns]. This table will be updated as changes to industrial facilities occur. Figures included in Appendix 11-2 display the locations of all industrial facilities covered by the Permit. BMPs listed within the SWPCPs reference a list of BMPs, with corresponding detailed descriptions, that was put together for ease of reference in Appendix 11-3. Each facility-specific SWPCP has been included in Appendix 11-2.

Copies of the updated SWPCPs will be provided to each industrial facility and a representative from the facility will review and accept any changes. EV will verify that a designated person from each facility has received the required training and has been given the responsibility of implementing all practices indicated within the SWPCP. Each updated SWPCP will be implemented upon submittal of this SWMP to DOH. Each facility will ensure that a copy of the SWPCP is available onsite at all times.

The person designated at each facility for ensuring SWPCP compliance will be responsible for conducting inspections, identifying deficiencies, and performing corrective actions. Inspections will be conducted semi-annually. The facility will keep records of the inspections. JB4 Environmental Division (PRJ4) will also conduct semi-annual inspections for NRH at industrial facilities covered by the Permit. Records of the inspections shall at a minimum include: dates on which the inspections were conducted, weather conditions at the time of the inspection, inspection findings, any photo documentation, any impact to receiving waters, timeframes for corrective actions to be performed, and corrective actions taken.

The permit requires that storm water samples be collected at each facility. EV will be responsible for the monitoring program as outlined in Section 12.

SWPCPs will be reviewed as needed, at a minimum of once annually, and will be updated as needed by the facility and EV. Any changes will be provided to the corresponding facility for review and acceptance before it is submitted to DOH. EV will document all SWPCP reviews and report any significant changes to DOH within 30 calendar days of when the changes occur. Any significant changes to the SWPCP will be highlighted within the Annual Report. The term "significant changes" shall include, but not be limited to the size and location of the industrial area or facility, type of industrial activities, BMPs and housekeeping practices, sampling location, and sampling parameters.

EV will provide annual training to all Facility and military personnel that work within the identified industrial areas or facilities with the potential to impact storm water runoff quality and impact receiving water quality. The training will be sufficient to ensure the SWPCP will be properly implemented.

12 Monitoring Plan

12.1 Introduction

This Monitoring Plan provides the technical and management procedures to meet the requirements of the NPDES Permit HI S000257. All monitoring described in this plan are required by the NPDES storm water permit and/or state and federal storm water regulations. NPDES Permit HI S000257 requires The Department of the Navy, Navy Region Hawaii to monitor their storm water discharges associated with industrial activities. State of Hawaii Department of Health (DOH) also requires that each effluent flow or pollutant that is required to be monitored shall be monitored annually to yield data that reasonably characterizes the nature of the discharge.

The Permit describes the requirements for the Annual Monitoring Plan as follows:

Annual Monitoring Plan (Part F.1):

1. ***Monitoring Plan***

a. *The Permittee shall annually review and update, as necessary, the Monitoring Plan. The monitoring program must be designed and implemented to meet the following objectives:*
   - *(i) Assess compliance with this permit (including demonstrating consistency with WLAs);*
   - *(ii) Determine whether the Permittee's industrial facilities (as specified in Part E) comply with water quality requirements set forth in Part F.2 of this permit;*
   - *(iii) Measure the effectiveness of each element/control measure of the Permittee's storm water management program;*
   - *(iv) Assess the overall health based on the chemical, physical, and biological impacts to receiving waters resulting from storm water discharges and an evaluation of the long term trends;*
   - *(v) Characterize storm water discharges from the Small MS4;*
   - *(vi) Identify sources of specific pollutants;*
   - *(vii) Detect and eliminate illicit discharges and illegal connections to the Small MS4; and*
   - *(viii) Assess the water quality issues in watershed resulting from storm water discharges to receiving waters.*

b. *The plan shall, at a minimum, include the following items:*
   - *(i) Written narrative of the proposed monitoring plan's objectives, including but not limited to the objectives identified in Part F.1.a., and description of activities;*
   - *(ii) The monitoring locations on a sampling location map with an explanation of why the location was selected and the identification of the pollutants of concern for each of the sampling locations.*
   - *(iii) The Permittee shall develop a priority based monitoring schedule for each type of industrial area or facility identified pursuant to Part E.1.a. of this permit. The monitoring schedule will prioritize facilities or areas with the greatest potential of pollutant discharge. The facilities or areas ranked first within each type shall be monitored annually. Industrial areas or facilities not ranked first shall be monitored on a rotational basis (at least two (2) areas or facilities monitored per year per type). The Plan shall provide the rationale for the priority rankings, identify the types of*

industry within each of the priority areas or facilities, and provide a monitoring schedule for the rotational monitoring of industrial areas or facilities. Areas or facilities which exceed any of the limitations are required to be monitored during the next representative storm event for all parameters until none of the limitations are exceeded.

(iv) For each activity, a description of how the results will be used to determine compliance with this permit.

(v) Identification of management measures proven to be effective and/or ineffective at reducing pollutants and flow.

(vi) Written documentation of the following:

(a) Characteristics (timing, duration, intensity, total rainfall) of the storm event(s);

(b) Parameters for measured pollutant loads; and

(c) Range of discharge volumes to be monitored, as well as the timing, frequency, and duration at which they are identified;

(vii) Written documentation of the analytical methods to be used;

(viii) Written documentation of the Quality Assurance/Quality Control procedures to be used; and

(ix) Estimated budget to be implemented over the coming calendar year.

12.2 Sampling locations and Rationale

Monitoring locations were designated using a priority based ranking system per industrial type. Element Environmental reviewed documentation from previous SWPCP performed by HDR and reported in "Storm Water Program Plan Commander, Navy Region Hawaii Joint Base Pearl Harbor-Hickam" Appendix G5 and G7, 29 June 2012 and visited the industrial sites identified in the permit from November through December 2017 in order to determine site ranking and sampling priority. The following facilities (listed in table 12-1) or areas with the greatest potential of pollutant discharge shall be monitored annually.

The remaining sites will be monitored on a rotational basis with at least two locations (where more than one per industrial type exists) monitored per year. Details for each location, including a sampling location map, justification for the sample location and a list of pollutants of concern are listed in Appendix 12-1.

12.2.1 Annual monitoring sites

Sampling locations identified as a priority within an industrial type are provided in table 12-1. These sites shall be monitored once per year throughout the five-year period of this permit.

Table 12-1 Annual Monitoring Sites for JBPHH
[redacted due to national security concerns]

Building	Industrial Activity	Industrial Code
35	[Descriptions redacted due to national security concerns]	5
159		4
1725		3
3020		2
1757, 1758		6
2177, 2187, 2188		1

12.2.2 Secondary monitoring locations

Sampling locations not identified as the highest priority when grouped by industrial type are listed in table 12-2. These locations will be monitored once over the five year permit period as per the schedule provided in table 12-3.

Table 12-2 Secondary Monitoring Points to be monitored over a 5 year period

[redacted due to national security concerns]

Building	Industrial Activity	Priority Rank	Industrial code[1]
X-24, X-31, 77, 78	[Descriptions redacted due to national security concerns]	2	1
2030- Hangar 15		3	1
A19, 2651		4	1
14		5	1
68		6	1
19		7	1
1219, 1220		8	1
439		9	1
5		10	1
57		11	1
154		12	1
226		13	1
1055, 2030, 2125		14	1
Miscellaneous Items Warehouse (Bldg 60)		15	1
Northern Storage Area (Bldg 40)		16	1
Hotel Piers 1 to 4		2	2
2157, 2152		3	2
3004		5	2
FORFAC		6	2
454		7	2
2184		8	2
3002		9	2
12604, 12605		10	2
B-23, B-24, B-25, B-26		2	3
1770		3	3
M-1, M-2, M-3, M-4		4	3
K-3, K-4 to K-11		5	3
Wharves S-1, S-8, to S- 21		6	3
F-5		8	3
1588		9	3
3		10	3

Building	Industrial Activity	Priority Rank	Industrial code[1]
A2, A3, A4, A5		11	3
3455, 3460	[Descriptions redacted due to national security concerns]	12	3
BWPU		13	3
284		14	3
553		2	4
1526		3	4
1766		4	4
217, 217a		5	4
229		6	4
1070, 1072		7	4
IWTC		8	4
1073		2	5
4		3	5
3424		4	5
2002		5	5
11668		6	5
1631		7	5
2130		8	5
1055		9	5
3		10	5
558		11	5
1754		12	5
2025		13	5
11665		14	5
683		2	6
61		3	6
72		4	6
459		5	6

12.3 Priority based Monitoring Schedule

The monitoring schedule in table 12-3 was established by prioritizing industrial sites by industrial classification and then by rank of potential of pollutant discharge. Appendix 12-1 lists the individual sites and rationale that was used to create the schedule.

Table 12-3 Priority based monitoring schedule

Sampling location		Year				
		2022	2023	2024	2025	2026
Bishop Point	19			X		
	A2, A3, A4, A5			X		
Ford Island	217, 217a					X
	3			X		X
	S-375, S-376				X	
	454					X
	459			X		
Merry point	1725, 1631	X	X	X	X	X
	M-1, M-2, M-3, M-4			X		
Bravo Wharves	B-23, B-24, B-25, B-26			X		
Subase	1770			X		
	683		X		X	
	1588					X
	1766					X
	Wharves S-1, S-8, to S- 21		X			
NAVSUP Fleet logistics	Hotel Piers 1 to 4	X				
	FORFAC			X		
	449				X	
	1757, 1758	X	X	X	X	X
	K-3, K-4 to K-11		X			
Lualualei	4		X			
	439	X				
West Loch	3				X	
	57/462				X	
	5				X	
	558				X	
Moanalua	A-19, 2651		X			
NAVFAC HI Main	X-24, X-31, 77, 78	X				
Pearl Harbor South	35	X	X	X	X	X
	1526		X			
	BWPU	X				

Sampling location		Year				
		2022	2023	2024	2025	2026
	Bldg 1754					X
	IWTC					X
	Bldg 68	X				
	Bldg 226					X
	Bldg 284					X
	Bldg 72		X			
	Bldg 159	X	X	X	X	X
Makalapa Gate	553, 229	X				
Waipio Penninsula	Northern Storage Area					X
	Miscellaneous Items Warehouse					X
Hickam	61		X			
	1055			X		
	1070, 1072	X				
	1073, 2001		X			
	2002		X			
	2006		X			
	2010	X				
	2025			X		
	2030- Hangar 15		X			
	2130	X				
	2157, 2152		X			
	2177, 2178, 2183, 2184, 2185, 2186	X	X	X	X	X
	3002				X	
	1055, 2030, 2125			X		
	12604					X
	12605					X
	1219, 1220	X				
	2184				X	
	3455, 3460		X			
	3004	X				
HIANG	3020	X	X	X	X	X
	11665					
	3424			X		
	11666					X

12.4 Permit Compliance

A description of how results from each activity are used to ensure permit compliance are provided in this section.

Results from sample analysis and physical observations of storm water discharges will be evaluated against acceptable runoff effluent limitations as provided in PART F, Table 1 of the permit and presented in table 12-4 of this work plan. Additional toxic parameters provided by HAR 11-54 are presented in table 12-9 of this work plan. Data will be evaluated to measure the effectiveness of control measures of the management program and to assess the overall health of impacts to receiving waters. Monitoring locations where sample results fail to meet the limitations will be investigated; for potential improvements to BMPs, to identify illicit discharges and/or illegal connections.

12.5 Management Measures Effectiveness

Both visual observations during storm water monitoring and storm water sample analysis results will be used to help determine whether management measures are effective at reducing pollutants and flow. Visual observations of management measures will be recorded on field sampling sheets and/or field logbooks when possible during storm water sampling. Examples may include storm water breaching an absorbent sock or a sock that is effectively preventing a sheen from entering a storm drain inlet. Data from storm water analysis will be evaluated to determine whether management measures used to reduce a pollutant are effective or not by comparing numerical values to past exceedances.

12.6 Storm event selection criteria

Permit HI S000257 requires that the permittee collect samples for analysis from a representative storm. A representative storm is defined as a storm which accumulates a minimum of 0.1 inch of rain throughout the storm and occurs at least 72 hours after the previous qualifying rainfall event. Sampling shall start within the first 15 minutes of storm water discharge.

12.7 Storm Water sampling and analysis

This section provides information for storm water sampling and analysis. Sample collection and transport are discussed in section 12.7.1. Analytical parameters, holding times and container requirements are discussed in section 12.7.2. Locations where industrial parameters relating to the facility operation fail to meet the limitations of the permit, must be resampled until parameters return to compliance through the use of improved management practices.

12.7.1 Sample Collection and Transport

Samples are to be collected within the first 15 minutes of a discharge event or once flow starts at the sampling location. A sample collected within the first 15 minutes is considered a “Grab” sample. Subsequent samples collected beyond 15 minutes are to be combined and are considered a “composite”-sample. Composite samples shall be taken every 15 minutes up to 1 hour after the start of discharge. Composite samples are to be flow proportional as described below. Sampling may cease if the discharge flows for more than 1 hour.

If the duration of a discharge event is less than 30 minutes, the sample collected during the first 15 minutes fulfills the requirement of a composite sample and shall be analyzed for all parameters. Enough sample should be collected as a grab sample to perform all analysis.

If the duration of the discharge event lasts longer than a half hour, each 15 minute sample shall be combined proportional to the flow occurring at the time each sample was taken, including the initial grab sample, into one composite sample. Flow proportions can be established by adjusting the timing of sampling, to increase during periods of greater flow or by volume, collecting more sample for greater flow at the given intervals. For example, during a rain event an ISCO autosampler is programmed to collect about 2 liters of sample every 15 minutes. The initial "grab" sample is collected within the first 5 minutes of flow. At 20 minutes, the flow continues at a similar rate and the second 2 liters of sample is collected. At 35 minutes the rain intensity increases and the flow doubles in volume and the autosampler collects a third two 2 liter sample. Finally, at 50 minutes later a fourth sample is collected as the rain has been subsiding and the flow rate is about half of the initial flow rate. A composite sample of the event would include: 1 liter of the "grab" sample, 1 liter of the second sample, 2 liters of the third sample and 0.5 Liters of the fourth sample. All sample aliquots would be poured into one composite vessel and then poured off into the appropriate laboratory sample bottles. The remaining 1 liter of "grab" sample would be poured into the oil and grease sample bottle.

For discharge events greater than 30 minutes in duration, labile analytes are to be tested from the grab sample and all others from the composite as described in table 12-4. Samples shall be collected so that there is adequate volume of the "grab" sample to be split for both the composite parameters and for a stand alone grab sample

12.7.1.1 Manual Sampling

Samples may be collected manually or with automated sampling equipment such as an ISCO Avalanche or Global WS750. Manual sample collection may include the use of a sheet flow sampler such as a surface bailer type device, direct grabs using a glass jar such as the 1.8-liter ISCO container or through a peristaltic pump with tubing run down through a storm drain inlet. Care must be taken to use sampling equipment with inert surfaces to avoid interactions with target analysis such as Oil and Grease. Equipment should be Teflon lined, glass or stainless steel. If low level analysis of metals associated with steel, such as chromium are required, contact with metal surfaces should also be avoided. Monitoring locations were designated based on collecting discharge from an industrial site. Each site poses different challenges in obtaining a representative sample. Appendix 12-1 addresses sampling challenges and suggested sampling approaches for each monitoring location.

Table 12-4 NPDES Permit HI S000257 Limitations and Monitoring Requirements

Effluent Parameter (units)	Effluent Limitation {1}	Type of Sample {2}
Flow (gallons)	{4}	Calculated or Estimated
Total Suspended Solids (mg/l)	{4}	Composite {3}
Oil and Grease (mg/l)	15	Grab {6}
pH Range (Standard Units)	Streams 5.5-8.0 {7} Pearl Harbor 6.8-8.8 {7} Open Coastal 7.0-8.6 {8}	Grab {9}
Dissolved Oxygen (0.1 mg/l)	{4}	Grab
Oxygen Saturation (1%)	{4}	Grab
Temperature (0.1 ºC)	{4}	Grab

Effluent Parameter (units)	Effluent Limitation {1}	Type of Sample {2}
Copper (µg/l)	6+ {freshwater} 2.9 {saltwater}	Composite {3}
Zinc (µg/l)	22+ {freshwater} 95 {saltwater}	Composite {3}
Additional Toxic Pollutants {10}	{11}	{12}

mg/l = milligrams per liter = 1000 micrograms per liter (µg/l)

+ = The value listed as the minimum standard. Depending upon the receiving water $CaCO_3$ hardness, higher standards may be calculated using the respective formula in the U.S. Environmental Protection Agency publication Quality Criteria for Water (EPA 440/5-86-001, Revised May 1, 1987).

NOTES:

{1} Pollutant concentration levels shall not exceed the storm water discharge limits or be outside the ranges indicated in the table. Actual or measured levels which exceed those storm water discharge limits or are outside those ranges shall be reported to the CWB.

{2} The Permittee shall collect samples for analysis from a discharge resulting from a representative storm. A representative storm means a rainfall that accumulates more than 0.1 inch of rain and occurs at least 72 hours after the previous measurable (greater than 0.1 inch) rainfall event.

"Grab sample" means a sample collected during the first 15 minutes of the discharge.

"Composite sample" means a combination of at least two (2) sample aliquots, collected at periodic intervals. The Permittee may collect aliquots manually or automatically.

Samples for analysis shall be collected during the first 15 minutes of the discharge and at 15-minute intervals thereafter for the duration of the discharge, as applicable. If the discharge lasts for over an hour, sample collection may cease.

{3} If the duration of the discharge event is less than 30 minutes, the sample collected during the first 15 minutes of the discharge shall be analyzed as a grab sample and reported toward the fulfillment of this composite sample specification. If the duration of the discharge event is greater than 30 minutes, the Permittee shall analyze two (2) or more sample aliquots as a composite sample.

{4} Monitor and Report. The value shall not exceed the applicable limit as specified in Chapter 11-54 for the applicable classification of the receiving state waters. If no limitation is specified in Chapter 11-54, then the Permittee shall monitor and report the analytical result. DOH may include discharge limitations specified in Section 11-55-19 and discharge limitations based on Federal Register, Vol. 73, No. 189, Pages 56572–56578, dated September 29, 2008.

{5} The Total Nitrogen parameter is a measure of all nitrogen compounds in the sample (nitrate, nitrite, ammonia, dissolved organic nitrogen, and organic matter present as particulates).

{6} The Permittee shall measure Oil and Grease using EPA Method 1664, Revision A.

{7} The following pH limitations applies to discharge into state waters classified as inland streams:

(a) For streams, pH hall not deviate more than 0.5 units from ambient conditions and shall not be lower than 5.5 nor higher than 8.0.

(b) For the Pearl Harbor Estuary, pH shall not deviate more than 0.5 units from ambient conditions and shall not be lower than 6.8 nor higher than 8.8.

{8} The pH limitation for discharge into state waters classified as marine open coastal waters and embayments shall not deviate more than 0.5 units from a value of 8.1, except at coastal locations where and when freshwater from stream, stormdrain or groundwater discharge may depress the pH to a minimum level of 7.0.

{9} The Permittee shall measure pH within 15 minutes of obtaining the grab sample.

{10} Toxic pollutants, as identified in Appendix D of 40 CFR Part 122 (for JBPHH facilities whose storm water discharges are associated with industrial activity as listed in 40 CFR 122.26(b)(14)) or in HAR, Chapter 11-54, Section 11-54-4, need only be analyzed if they are identified by the Permittee as potential pollutants requiring monitoring in the SWPCP. If any toxic pollutant is detected equal to or greater than the discharge limitation, the Permittee shall revise the SWPCP, as necessary, to reduce the presence of the pollutant in the discharge of storm water to below the discharge limitation.

{11} Effluent limitations are the acute water quality standards established in HAR, Section 11-54-4. For pollutants which do not have established acute water quality standards, monitoring results shall be reported.

{12} Cyanide and the volatile fraction of the toxic organic compounds shall be sampled by grab sample. All other pollutants, as identified in Appendix D of the 40 CFR Part 122 or in HAR Section 11-54-4 shall be sampled by composite sample.

12.7.1.2 Automated Sampling

Automated sampling improves the efficiency of sampling and is useful in collecting samples from discharge events that occur outside of typical business hours. Deployment of automated samplers requires a site visit prior to a qualifying storm event. Automated samplers utilize a peristaltic pump which delivers sample to jars within the unit. A mechanism moves the sample stream between jars according to user defined programmed events. This allows the sampler to take composite and grab samples. Teflon lined sample tubing is secured to a sampling intake screen which is typically mounted within a storm drain inlet upstream of a weir. A fluid sensor is secured just above the sample intake to initiate sampling once discharge is detected. A pressure transducer and Doppler velocity unit may also be secured beside the sample inlet to measure flow. The tubing and wiring is then routed to the auto-sampler. A rain gauge may be attached to the sampler to record rainfall, used to determine compliance

with a qualifying event or to help establish flow. The ISCO Avalanche auto-sampler is equipped with a pH flow cell and thermometer for recording field parameters real time and a refrigerated sample storage compartment. For sites where automated samplers may be deployed for an extended period of time, a solar panel may be attached to the outside protective shed to maintain battery levels; ensuring sufficient power to complete the sampling process if a discharge event occurs. Data obtained while samples are collected by the ISCO include pH, rainfall, temperature and flow data is stored on the ISCO Signature unit and may be accessed using a cellular modem with telemetry. Samples are stored refrigerated within the automated sampler until retrieved. The Global WS750 sampler is triggered by flow but does not record the additional information.

Automated samplers require routine maintenance once deployed until samples are successfully obtained. It is recommended that Samplers are visited on a weekly basis. Batteries and desiccant need to be checked and replaced as needed, pH probes require calibration checks, sample inlets should be cleared of debris and sediment and tubing connections should be checked and replaced when faulty. Discharge events may trigger an auto-sampler that fail to meet the 0.1 inch qualifying event requirement. In this case, samples need to be removed, bottles cleaned and replaced and batteries recharged or replaced. Once a sampler has successfully obtained a qualifying sample, it should be removed from the sampling location, maintenance completed and either deployed at another site or placed in storage.

12.7.1.3 Sample transport

Once samples have been obtained, either manually or through automation, samples may need to be analyzed for pH, dissolved oxygen, oxygen saturation and temperature using field equipment if the parameters were not measured by automated equipment or if they cannot be transported to the laboratory within the method holding times. Samples must then be transferred to appropriate laboratory provided bottles, placed in a cooler with ice and transported to an analytical laboratory. A chain of custody (see section 12.8.2) must be filled out and accompany the samples. Sample containers, holding times and preservative requirements can be found in table 12-5.

12.7.2 Analytical Requirements

NPDES permit HI S000257 requires that all sites be analyzed for the parameters listed in table 12-4. In addition to the tests listed in the table, Additional Toxic Pollutants are required. These pollutants are determined during site visits as identified during the SWPCP process. Tables 12-7 and 12-8 describe chemical pollutants associated with significant materials from 40 CFR 122.26(b)(14) defined industrial activities that were encountered during site visits and documented in the SWPCP. Table 12-6 lists the cumulative potential toxic pollutants from sampling locations listed in tables 12-1 and 12-2. Individual pollutant lists by sampling location are provided in Appendix 12-1.

Table 12-5 NPDES Permit HI S000257 sample container requirements

Parameter Name[1]	Units	Methodology	Maximum Holding Time	Preservation	Container Type/ Size
TPH(D)	µg/L	GC/FID	7 days (extract)	4ºC, pH<2, HCl	1x4 oz amber
TPH(G)	µg/L	GC/FID	14 days (analysis)	4ºC, pH<2, HCl	3x40 mL VOA
O&G	mg/L	gravimetric	7 days (extract)	4ºC, pH<2, H2SO4	1x1 liter amber
VOCs	µg/L	GC/MS	14 days	4ºC	3x40 mL VOA
BTEX	ug/L	GC/PID	14 days	4ºC	3x40 mL VOA
PAHs	µg/L	GC/MS	7 days (extract) 40 days (analysis)	4ºC, Na2S2O3 day K	1x1 liter amber
MBAS	mg/L	Colorimetric	48 hours	4ºC	1x25 mL
Carb	µg/L	HPLC	7 days (extract) 40 days (analysis)	4ºC	1x1 liter amber
Herb	µg/L	GC/ECD	7 days (extract) 40 days (analysis)	4ºC	1x1 liter amber
GEs	mg/L	GC/MS	14 days	4ºC	3x40 mL VOA
Alcs	mg/L	GC/MS	14 days	4ºC	3x40 mL VOA
metals	µg/L	ICP	6 months	pH<2, HNO3	500 mL plastic
BOD5	mg/L	Electrode	48 hours	4ºC	1000 mL plastic
COD	mg/L	Photo Spectroscopy	28 days	4ºC, pH<2, H2SO4	50 mL plastic
TKN	mg/L	IC	28 days	4ºC, pH<2, H2SO4	500 mL plastic
Nitrate & Nitrite	mg/L	Colorimetric	28 days	4ºC	500 mL plastic
TSS	mg/L	Gravimetric	7 days	4ºC	100 mL plastic

Notes.

1. Alcs - Alcohols
BOD5 - Five-Day Biochemical Oxygen Demand
BTEX - Benzene, Toluene, Ethylbenzene, Xylene
Carb - Carbamates
COD - Chemical Oxygen Demand
Dup RPD - Duplicate Relative Percent Difference
ECD - Electron Capture Detection
EDTA - Ethylenediaminetetraacetic acid
FID - Flame ionization detection
GC - Gas chromatography
GEs - Glycol esters
Herb - Chlorinated Herbicides
ICP - Inductively coupled plasma atomic emission spectroscopy
MBAS - Methylene blue active substances
mg/L - Milligrams per Liter
MS - Mass spectrometry
MS RPD - Matrix spike relative percent difference
NH4+ - Ammonium
O&G - Oil and Grease
P - Phosphorous
Ten Metals - Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn) analysis by inductively coupled plasma atomic emission spectro-scopy method and atomic absorption spectroscopy method
TKN - Total Kjeldahl Nitrogen
TPH(D) - Total petroleum hydrocarbons (as diesel)
TPH(G) - Total petroleum hydrocarbons (as gasoline)
TSS - Total Suspended Solids
TDS - Total Dissolved Solids
µg/L - Micrograms per Liter
VOCs - Volatile Organic Compounds

Table 12-6 Analytical Parameters, Methodologies and Detection Levels

Parameter	Method	Detection Level (mg/L)
Basewide requirements		
TSS (Total Suspended Solids)	SM 2540D	2.0
Oil and Grease	1664 A	2.0
pH	150.1, 4500-H^+ B FM	N/A
Dissolved Oxygen	SM4500-O FM	0.1
Oxygen Saturation	Calc FM	(1%)
Temperature	SM 2550B FM	1°C
Cu (Copper)	200.8 low level	0.002
Zn (Zinc)	200.8 low level	0.09
Toxic Pollutants as determined by SWPCP		
TPH		
TPH(RRO)	8015	0.1
TPH (Diesel)	8015	0.1
TPH (Gas)	8015	0.1
BTEX		
Benzene	624	0.001
Toluene	624	0.001
Ethylbenzene	624	0.001
Total Xylenes	624	0.001
MBAS	425.1, SM 18th 5540 C	0.1
Carbamates		
Carbaryl (Sevin)	TLC, 632	0.005
Carbofuran (Furadan)	632	0.005
Methiocarb (Mesurol)	TLC, 632	0.005
Methomyl (Lannate)	632	0.005
Oxamyl (Vydate)	632	0.005
Propoxur (Baygon)	TLC, 632	0.005
Chlorinated Herbicides:		
2,4-D	8151A	0.0002
Dalapon	8151A	0.0002
Dinoseb	8151A	0.0002
Alcohols and Esters		
Glycol Esters: Ethylene Glycol	8015B, 8260M	25
Alcohols: Isopropyl Alcohol	8015B, 8260M	5
Reactive Parameters		
Cyanide, Total mg/kg	335.3	0.1
Sulfide	SM4500-S2	0.1
Other metals		
Titanium	200.8 low level	0.25
Iron	200.8 low level	0.1
Aluminum	200.8 low level	0.7
Magnesium	200.8 low level	0.1
Ten Metals		

Parameter	Method	Detection Level (mg/L)
As (Arsenic)	200.8 low level	0.06
Cd (Cadmium)	200.8 low level	0.04
Cr (Chromium)	200.8 low level	1
Pb (Lead)	200.8 low level	0.1
Hg (Mercury)	245.1	0.002
Ni (Nickel)	200.8 low level	0.09
Se (Selenium)	200.8 low level	0.25
Ag (Silver)	200.8 low level	0.002
PAHs		
Acenaphthene	625	0.01
Benzo (a)pyrene	625	0.01
Fluoranthene	625	0.01
Naphthalene	625	0.01
Solvents		
Halogenated Volatile Organic Compounds	624	0.001
Semivolatiles	625	0.001

Table 12-7 Organic Analytical Parameters Associated with Potential Pollutants

Potential Pollutant	Analytical Parameter																		
	TFH	TPH(D)	TPH(G)	TPH(IR)	O&G	PCBs	VOCs	BTEX	MBAS	Carb	Herb	BOD	COD	GEs	Alcs	Expls	PAHs	Fec. Col.	Fec. Str.
Adhesives/Resins/Glue							X										X		
Alcohols															X				
Algicides											X								
Antifreeze/Coolant														X					
Caustics																	X		
Detergents/Surfactants									X										
Dielectric/Electrolytes						X													
Diesel Fuel		X															X		
Explosives																X			
Firefighting Foam									X					X					
Freon					X														
Gasoline			X					X									X		
Hydraulic/Calibration Fluid	X																		
Jet Fuel		X																	
Kerosene	X																		
Lubricants					X														
Metal Cleaners	X																		
Oil & Grease					X												X		
Paint Thinner	X																		

Potential Pollutant	Analytical Parameter																		
	TFH	TPH(D)	TPH(G)	TPH(IR)	O&G	PCBs	VOCs	BTEX	MBAS	Carb	Herb	BOD	COD	GEs	Alcs	Expls	PAHs	Fec. Col.	Fec. Str.
Paint/Varnish																	X		
Pesticides/Herbicides										X	X								
Photographic Chemicals							X												
Sanitary Waste																		X	X
Sawdust												X	X						
Solvents	X																		
Tar				X															
Transformer Oil						X													
Used Oil					X														
Wash Water					X				X										

Notes:

Alcs	Alcohols
BTEX	Benzene, toluene, ethylbenzene, total xylenes
Carb	Carbamates
Expls	Explosives (nitroaromatics & nitroamines)
Fec. Col.	Fecal Coliform
Fec. Str.	Fecal Streptoccocci
GEs	Glycol esters
Herb	Chlorinated herbicides
MBAS	Methylene blue active substances
O&G	Oil and Grease
PAHs	Poly Aromatic Hydrocarbons
PCBs	Polychlorinated biphenyls
TFH	Total fuel hydrocarbons
TPH(D)	Total petroleum hydrocarbons (as diesel)
TPH(G)	Total petroleum hydrocarbons (as gasoline)
TPH(IR)	Total petroleum hydrocarbons (as infrared spectroscopy)
VOCs	Volatile organic compounds

Table 12-8 Inorganic and General Analytical Parameters Associated with Potential Pollutants

Potential Pollutant	Analytical Parameter																		
	Cu	Cr	Hg	Ag	Ti	Pb	Cd	Ten Metals	pH	NH_4^+	Nitrate & Nitrite	Total P	Sulfate & Sulfite	Anions & Cations	Resid. Cl_2	Asb.	SC	TSS	TDS
Acids								X	X										
Algicides	X																		
Anti-Freeze/Coolant	X																		
Caustics									X					X					
Chlorine/Sodium Hypochlorite															X				
Chromate		X							X										
Detergents/Surfactants									X										
Dielectric/Electrolytes								X											
Fertilizers										X	X	X	X						
Gypsum													X	X					
Lead						X													
Lubricants								X											
Metal Cleaners								X	X										
Oxidizers								X	X										
Paint Chips	X					X												X	
Paint/Varnish	X				X														
Photographic Chemicals			X	X							X								
Salts									X					X			X		X
Sandblasting Waste Solids								X										X	X
Sanitary Waste										X									
Sediment																		X	X
Tar								X											
Ten Metals								X											
Transformer Oil								X											
Used Oil								X											

Notes:

Ag	Silver
Anions & Cations	HCO3-, CO3-2, Cl-, SO4-2, NO3-, F-, OH-, Na+, K+, Ca+2, Mg+2
Asb.	Asbestos
Cr	Chromium (total)
Cu	Copper
Hg	Mercury
NH4+	Ammonium
P	Phosphorus
Resid Cl2	Residual Chlorine
SC	Specific Conductance
Ten Metals	Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn) analysis by inductively coupled plasma atomic emission spectroscopy method and atomic absorption spectroscopy method.
Ti	Titanium
TSS	Total Suspended Solids
TDS	Total Dissolved Solids

Table 12-9 HAR 11-54 Limits

HAR 11-54 Not to exceed values		
	fresh	marine
Pollutant	Acute (ug/l)	Acute (ug/l)
Acenapthene	570	320
Acrolein	23	18
Acrylonitrile*	2,500	ns
Aldrin*	3.0	1.3
Aluminum	750	ns
Antimony	3,000	ns
Arsenic	360	69
Benzene*	1,800	1,700
Benzidine*	800	ns
Beryllium*	43	ns
Cadmium	3+	43
Carbon tetra- chloride*	12,000	16,000
Chlordane*	2.4	0.09
Chlorine	19	13
Chloroethers- ethy(bis-2)*	ns	ns
isoprophyl	ns	ns
methyl(bis)*	ns	ns
Chlorophenol(2)	1,400	ns
Chlorpyrifos	0.083	0.011
Chromium (VI)	16	1,100
Copper	6+	2.9
Cyanide	22	1
DDT*	1.1	0.013
metabolite TDE*	0.03	1.2
Demeton	ns	ns
Dichloro- benzenes*	370	660
benzidine*	ns	ns
ethane(1,2)*	39,000	38,000
ethylene(1,1)*	3,900	75,000
phenol(2,4)	670	ns
propanes	7,700	3,400
propene(1,3)	2,000	260
Dieldrin*	2.5	0.71
Dinitro	ns	ns
toluenes*	110	200
Dioxin*	0.003	ns
Diphenyl- hydrazine(1,2)	ns	ns
Endosulfan	0.22	0.034
Endrin	0.18	0.037
Ethylbenzene	11,000	140
Fluoranthene	1,300	13

HAR 11-54 Not to exceed values		
	fresh	marine
Pollutant	Acute (ug/l)	Acute (ug/l)
Guthion	ns	ns
Heptachlor	0.52	0.53
Hexachlorobenzene*	ns	ns
Hexachlorobutadiene*	30	11
Hexachlorocyclohexane- alpha*	ns	ns
Hexachlorocyclohexane-beta*	ns	ns
Hexachlorocyclohexane-technical*	ns	ns
Hexachlorocyclopentadiene	2	2
Hexachloroethane*	330	310
Isophorone	39,000	4,300
Lead	29+	140
Lindane*	2.0	0.16
Malathion	ns	ns
Mercury	2.4	2.1
Methoxychlor	ns	ns
Mirex	ns	ns
Naphthalene	770	780
Nickel	5+	75
Nitrobenzene	9,000	2,200
Nitrophenols*	77	1,600
Nitrosamines*	1,950	ns
Nitroso dibutylamine-N*	ns	ns
diethylamine-N*	ns	ns
dimethylamine-N*	ns	ns
diphenylamine-N*	ns	ns
pyrrolidine-N*	ns	ns
Parathion	0.065	ns
Pentachloro- ethanes	2,400	130
benzene	ns	ns
phenol	20	13
Phenol	3,400	170
2,4-dimethyl	700	ns
Phthalate esters		
dibutyl	ns	ns
diethyl	ns	ns
di-2-ethylhexyl	ns	ns
dimethyl	ns	ns
Polychlorinated biphenyls*	2.0	10
Polynuclear Aromatic hydrocarbons*	ns	ns
Selenium	20	300
Silver	1+	2.3
Tetrachloro-		
ethanes	3,100	ns

HAR 11-54 Not to exceed values		
	fresh	marine
Pollutant	Acute (ug/l)	Acute (ug/l)
benzene(1,2,4,5)	ns	ns
ethane(1,1,2,2)*	ns	3,000
ethylene*	1,800	3,400
phenol(2,3,5,6)	ns	ns
Thallium	470	710
Toluene	5,800	2,100
Toxaphene*	0.73	0.21
Tributyltin	ns	ns
Trichloro-		
ethane(1,1,1)	6,000	10,400
ethane(1,1,2)*	6,000	ns
ethylene*	15,000	700
phenol(2,4,6)*	ns	ns
Vinyl chloride*	ns	ns
Zinc	22+	95

*- Carcinogen

Contaminant	Units	Stream	Estuary	Pearl Harbor	Embayments	Open Coastal
Diss Oxygen Sat.	%	80	75	60	75	75
Total Nitrogen wet	ug/L	250.00	200.00	300.00	200.00	150.00
Total Nitrogen dry	ug/L	180.00	200.00	300.00	150.00	110.00
Ammonia Nitrogen wet	ug/L	NA	6.00	10.00	6.00	3.50
Ammonia Nitrogen dry	ug/L	NA	6.00	10.00	3.50	2.00
Nitrate+ Nitrite Nitrogen wet	ug/L	70.00	8.00	15.00	8.00	5.00
Nitrate+ Nitrite Nitrogen dry	ug/L	30.00	8.00	15.00	5.00	3.50
Total Phosphorus wet	ug/L	50.00	25.00	60.00	25.00	20.00
Total Phosphorus dry	ug/L	30.00	25.00	60.00	20.00	16.00
Total Suspended Solids wet	mg/l	NA	NA	NA	NA	NA
Total Suspended Solids dry	mg/l	NA	NA	NA	NA	NA
Chlorophyll a wet	ug/L	NA	2.00	3.50	1.50	0.30
Chlorophyll a dry	ug/L	NA	2.00	3.50	0.50	0.15
Turbidity wet	NTU	5.00	1.50	4.00	1.50	0.50
Turbidity dry	NTU	2.00	1.50	4.00	0.40	0.20
wet/dry basis		DATE	NA	NA	MAP	MAP
DATE: wet 11/1 - 4/30 dry 5/1 - 10/31						

12.8 Quality Assurance/Quality Control

A thorough Quality Assurance/Quality Control (QA/QC) plan is an essential component of a monitoring program, involving extensive field sampling and laboratory analyses. Because of the inherent variability in storm water samples, it is important to minimize additional uncertainties that may be introduced by sample handling and analytical techniques. This section describes the major elements of the QA/QC plan as related to sampling procedures and to methods of chemical analyses performed in the monitoring program. The plan fulfills the QA/QC requirements of the NPDES storm water permit.

The objectives of the QA/QC plan are to assure that: (1) all elements of the monitoring program are conducted, and (2) all monitoring is conducted by trained personnel. Implementation of a sound QA/QC plan ensures that the data collected are of high quality and defensible in court. QA/QC procedures will be followed in all phases of the monitoring program including sampling, laboratory analysis, and data reporting/validation. This plan includes elements to address both sampling and analytical concerns including sample contamination, variability, accuracy, and precision.

12.8.1 Field Sample Procedures

Adherence to proper sampling preparation, sample handling, and laboratory procedures is essential to maintaining data quality and integrity. This section details the required standard operating procedures for sampling and sample handling as set forth by the EPA.

12.8.1.1 Reconnaissance and Preparation

Representative sampling sites have been selected in accordance with feasibility, accessibility, and safety constraints. Communication with laboratories will be established and a Sampling Field Notebook will be prepared, as described in Section 12.8.1.2 noted below. Field teams will be trained by experienced personnel. Supervisors will be responsible for coordination of sampling efforts and for preparedness of teams.

12.8.1.2 Sampling Field Notebook

A specific Sampling Field Notebook will be prepared and kept on file. The Sampling Field Notebook will contain the following items and procedures:

- List of equipment
- Location (map and description) of sampling point(s)
- Field Data Sheets
- Field sampling instructions
- Sample packing, transfer, and tracking (chain-of-custody) instructions and forms

These procedures will be followed by the field personnel in all phases of the field monitoring program. Personnel with field experience in storm water sampling will be responsible for training field sampling personnel.

12.8.2 Chain-of-Custody Procedures

All sample custody and transfer procedures will follow EPA-recommended procedures and emphasize careful documentation of sample collection and handling processes, including transfer of sample and chain-of-custody details such as sample date and time, number of sample containers and sampling method required. Field teams will adhere to proper chain-of-custody and documentation procedures for

all sampling operations. Preformatted sample and chain-of-custody forms will be used to document the relevant information for each sample bottle and the transfer of bottles to the laboratory. An example of a completed chain-of-custody form is shown in Figure 12-1.

12.8.3 Laboratory Procedures

Analysis for the routine parameters will be performed by a qualified laboratory. A qualified laboratory shall meet ISO17025 requirements. The laboratory must make every effort to meet target detection limits, holding times, and sample preservation techniques. The laboratory shall provide a written QA/QC report addressing any deviations from the QA/QC requirements.

12.8.3.1 Accuracy

Laboratory accuracy can be assessed through performance and evaluation programs, and/or a certification of performance. As an alternative, the use of "blind" standard reference samples supplied by Environmental Resource Associates (ERA) and through the analysis of laboratory-prepared matrix spike samples, or "internal standards", can be used. Blind ERA reference samples would be analyzed once every quarter in which samples are analyzed. A goal of five percent of the samples shall be analyzed as matrix spike duplicates. For the matrix spike duplicate, a known standard analyte concentration is first spiked, or added, to an original sample and then duplicated. The accuracy of the analytical methods is evaluated from the results of the analytical recoveries of the first, or matrix spike, and second, or matrix spike duplicate spikes.

12.8.3.2 Precision

Laboratory precision must be assessed through the analysis of laboratory duplicates, for example analysis of two portions derived from the same sample, at the frequency of 10 percent of the samples. In addition, five percent of the samples will be analyzed for matrix spike duplicates as described above.

12.8.3.3 Laboratory Blanks

Sample contamination resulting from laboratory analysis procedures or sample storage methods will be assessed through the use and analysis of laboratory blanks and equipment blanks. Laboratory blanks, including reagent and/or method, shall be reported for each day samples are analyzed.

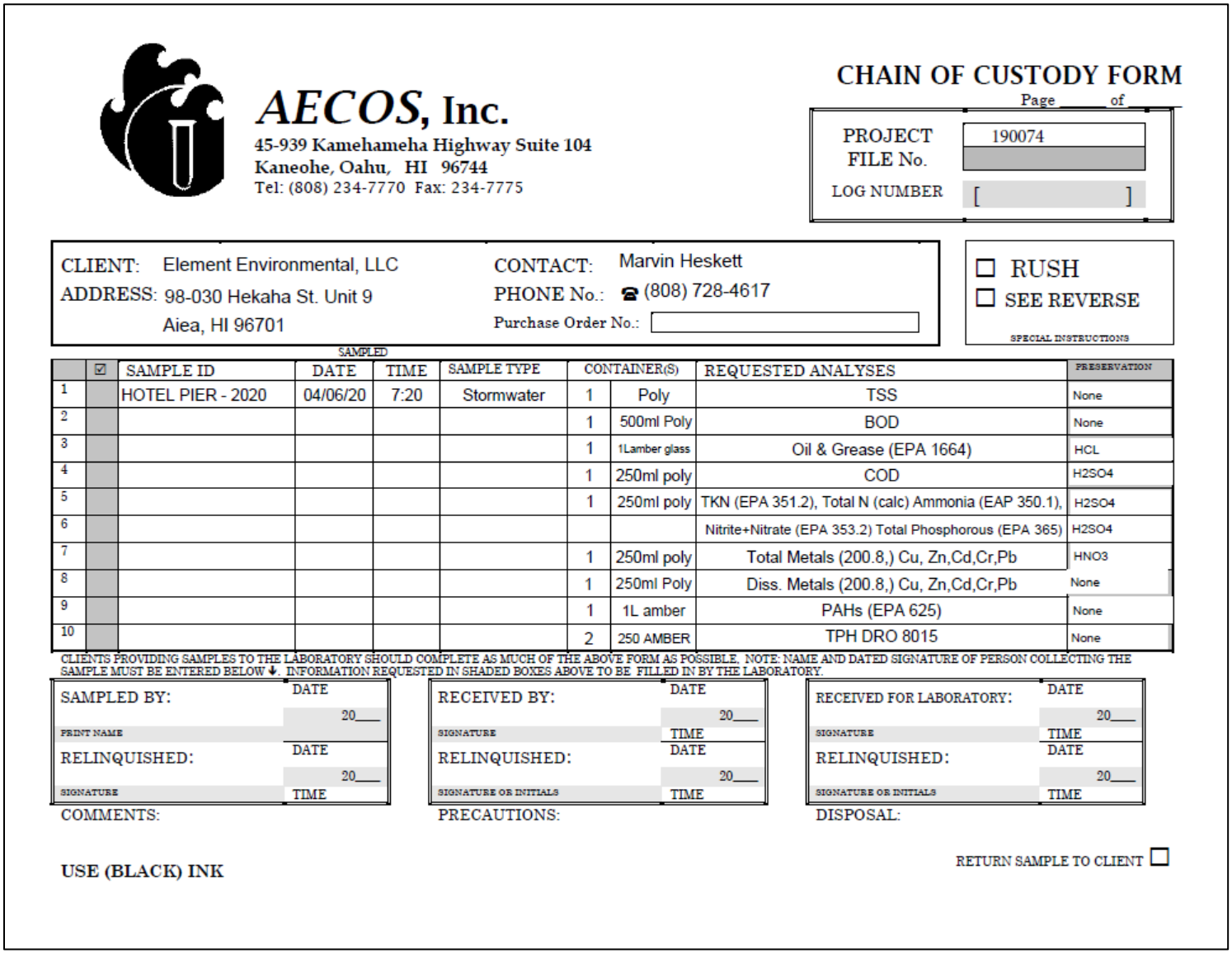
12.8.3.4 Completeness

All reported analyses will be evaluated against the requested analyses to assess the completeness of the analytical characterization of the water samples. Any missing data will be accounted for by the laboratory or field programs, with an overall goal of 95 percent completeness.

12.8.4 Data Reduction, Validation, and Reporting

Overall data quality will be assessed by laboratory personnel responsible for QA/QC based on sampling and analytical conditions, adherence to internal QC procedures, and results of accuracy and precision checks. Actual detection limits will be reported in the final analytical report summary along with the results of the external QA samples, field duplicates, laboratory duplicates, matrix spike duplicates, and equipment and reagent blanks. Corrective action will be identified if necessary.

Figure 12-1 Sample Chain of Custody Form



AECOS, Inc.
45-939 Kamehameha Highway Suite 104
Kaneohe, Oahu, HI 96744
Tel: (808) 234-7770 Fax: 234-7775

CHAIN OF CUSTODY FORM
Page ____ of ____

PROJECT FILE No.: 190074
LOG NUMBER: [ ]

CLIENT: Element Environmental, LLC
ADDRESS: 98-030 Hekaha St. Unit 9, Aiea, HI 96701
CONTACT: Marvin Heskett
PHONE No.: ☎ (808) 728-4617
Purchase Order No.:

☐ RUSH
☐ SEE REVERSE
SPECIAL INSTRUCTIONS

	☑ SAMPLED	SAMPLE ID	DATE	TIME	SAMPLE TYPE	CONTAINER(S)		REQUESTED ANALYSES	PRESERVATION
1		HOTEL PIER - 2020	04/06/20	7:20	Stormwater	1	Poly	TSS	None
2						1	500ml Poly	BOD	None
3						1	1Lamber glass	Oil & Grease (EPA 1664)	HCL
4						1	250ml poly	COD	H2SO4
5						1	250ml poly	TKN (EPA 351.2), Total N (calc) Ammonia (EAP 350.1),	H2SO4
6								Nitrite+Nitrate (EPA 353.2) Total Phosphorous (EPA 365)	H2SO4
7						1	250ml poly	Total Metals (200.8,) Cu, Zn,Cd,Cr,Pb	HNO3
8						1	250ml Poly	Diss. Metals (200.8,) Cu, Zn,Cd,Cr,Pb	None
9						1	1L amber	PAHs (EPA 625)	None
10						2	250 AMBER	TPH DRO 8015	None

CLIENTS PROVIDING SAMPLES TO THE LABORATORY SHOULD COMPLETE AS MUCH OF THE ABOVE FORM AS POSSIBLE. NOTE: NAME AND DATED SIGNATURE OF PERSON COLLECTING THE SAMPLE MUST BE ENTERED BELOW ↓. INFORMATION REQUESTED IN SHADED BOXES ABOVE TO BE FILLED IN BY THE LABORATORY.

SAMPLED BY:	DATE 20___	RECEIVED BY:	DATE 20___	RECEIVED FOR LABORATORY:	DATE 20___
PRINT NAME		SIGNATURE	TIME	SIGNATURE	TIME
RELINQUISHED:	DATE 20___	RELINQUISHED:	DATE 20___	RELINQUISHED:	DATE 20___
SIGNATURE	TIME	SIGNATURE OR INITIALS	TIME	SIGNATURE OR INITIALS	TIME

COMMENTS:
PRECAUTIONS:
DISPOSAL:

USE (BLACK) INK

RETURN SAMPLE TO CLIENT ☐

This page left intentionally blank.

12.8.5 Reporting Requirements

An Annual Report, which will include a Monitoring Report, shall be submitted to DOH by January 31st of each year of the permit. Monitoring reporting will be completed in accordance with the Permit. Storm water monitoring results shall be submitted on a DOH discharge monitoring report. Monitoring results exceeding the effluent limitations shall be reported to the Director of DOH CWB as soon as the results become available, but in no case later than 30 days after the samples were taken.

12.9 Analytical requirements, map and sampling information by monitoring location

Appendix 12-1 provides detailed information for field personnel to identify the appropriate analysis to perform for each sample location, identify sampling locations in relationship to permitted facilities with map oriented photos of each location and relevant information to successfully sample each location. Individual site descriptions are provided and justification is presented for sites listed on the permit that are no longer viable.

APPENDIX 1-1

Final Permit and Rationale
Navy Region Hawaii Permit No. HI S000257
Effective Date of Permit: March 23, 2015

[Redacted due to national security concerns]

APPENDIX 1-2

JBPHH Subarea Maps

[Redacted due to national security concerns]

APPENDIX 1-3

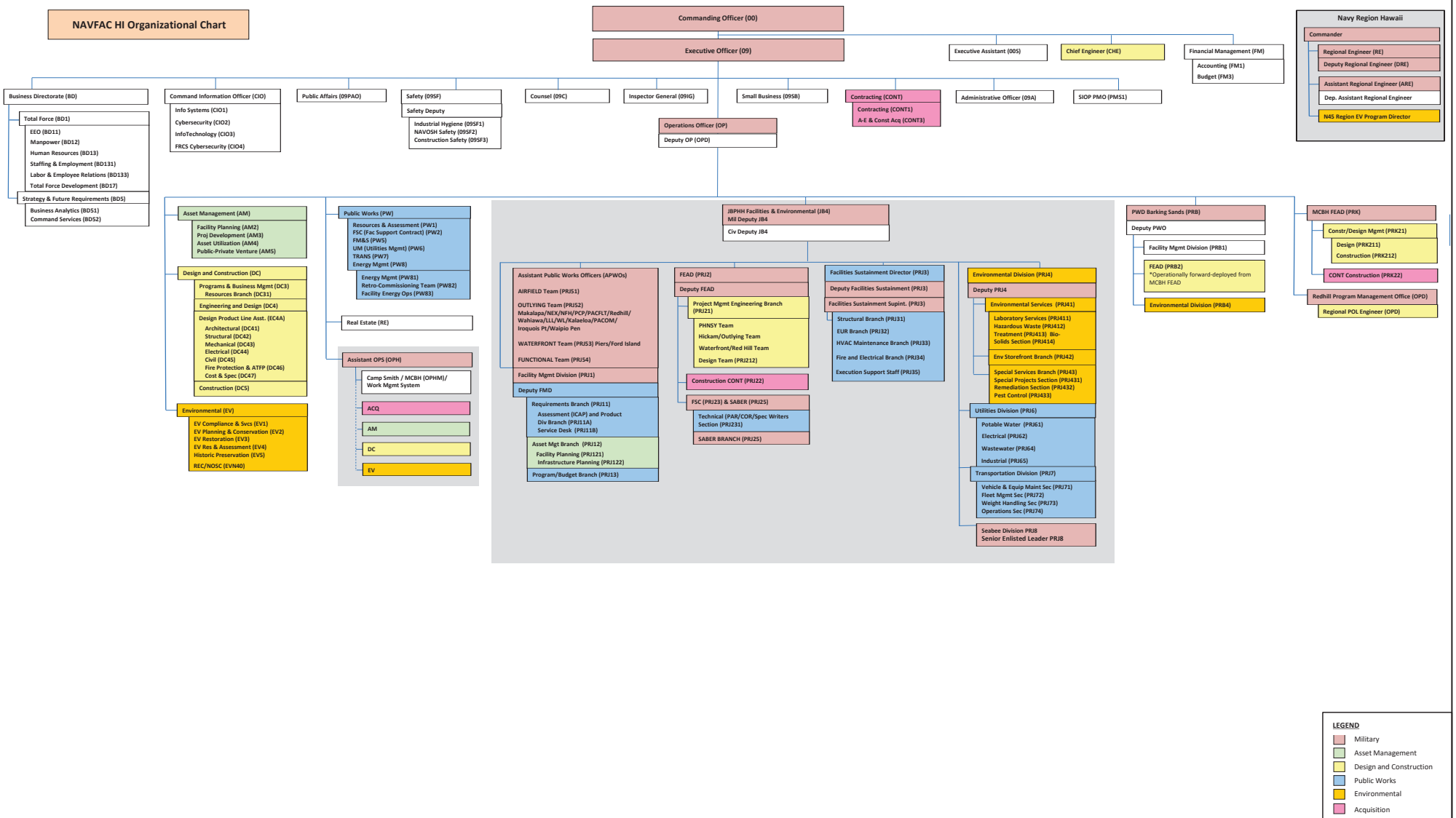
NAVFAC Hawaii Organizational Chart

NAVFAC Hawaii Organization

- Commanding Officer (00/RE)
  - Executive Officer (09/DRE)
    - Business Director (BD)
    - Cmd Info Office (CIO)
    - Public Affairs (09PAO)
    - Safety (09SF)
    - Counsel (09C)
    - Command IG (09IG)
    - Small Bus (09SB)
    - Contracts (CON)
    - Operations Officer (OP) Deputy Ops. Officer (DOPS)
      - AOPS Projects (IPT)
      - Red Hill Program Management Office (OPD)
      - Asset Management Business Line (AM)
      - Design & Construction Business Line (DC)
      - Public Works Business Line (PW)
      - Real Estate Business Line (RE)
      - Environmental Business Line (EV)
      - PWD Joint Base Pearl Harbor-Hickam (PRJ)
        - APWO Division (PRJ1)
        - FEAD Division (PRJ2)
        - Facilities Sustainment (FS) Division (PRJ3)
        - Environmental (EV) Division (PRJ4)
        - Utilities (UT) Division (PRJ6)
        - Transportation (TR) Division (PRJ7)
      - PWD Barking Sands (PRB)
      - FEAD Marine Corps Base Hawaii (PRK)
  - Chief Eng (CHE) CIBLL
  - Financial Management (FM)

Legend: Business Line | Support Line | Operations/Execution

NAVFAC HI Organizational Chart



LEGEND

- Military
- Asset Management
- Design and Construction
- Public Works
- Environmental
- Acquisition

For Official Use Only

NAVFAC Hawaii
Front Office

NAVFAC HAWAII
ORGANIZATIONAL CHART

APPENDIX 2-1

A Guide to Understanding Stormwater Brochure

Good Housekeeping at Work

Practice good housekeeping and follow best management practices that are appropriate for your work area, aboard ship and ashore.

- Regularly sweep and mop, especially before wash downs.
- Keep chemicals, paints, fuel and oils properly contained and away from drain inlets.
- Keep dumpster lids closed when not in use to keep rainwater out and trash in.
- Install barriers to prevent soil runoff at construction sites.

Navy Pollution Prevention Partners

The Federal Clean Water Act and Hawaii laws establish environmental programs to protect the Nation's waters. JBPHH, PMRF, and Naval Facilities Engineering Systems Command Hawaii (NAVFAC Hawaii) Environmental Depart-ments oversee the Navy's Storm Water Pollution Prevention Program.

Everyone working together ensures that future generations can continue to enjoy Hawaii's life-sustaining waters.

- Share your knowledge about reducing or preventing storm water pollution with others.
- Remember that discharging pollutants to the storm drain system is **against the law**.

"Only Rain in the Drain!"

Important Contact Numbers

To report a questionable discharge into a Navy storm drain or nearby waters, please take the following action:

- Residents of JBPHH Family Housing – contact your area housing manager.
- All other base personnel – contact:

(1) JBPHH Installation Environmental Compliance Office, (808) 449-3184

or

(2) PMRF Installation Environmental Compliance Office, (808) 335-4064

or

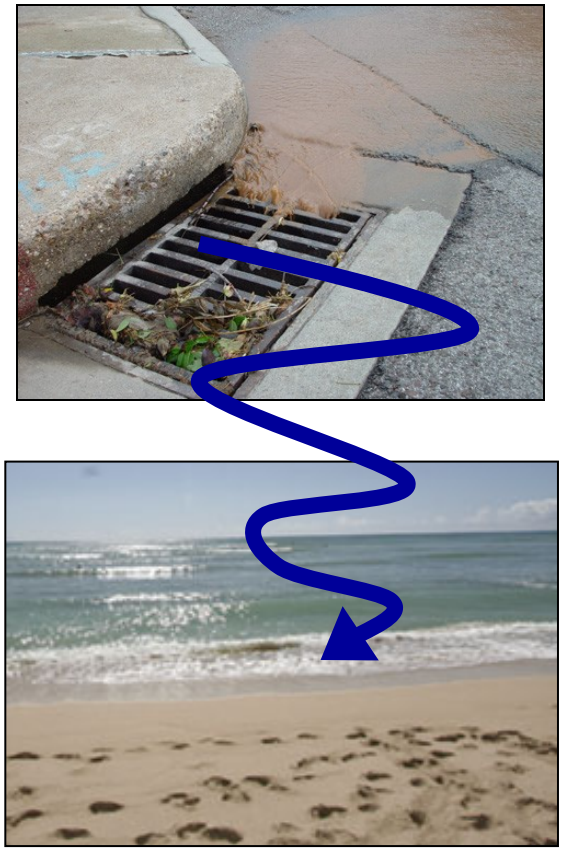
(3) Navy Region Hawaii Storm Water Program NAVFAC Hawaii, (808) 471-4814

For additional information, visit Navy Region Hawaii's Storm Water web page at *www.cnic.navy.mil/storm_water* .

Created by NAVFAC Hawaii Environmental
December 2021

A Guide to Understanding Storm Water

Protecting Our Valuable Water Resources



What is storm water?

When it rains, the water either soaks directly into the soil, flows over the land, or evaporates. **Storm water** is the rain runoff that flows over the ground surface, into storm drains, or directly into streams and rivers, which lead to Hawaii's beaches and ocean. *This water is not treated and is directly discharged into the waters that you swim, fish, and surf in.*

Why are we concerned about storm water?

As storm water flows over the ground, it can pick up pollutants and carry them directly to the beach, ocean, stream or river. **Polluted storm water** can harm or kill marine animals and other wildlife.

Here are examples of some pollutants and their effects:

- **Sediment** can cloud water and prevent organisms from finding (foraging) or making (photosynthesis) food.
- **Trash**, like plastic bags, bottles, cigarette butts and six-pack rings, can suffocate and/or dismember fish, turtles, and birds.

- **Fertilizers**, which are full of nutrients (plant food), can cause a rapid overgrowth, then decay, of algae in aquatic environments. Oxygen-dependent bacteria feed on the dying algae and in doing so, deplete the water of oxygen. This causes fish, and other vital organisms in the ecosystem, to die.
- **Bacteria and parasites** from wastes can wash into swimming and fishing areas, creating health hazards to humans that result in beach closures. These organisms may also lead to diseases that can cause marine and coastal mammals to die.
- **Household hazardous materials** such as herbicides, pesticides, fertilizers, paint, solvents, used motor oil and auto fluids can poison aquatic life.

What can we do to reduce storm water pollution?

The only way to reduce storm water pollution is with everyone's help. By changing small, individual activities, we can prevent large-scale pollution.

Yard Maintenance

- Keep sidewalks, curbs and gutters clean and properly dispose of any debris.
- Don't over-water your lawn and use pesticides and fertilizers sparingly. When necessary, use all chemicals in recommended amounts. Avoid application if the forecast calls for rain.
- Gather grass and tree cuttings and dispose as green waste. Don't sweep or wash cuttings, or any other debris from your yard, into the gutter and down the storm drain.

Auto Care

- Vehicle washing is not allowed on Navy Region Hawaii property (Joint Base Pearl Harbor-Hickam [JBPHH] and Pacific Missile Range Facility [PMRF]) unless it is at a housing residential area or at a designated washing facility.
- Residents, if you must wash your car with detergents, sparingly use environmentally friendly detergents that are phosphate-free and biodegradable, or go to a commercial car wash that treats or recycles its wastewater.
- Don't pour motor oil on the ground or down the storm drain. Purchase an oil change box available at retail outlets that sell motor oil.

Pet Waste

- Pick up and dispose of all pet waste which can contain nutrients and harmful bacteria and/or parasites.

Household Waste

- Reduce your use of hazardous household cleaning products and replace with environmentally-safe products.
- Never empty unused household products down the drain, toilet, or into the gutter. Visit *www.opala.org* for more information about the disposal of common household items.

APPENDIX 1-3

Stormwater Pollution Prevention for Industrial Facilities on JBPHH Brochure

STORMWATER POLLUTION PREVENTION FOR **INDUSTRIAL FACILITIES** *ON JOINT BASE PEARL HARBOR-*HICKAM

November 2021

STORMWATER

Semi-Annual Inspections for Stormwater. This brochure explains why your industrial facility is required to be inspected semi-annually by Joint Base Pearl Harbor-Hickam (JBPHH) Environmental or NAVFAC Hawaii Environmental (EV) staff and what must be done to comply. These semi-annual inspections are required by the State of Hawaii, Department of Health (HDOH) National Pollutant Discharge Elimination System (NPDES) Permit HI S000257.

What is stormwater runoff?
Stormwater runoff occurs when water from rainfall flows over the ground.

How can stormwater become a problem?
Stormwater can pick up debris, chemicals, dirt and other pollutants which travel into a storm drain system or directly to a stream, river, wetland or ocean. Anything that enters a storm drain system is discharged untreated into the water bodies we use for swimming and fishing. Common pollutants include:

Sediment can cloud the water and make it difficult for aquatic plants to grow.

Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low oxygen levels.

Bacteria and other pathogens can wash into swimming areas and create health hazards. Land animals and people can become sick from eating diseased fish/shellfish or ingesting polluted water.

Debris like plastic bags, six-pack rings, bottles, and cigarette butts washed into water bodies can choke, suffocate or disable aquatic life like ducks, fish, turtles, and birds.

Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil and other automotive fluids can poison aquatic life.

What is an illicit discharge?
An *illicit discharge* is any spill into the storm drain system that isn't entirely made of rain water and isn't considered an allowable non-stormwater discharge.

What is the solution to the problem?
The key to stormwater pollution prevention is to control the sources of pollutants and eliminate pollutants from coming into contact with stormwater. Below is a list of general Best Management Practices (BMPs) that everyone needs to implement at their work place. There are also required site-specific BMPs that apply to industrial type activities/operations.

a. Conduct periodic inspections and promote good housekeeping practices such as frequent cleaning, sweeping and vacuuming to remove debris, litter and other contaminants. Keep areas neat and clean. Do not wash contaminants into the stormwater drainage system.

b. Prevent the release/spills of hazardous substances such as oil, paint, solvents and chemicals onto the ground or into the storm drainage system. If trained to do so, clean up the spill.

c. Ensure that all spills over 25 gallons are reported to the Federal Fire Department Dispatcher at (808) 471-7117.

d. Properly store and label hazardous substances/material/waste in a contained and covered area to minimize exposure to rainfall and stormwater runoff.

e. Properly manage used oil, paints, and hazardous wastes in accordance with the Navy Region Hawaii (NRH) Hazardous Waste Management Plan, Federal, State, and local regulations. Disposing of hazardous material/waste into the stormwater drainage system or receiving waters is strictly prohibited.

f. For operations that generate debris like sanding or cutting, provide containment (place plastic tarps on ground and around operations) to collect debris or if possible, conduct activity indoors.

g. Properly maintain all vehicles, equipment, and storage units exposed to rainfall and stormwater runoff. Place drip pans under leaking vehicles and equipment to contain any leaking fluid (oil, grease, gasoline, antifreeze, brake fluids, etc.) and repair the vehicle or equipment as soon as possible.

h. Conduct fueling of vehicles and portable equipment on impervious surfaces. Keep spill kits near the location of fueling operations.

i. Vehicle and equipment washing is not allowed on JBPHH, under NRH's NPDES permit unless in a designated vehicle wash rack. Personal vehicle washing is

allowed for residents in housing areas. Fundraising car washes are required to use BMPs and obtain proper approval.

j. Prevent runoff of excess pesticides, fertilizers, and herbicides by using them per the manufacturer's instructions. Avoid application near storm drains or if the weather forecast calls for rain.

k. Control soil erosion by planting ground cover.

LEGAL ISSUES/PERMITTING

What law governs stormwater pollution?

- The NPDES Program regulates all discharges into waters of the United States under the Clean Water Act.
- The NPDES program requires all discharges into waters of the United States to be permitted and comply with receiving water quality standards to protect, maintain, and improve the water quality of our oceans.
- The HDOH has been delegated by the U.S. Environmental Protection Agency to enforce stormwater laws in Hawaii.
- JBPHH is covered under NPDES permit HI S000257 with the HDOH.

Why do we need to comply?
Stormwater Pollution Prevention is required by Federal, State and local laws and regulations. Civil and criminal penalties may be imposed on NRH for the discharge of pollutants into receiving waters and violations of permit conditions.

How do we comply with the permit conditions?
Implement appropriate BMPs at your facility to reduce the amount of pollutants discharging to the ocean or other water bodies.

What is an Allowable Non-Stormwater Discharge?
A non-stormwater discharge is any water that does not come from rainfall. There are allowable non-storm discharges authorized by the permit. For information and requirements regarding the allowable non-stormwater discharges call or email the NAVFAC Hawaii Environmental contact.

What are some of the permit conditions that need to be reported to the NRH POC?
The permit requires NRH to report the following:

a. Report any spills or illicit discharges into the storm drain system that did not come from rainfall.
b. Report any illicit connection to the stormwater system (e.g., floor drains and sinks that should not be connected to the storm drain system).
c. Report should be made to the respective Environmental compliance personnel as soon as possible.

What information do I need to include in my notification?
At a minimum, the following information needs to be included in the notification:

a. Name, activity, and code (if applicable)
b. Phone number
c. Building/facility number or location
d. Date and time of the spill
e. Description of the reportable spill and estimated volume
f. Extent of the spill (Did spill enter the storm drainage system or nearby waterbodies?)
g. Containment or cleanup measures implemented

STORMWATER POLLUTION CONTROL PLAN (SWPCP)

Facility-specific BMPs were developed in a Stormwater Pollution Control Plan for each permitted industrial facilities on base. A copy of the SWPCP is required to be kept at the industrial facility or nearest field office and the plan must be fully implemented. The SWPCP includes a place to document chemical spills and their containment or clean up. Spills are reported by NAVFAC EV to HDOH annually.

Stormwater Monitoring
The mandatory stormwater monitoring at JBPHH requires the collection of stormwater samples which are submitted to the HDOH. Please do not remove any stormwater monitoring equipment near storm drains. If there are operational concerns, call or email the NAVFAC Hawaii Environmental contact.

RESPONSIBILITIES

What do I need to do at my work place?
The following are key responsibilities that all personnel must comply with:

a. Prevent stormwater pollution by controlling sources of pollutants and eliminate/prevent pollutants from coming into contact with stormwater.
b. Implement general BMPs to prevent/ minimize stormwater pollution.
c. As applicable, maintain and implement the Site-Specific SWPCP for the industrial facility.
d. Provide appropriate notifications as required by the permit conditions to the Stormwater Program Manager or the Environmental Compliance Office.

Contact Information:

Joint Base Pearl Harbor-Hickam
Environmental Compliance Office
Phone Number: 449-3184

NAVFAC Hawaii Environmental
Stormwater Program Manager
Phone Number: 471-4814

APPENDIX 3-1

BMPs for Allowable Non-storm Water Discharge

NOTE: In the event that any of the listed discharges is observed or expected to be significant sources of pollutants to the MS4, the discharge will no longer be allowed.

BMPs FOR ALLOWABLE NON-STORM DISCHARGE

Allowable Discharge	BMP Water Description
Water line flushing Steamline condensate and flushing	If applicable, clean pavement surfaces of dust, debris, or other pollutants and remove any oil sheen or slick prior to discharge to the paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge
Irrigation, excluding runoff from commercial agriculture	Reduce watering demand by watering during the cool part of the day. Control rate of flow to prevent excessive runoff. Follow manufacturer's application instructions to prevent excessive herbicide and/or pesticide use.
Diverted stream flows	BMPs not applicable
Rising ground waters	BMPs not applicable
Uncontaminated ground water infiltration (as defined in 40 CFR §35.2005(20))	If applicable, clean pavement surfaces of dust, debris, or other pollutants, and remove any oil sheen or slick prior to discharge to paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge.
Uncontaminated pumped ground water, foundation and footing drains, not including construction related dewatering activities	If applicable, clean pavement surfaces of dust, debris, or other pollutants, and remove any oil sheen or slick prior to discharge to paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. . If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge.

NOTE: In the event that any of the listed discharges is observed or expected to be significant sources of pollutants to the MS4, the discharge will no longer be allowed.

BMPs FOR ALLOWABLE NON-STORM DISCHARGE

Allowable Discharge	BMP Water Description
Discharges from potable water sources *(including but not limited to waterline flushing, emergency eye wash basins and showers, drinking fountains, and foundation drains)*	Emergency Eye Wash and Shower and Drinking Fountains: Quantity of discharge will be very small. Pollution potential negligible for NRH. Other potable water discharges (e.g., waterline flushing, foundation drains): If applicable, clean pavement surfaces of dust, debris, or other pollutants prior to discharge to the paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge.
Condensate – air conditioning, ice machines, and air compressors	Quantity of discharge will be very small. Pollution potential negligible for NRH
Springs	BMPs not applicable
Water from crawl space pumps and footing drains *(including discharge from buildings with basements, and crawl space pumps used by utility companies to dewater utility manholes and other maintenance and operations substructure facilities)*	If applicable, clean pavement surfaces of dust, debris, or other pollutants, and remove any oil sheen or slick prior to discharge to paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge.
Water from individual residential car washing	Wash cars at designated wash areas. Minimize detergent use and do not wash engine components. Pavement surfaces where cars are being washed shall be cleaned by sweeping and removing debris and other pollutants prior to the car wash activity.

NOTE: In the event that any of the listed discharges is observed or expected to be significant sources of pollutants to the MS4, the discharge will no longer be allowed.

BMPs FOR ALLOWABLE NON-STORM DISCHARGE

Allowable Discharge	BMP Water Description
Water from charity car washes	Wash cars at designated wash areas. Minimize detergent use and do not wash engine components. Pavement surfaces where cars are being washed shall be cleaned by sweeping and removing debris and other pollutants prior to the car wash activity. For charity car washes, BMPs have been developed and will be implemented during these events.
Flows from riparian habitats and wetlands	BMPs not applicable
Dechlorinated swimming pool discharges	Dechlorinate water prior to discharge, and coordinate discharge with NAVFAC HI EV. If applicable, clean pavement surfaces of dust, debris, or other pollutants prior to discharge to paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge
Residual street wash water (water only), including wash water from sidewalks, plazas, and driveways, but excluding parking lots	Clean surfaces by sweeping and remove debris and other pollutants prior to washdown. Use only water.
Discharges or flows from firefighting activities and training *(note: fire hydrant testing and fire sprinkler testing may be discharged if source is potable water)*	BMPs not applicable for emergency situations, but should be implemented to the extent practical. For training and testing activities, clean pavement surfaces of dust, debris, or other pollutants prior to discharge to the paved surface, street gutter, or drainage ditch, if applicable. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge.

NOTE: In the event that any of the listed discharges is observed or expected to be significant sources of pollutants to the MS4, the discharge will no longer be allowed.

BMPs FOR ALLOWABLE NON-STORM DISCHARGE

Allowable Discharge	BMP Water Description
Boat Rinsing	The intent of the rinsing activity is salt removal. Rinsing must be limited to water only. No soaps, detergents, chemicals, or high pressure washing are allowed. Engine maintenance/degreasing activities must be conducted at designated locations with appropriate controls and cannot be discharged directly to the storm drain system or the ground. Bilge water cannot be discharged to the storm drain system or the ground.
Dive Gear Rinsing	The intent of the rinsing activity is salt removal. Rinsing must be limited to water only. No soaps, detergents, or chemicals are allowed.
Parachute Rinsing and Drying	The intent of the rinsing activity is salt removal. Rinsing must be limited to water only. No soaps, detergents, or chemicals are allowed.
Aircraft Rinsing	The intent of the rinsing activity is salt removal. Rinsing must be limited to water only. No soaps, detergents, chemicals, or high-pressure washing are allowed. Engine maintenance/degreasing activities must be conducted at designated locations with appropriate controls and cannot be discharged directly to the storm drain system or the ground.
Water from building exterior rinsing	The intent of the rinsing is removal of atmospheric deposits. Rinsing must to limited to water only. No soaps, detergents, chemicals, or high-pressure washing are allowed.
Unpolluted saltwater from saltwater distribution lines	No additives shall be added or present in the saltwater. If applicable, clean pavement surfaces of dust, debris, or other pollutants and remove any oil sheen or slick prior to discharge to the paved surface, street gutter, or drainage ditch. If possible, discharge to vegetated, pervious areas that do not have high erosion potential. If there is potential for sediment/debris to get into water before it reaches drain inlet, install drainage inlet protection (e.g., sandbags, silt fences, filter socks, filter fabric, etc.) prior to discharge.

APPENDIX 3-2

BMPs for Disposal of Waste Materials and Contaminated Water

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
General Construction and Painting; Street and Utility Maintenance	
Excess paint (oil-based)	1. Recycle/reuse. 2. Dispose waste in accordance with Federal, State, and Local regulations.
Excess paint (water-based)	1. Recycle/reuse 2. Dry residue of less than one inch of substance in cans and dispose as trash. 3. Dispose waste in accordance with Federal, State, and Local regulations.
Paint cleanup (oil-based)	Wipe paint out of brushes, then: 1. Filter and reuse thinner and solvents. 2. Dispose of waste in accordance with Federal, State, and Local regulations.
Paint cleanup (water-based)	Wipe paint out of brushes, then: 1. Rinse to sanitary sewer.
Empty paint cans (dry)	1. Remove lids, dispose lid and can as trash.
Paint stripping (with solvent)	1. Dispose waste in accordance with Federal, State, and Local regulations.
Cleaning of building exteriors which have hazardous material (e.g., mercury, lead) in paints	1. Use dry cleaning methods. 2. Contain and dispose waste in accordance with Federal, State, and Local regulations. (Suggestion: dry material first to reduce volume.)
Non-hazardous paint scraping or sandblasting	1. Dry sweep and dispose as trash.

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
Hazardous paint scraping or sandblasting (e.g., marine paints or paints containing lead or tributyltin tin)	1. Dry sweep and dispose waste in accordance with Federal, State, and Local regulations.
Soil from excavations during periods when storms are forecast	1. Should not be placed in street or on paved areas. 2. Remove from site or backfill by end of day. 3. Cover with tarpaulin, surround with runoff controls. 4. Place filter mat over storm water system. Note: Thoroughly sweep following removal of dirt in all four alternatives.
Soil from excavations placed on paved surfaces during periods when storms are not forecast	1. Keep material out of storm water systems and thoroughly remove via sweeping following removal of soil.
Cleaning streets in construction areas	1. Dry sweep and minimize tracking of mud. 2. Percolate water onsite to prevent runoff and discharge.
Soil erosion, sediments	1. Cover disturbed soils, use erosion controls, and block entry to storm water system. 2. Seed or plant immediately.
Fresh cement, grout, mortar	1. Use/reuse excess. 2. Dispose to trash.
Wash water from concrete and mortar cleanup	1. Return to yard or wash into lined container or pit. 2. Pump and remove to appropriate disposal facility or allow to evaporate.
Aggregate wash from construction	1. Return to yard or wash into lined container or pit. 2. Pump and remove to appropriate disposal facility or allow to evaporate.

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
Rinse water from concrete mixing trucks	1. Return to yard or wash into lined container or pit. 2. Pump and remove to appropriate disposal facility or allow to evaporate.
Non-hazardous construction and demolition debris	1. Recycle/reuse (concrete, wood, etc.). 2. Dispose as trash.
Hazardous demolition and construction debris (e.g., asbestos)	1. Dispose material with shipping document into a regulated landfill.
Saw-cut slurry	1. Use dry cutting technique and sweep up residue. 2. Vacuum slurry and dispose off-site. 3. Block storm water system or berm with low weir as necessary to allow most solids to settle. Shovel out gutters; dispose residue to earthen area, construction yard or landfill.
Portable toilet waste	1. Dispose to sanitary sewer specified by State.
Leakage from garbage dumpsters	1. Collect or contain leaking material. Eliminate leak, keep covered; return to leasing company for immediate repair. 2. If dumpster is used for liquid waste, use plastic liner.
Leaks from construction debris bins	1. Ensure that bins are used for dry non-hazardous materials only. (Suggestion: Fencing and covering help prevent misuse.)
Dumpster cleaning water	1. Clean at dumpster owner's facility and discharge waste through grease interceptor to sanitary sewer system. 2. Clean on-site and discharge through grease interceptor to sanitary sewer system, with approval of the pre-treatment program.

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
Cleaning paved areas (except parking lots)	1. Sweep and dispose as trash (dry cleaning only). 2. For vehicle leaks, follow this 3-step process: a. Clean up leaks with rags or absorbents. b. Sweep using granular absorbent material (cat litter). c. Mop and dispose of mop water to sanitary sewer system (or collect rinse water and pump to the sanitary sewer system). 3. Same as 2 above, except for 2c. Instead of mopping, rinse with water (no soap) and discharge to soil or grassy area. Rinse water from parking lots cannot be discharged to soil/grassy areas.
Landscape/Garden Maintenance	
Pesticides	1. Use up. Rinse containers; use rinse water as product. Dispose rinsed containers as trash. 2. Dispose waste in accordance with Federal, State, and Local regulations.
Garden clippings	1. Compost. 2. Take to green waste facility.
Tree trimming	1. Chip, if necessary, before composting or recycling.
Decorative fountains and ponds (no fish)	1. Do not use metal-based algaecides (i.e., copper sulfate). 2. Recycle/reuse (e.g., irrigation). 3. Discharge to sanitary sewer system. 4. Discharge to storm drain system only if separate NPDES permit is obtained.
Acid or other pool/fountain cleaning	1. Neutralize and discharge to sanitary sewer with approval of the pre-treatment program.

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
Swimming pool and decorative fountain filter backwash (Dechlorinated water only)	1. Reuse for irrigation. 2. Dispose on pervious areas. 3. Settle, dispose to sanitary sewer system, with approval of the pre-treatment program.
Vehicle Wastes	
Used motor oil	1. Use secondary containment while storing. Dispose waste in accordance with Federal, State, and Local regulations.
Antifreeze	1. Use secondary containment while storing. Dispose waste in accordance with Federal, State, and Local regulations.
Other vehicle fluids and solvents	1. Dispose waste in accordance with Federal, State, and Local regulations.
Automobile batteries	1. Send to auto battery recycler. 2. Take to recycling center. 3. Store in appropriate storage containers or on containment pallets. Dispose in accordance with Federal, State and Local regulations.
Construction trailer waste	1. Use holding tank. Dispose to sanitary sewer system.
Vehicle and boat washings (using detergent or other compounds)	1. Recycle. 2. Discharge to sanitary sewer system, with approval from pre-treatment program; never to storm water system.
Rinse water from dust removal at new fleet vehicles	1. Discharge to sanitary sewer system, with approval from pre-treatment program. 2. If rinsing dust from exterior surfaces for appearance purposes, use no soap (water only); discharge to soil or grassy area.

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
Vehicle leaks at vehicle repair facilities	Follow this 3-step process: 1. Clean up leaks with rags or absorbents. 2. Sweep, using granular absorbent material (cat litter). 3. Mop and dispose of mop water to sanitary sewer.
Other Wastes	
Spent fix from photo processing	1. Collect for hauling as hazardous waste. 2. Treat to silver discharge limit.
Cooling water and demineralized water	1. Recycle/reuse. 2. Discharge to sanitary sewer system, with approval from pre-treatment program. 3. Discharge to storm drain system only if separate NPDES permit is obtained.
Kitchen grease	1. Provide secondary containment, collect, send to recycler. 2. Provide secondary containment, collect, send to treatment/disposal facility by hauler.
Cleaning of kitchen floor mats, exhaust filters, and compressed air line flushing, etc.	1. Clean inside building and route discharge through grease trap to sanitary sewer system, with approval of pre-treatment program. 2. Clean outside in container or lined bermed area and route discharge to sanitary sewer system, with approval of pre-treatment program.

NOTE: Use this table to choose alternative strategies to dispose of potential pollutants. The alternatives are listed in order of priority.

BMPs FOR DISPOSAL OF WASTE MATERIAL AND CONTAMINATED WATER

Discharge/Activity	Disposal Priorities
Cleanup wastewater from sewer backup	1. Follow this procedure: a. Block storm water system, contain, collect, and return spilled material to the sanitary sewer system. b. Block storm water system, rinse remaining material to collection point, and pump to sanitary sewer system. (No rinse water may flow to storm water system.)

"Discharge to sanitary sewer"	Dispose into sink, toilet, or sanitary sewer clean-out connection. Most discharges are subject to approval of the pre-treatment program.
"Dispose as trash"	Dispose in dumpsters or trash containers for pickup or eventual disposal in landfill
"Dispose as hazardous waste"	Contract with a hazardous waste hauler to remove and dispose

APPENDIX 3-3

Final Enforcement Response Plan

Reserved for Future Use - Currently Under Development

APPENDIX 3-4

Wastewater Spill Notification/Response Guidelines

[Redacted due to national security concerns]

APPENDIX 4-1

Initial BMP Site Inspection Checklist

INITIAL BMP SITE INSPECTION CHECKLIST

Site Name: _____ Installation: _____ Location: _____

Date: _____ Permit Number:_____ Inspector: _____

Inspection Criteria	Yes	No	N/A	Comments
Is the inspection occurring before the initiation of ground-disturbing activities?	☐	☐	☐	
Is the SWPPP/ BMP plan complete including all site maps?	☐	☐	☐	
Are BMPs installed in the locations specified in the plan?	☐	☐	☐	
Are all site BMPs and erosion/sediment controls installed correctly?	☐	☐	☐	
Are good housekeeping practices used?	☐	☐	☐	
Is the site in compliance with all Permittee-accepted permits, plans?	☐	☐	☐	
Will other pollutant discharges occur as a result of the project's construction activity?	☐	☐	☐	
Will any part of the site have the potential for erosion and sediment runoff?	☐	☐	☐	

Additional Comments:

APPENDIX 4-2

Storm Water Pollution Prevention Plan Content Review Checklist

Navy Region Hawaii
Storm Water Pollution Prevention Plan Content Review Checklist

Project Name: _____ Location:_____ Date: _____

NPDES Tracking No: _____ Reviewed By:_____ Contractor Name_____

Permit Citation	Are the required SWPPP elements included?	Yes	No	N/A	Comments/ Notes
	Project Activity and Description				
7.2.1	SWPPP identifies a "storm water team" including personnel name and individual responsibilities				
7.2.2	Defines the nature of construction activities, total site area (in acres) that is expected to be disturbed by construction activities (including any off-site areas)				
	Indicates the maximum area expected to be disturbed at one time				
7.2.3	If applicable, an explanation is given if the project is in response to a public emergency or natural disaster				
7.2.4	Provides the name of all contractors and indicates the areas of the project each contractor controls				
	Project Scheduling				
7.2.5	Contains a sequence of scheduled construction activities and approximate start and end dates				
7.2.5.1	Includes a schedule of the approximate dates storm water control measures will be installed and made operational				
7.2.5.2	Maintains a schedule of the initiation and duration of earth-disturbing activities including when grading, excavating and filling activities will occur				
7.2.5.3	If applicable, the work schedule indicates when construction activity will be temporarily or permanently ceased				
7.2.5.4 & 5.2.1	The dates of temporary and final site stabilization are included, including when ground disturbance will occur, which is consistent to stabilizing soil immediately after earth-disturbing activities have ceased on all portions of the site				

7.2.5.5	The schedule includes approximate dates of when temporary storm water control measures, construction equipment, and vehicles will be removed from the project site				
	The schedule outlines the estimated start and end dates of pollutant-generating activities				
	Site Maps and Work Boundaries				
7.2.6	Contains a legible site map showing property boundaries and locations where construction activities will occur				
7.2.6.1.	Map includes approximate slopes before and after grading and drainage patterns with flow patterns				
7.2.6.1.c & 7.2.6.1.d	Map includes locations where sediment, soil and other materials will be stockpiled, including contaminated spoils				
7.2.6.1.e & 7.2.6.1.f	Crossings of any state waters and vehicle exit points (to paved roads) are included				
7.2.6.1.g	All impervious surfaces are identified including built structures (upon completion of construction)				
7.2.6.1.h	Construction support area locations are included				
7.2.6.2	Site maps include locations of all state waters and listed impaired water bodies within or in the immediate vicinity of the project site				
7.2.6.3	If state waters are identified within 50 feet of earth disturbances, the map provides boundary lines of natural buffers (50-foot undisturbed) or buffers with double sediment control				
7.2.6.4	Map includes topography of the site, existing vegetation cover and drainage patterns of storm water onto, over and from the site property before and after major grading activities				
	Storm Water Discharge Locations				
7.2.6.5	Storm drain inlets have been located on and near the immediate vicinity of the sites that receive project storm water discharge				
7.2.6.7& 7.2.6.8	Includes the locations of storm water control measures and the locations where chemicals will be used and stored				
	Construction Site Pollutants				
7.2.7.a	A list and description of all pollutant-generating activities are included				

7.2.7.b	Inventory of pollutants or pollutant constituents for each pollutant-generating activity that could be discharged from the construction site are listed				
7.2.8	All sources of non-storm water are identified, including control measures to prevent discharges				
7.2.9	If state waters are located within 50 feet of project earth disturbances, natural buffers and additional sediment control measures are described				
	Erosion and Sediment Control				
7.2.10.1	All storm water control measures that will be installed and maintained on the project site are described				
7.2.10.1.a	Information is included on the type and design of all storm water control measures to be implemented and maintained				
7.2.10.1.b	Site specific sediment controls will be made operational prior to the initiation of earth disturbing activities				
7.2.10.1.c	If applicable, control measures are enacted to prevent the contact of any contaminated soil to storm water				
7.2.10.1.d	Stabilization techniques are used for vehicle exit points				
7.2.10.1.e	If applicable, linear project's BMPs are documented to the extent practicable				
7.2.10.2	Specific vegetative and/or non-vegetative stabilization measures are outlined				
	Post Construction and Spill Prevention Management				
7.2.10.3	Post construction BMP measures are described				
7.2.11.1	A spill prevention plan is included with spill response procedures for stopping, containing and cleaning up spills				
7.2.11.1.b	Procedures are defined for notifying appropriate facility personnel in the case of a hazardous substance spill				
7.2.11.2	Measures for handling and disposing of waste (including hazardous, sanitary) generated onsite are outlined				
	Staff Training Documentation and Inspections				
7.2.12	Procedures for maintaining storm water control measures, conducting inspections and taking corrective actions are outlined				

7.2.12.a, 7.2.12.b & 7.2.12.c	Personnel responsible for conducting inspections, an inspection schedule and any implemented inspection forms are included				
7.2.13	Documentation included shows personnel have been trained on their specific responsibilities				
7.2.14	If applicable, documentation of compliance with the Safe Drinking Water Act Underground Injection Control (UIC) is included				
7.2.15	The contactors information is listed (name, position title, address, phone, email)				
7.2.15.2.a	If applicable, the following are included: a copy of the drainage system owner's approval, county-approved grading permit, section 401 water quality certification and a copy of the department of the army permit				
	SWPPP Certifications and Amendments				
7.2.17	The SWPPP has been certified, signed and dated				
7.2.18.a & 7.2.18.b	After the issuance of the NGPC the SWPPP includes a copy of the NOI (with any correspondence with the department) and a copy of the NGPC including attachments				
7.4.1.4.	If applicable, where the department requires additional discharge requirements, a copy of any correspondence is included with a description of additional storm water control measures				
7.4.4	If applicable, modifications made to the SWPPP are certified, signed and dated by the Certifying Person				
	Is a hydrotesting or other non-storm water permit required?				

Additional Comments:
Date Corrections Received by NRH:

NRH, Clean Water Program will not allow construction to commence on any contract or in-house project until a Clean Water Program employee has reviewed the SWPPP to verify that it meets the requirements of HAR, Chapter 11-55, Appendix C and any other requirements under the NPDES permit program.

The SWPPP document has been reviewed according to the above criteria.

_____ _____

Reviewed By (NRH Clean Water Program Signature) Date

APPENDIX 4-3

Construction Oversight Field Inspection Checklist

Construction Oversight Field Inspection Checklist

Inspection Date:		Name and phone # of those present during inspection:	
Time:			

Site Information

Construction site name:	
Permit number:	Location/ watershed:
Inspection: ☐ Announced ☐ Unannounced	Surface waters located within 50 feet of disturbance? ☐ Yes ☐ No
Approximate % of exposed site: _____	Phase (if construction site is multi-phased): Construction completed, restoration in progress

Construction stage: ☐ Preliminary Stage ☐ Mass Grading Stage ☐ Streets and Utilities Stage ☐ Vertical Construction Stage

Completed Activities:

Weather and Discharge Observations

Weather during inspection:
(*complete weather observations below if inspection performed during rain event*)

Date rain predicted to occur:		Predicted % chance of rain:	
Estimate storm beginning: _____ (date and time)	Estimate storm duration: _____ (hours)	Estimate time since last storm: _____ (days or hours)	Rain gauge reading: _____ (inches)

Discharge Observations (if inspection performed during a rain event) Location(s):

Odors	Yes ☐	No ☐	N/A ☐	Floating material	Yes ☐	No ☐	N/A ☐
Suspended Material	Yes ☐	No ☐	N/A ☐	Sheen	Yes ☐	No ☐	N/A ☐
Discolorations	Yes ☐	No ☐	N/A ☐	Turbidity	Yes ☐	No ☐	N/A ☐

BMP Effectiveness

(*add additional sheets or attached detailed BMP Inspection Checklists*)

Outfalls or BMPs Evaluated	Deficiencies/ Comments
EROSION CONTROL (vegetation preservation, etc. see SWPPP)	
SEDIMENT CONTROL – Storm drain inlet protection	
HOUSE KEEPING- General housekeeping , washout facilities, litter, solid waste	
SEDIMENT CONTROL – Tracking control	.
SEDIMENT CONTROL – Perimeter control/silt fence	
NON-STORMWATER – Vehicle & equipment fueling, storage, and maintenance	.
NON-STORMWATER – Other (paving, concrete, water conservation)	
WASTE MANAGEMENT – Material and stockpile	

management	
Photos Taken: Yes ☐ No ☐	Photo Reference IDs:

Site Inspections, Monitoring, and Sampling

Requirement			Comments
SWPPP/ SSCBMP/NGPC Retained Onsite:	Yes ☐	No ☐	
SWPPP/ SSCBMP/ Site maps Current:	Yes ☐	No ☐	
Weekly Inspections Performed:	Yes ☐	No ☐	
Amendment log up to date:	Yes ☐	No ☐	
Inspections conducted within 24 hours of storm event of< 0.25 inches:	Yes ☐	No ☐	
Documented staff training?	Yes ☐	No ☐	

Corrective Actions Identified

Corrective Action:	
Follow-up:	Date correction received: _____ Photo reference: _____ Initials: _____
Corrective Action:	
Follow-up:	Date correction received: _____ Photo reference: _____ Initials: _____
Corrective Action:	
Follow-up:	Date correction received: _____ Photo reference: _____ Initials: _____
Corrective Action:	
Follow-up:	Date correction received: _____ Photo reference: _____ Initials: _____

Inspector Information

Inspector Name:	Inspector Title:
Signature:	Date:

APPENDIX 5-1

LID/EISA Constraints and Waiver Request

LID/EISA Constraints Review and Waiver Request

BACKGROUND – NAVY LID POLICY

In August 2008, Assistant Secretary of the Navy for Installations & Environment (ASN I&E) issued a policy memorandum regarding the use of Low Impact Development (LID) that sets an objective of "no net increase in stormwater runoff volume and sediment or nutrient loading from major renovation and construction projects." This is defined as any increase in stormwater runoff volume, or sediment or nutrient loading from pre- to post-development conditions for the design storm event. Any changes to either quantity or quality of runoff is to be managed on the project site, before the runoff is conveyed to receiving waters, by using one or more of the following methods: interception, infiltration, storage, and/or evapotranspiration. The memorandum was based on the stipulations of the Energy Independence and Security Act (EISA) of 2007.

"No net increase…" is achieved by implementing LID site planning concepts and LID Integrated Management Practices (IMPs) to handle runoff at its source or point of origin. (Note: IMPs are improvements to and/or changes from previously used site solutions and have replaced Best Management Practices, or BMPs, as the preferred methods for stormwater management approach.) LID IMP facilities designed and implemented properly using the criteria as set forth in UFC 3-210-10 (Low Impact Development) will help improve the quality of stormwater runoff, reduce the peak flow rate, and eliminate any net increase in runoff volume reaching the receiving water bodies for the design storm event. Please refer to the UMC for further LID planning and design information.

In meeting the goal of "no net increase…" the site designer shall comply with all local and State regulatory requirements and shall use LID IMPs to control all regulated storm events to handle the peak rate and volume of discharge for flood control purposes.

LID POLICY WAIVER PROCESS

The Navy LID Policy authorized a waiver process to be used "in those infrequent situations where LID is not appropriate given the characteristics of the site…" Any request for waiver must be reviewed by CI Core Technical Discipline Provider for concurrence. This waiver process is required to include the Regional Engineer (FEC Commander) level review for approval.

NOTE: This form is initiated by the *Project Manager* upon the request and advice of the Civil Engineer on the Project Design Team (In-house or A/E).

The *Review Number* is assigned by the Civil Technical Discipline Coordinator, sequentially, based on the FY that the waiver is requested and approved.

For help explanations for most of the blanks, click in that blank and click the F1 key. The help explanation will pop up.

SCAN AND ATTACH A COPY OF THE APPROVED WAIVER ON THE NOTES TAB OF THE ePROJECTS RECORD.

LID/EISA Constraints Review and Waiver Request

[This page has notes written for your convenience, the fillable form has the notes embedded.]

(UNCLASSIFIED)

1. Request Date	1a. Date Needed Date at which construction schedule will be impacted if waiver not appr.	**2. Review Number: HI-20 -LID**001 Issued by TDC, sequentially numbered by FY

3. eProjects Work Order Number(s) _____ Fiscal Year _____ Project Number _____ MILCON P#, Special Project # or SPM#
If request covers projects at contiguous sites, all should be included in this form
Title: _____ as noted on DD1391; if no DD1391, title of the solicitation documents
Installation, City, State: _____
Fund Type: _____ MILCON, O&MN, NWCF, etc.

4. Construction Solicitation or Contract Number(s): N62478-
Task Order Number N/A TO# applicable only for MACC Modification Number(s) N/A if applicable

5. Execution Team: _____ as shown in eProjects record
Project Manager (PM): _____ " " " " " "
Design Manager (DM): _____ " " " " " "
Designer of Record (DOR) A/E Firm & Project Manager (*if applicable*):
_____ For DB this is construction contractor's A/E and there will not be any A/E contract number
A/E Contract # (*if applicable*): _____ T.O. # _____

PM Contact Information
Telephone: ( ) ext. N/A
DSN:
DOR (*provide DM information if DOR is In-House*):
Telephone: ( )

6. Construction Office: _____ as shown in eProjects record
Responsible Person (*Name & Title or Rank*): _____ PM&E, FEAD Director, or ROICC at Marine Corps installations

Contact Information
Telephone: ( ) ext. N/A
DSN:

7. Project Purpose and Description:
Very brief description of what the project is to provide

8. Attachments: ☐ Plans ☐ Stormwater Calculations ☐ Other Supporting Documentation

9. Has LID been used to manage any portion of the pre- to post-development increase in stormwater runoff volume or sediment/nutrient loading for the design storm event ? ☐ Yes ☐ No

10. What is the volume increase (for the design storm event) from pre-construction conditions? __ **%** increase from pre-development amount that is not being mitigated by LID

11. Storm Water Management Features (Planned or Actual, structural and non-structural) that will be implemented by this project: _____ List any features that this project will provide, including any that are off-site

12. Reason(s) that LID goals cannot be achieved for this Project:

- ☐ Technical:
  - ☐ Non-potable water demand (for irrigation, toilets, wash-water, etc.) is too small to warrant water harvesting and reuse systems
  - ☐ Retaining storm water on site would adversely impact receiving water flows
  - ☐ Site has
    - ☐ shallow bedrock
    - ☐ contaminated soils
    - ☐ high groundwater
    - ☐ underground facilities or utilities
  - ☐ Site is too small to infiltrate significant volume
  - ☐ Soil infiltration capacity is limited
- ☐ Economic
- ☐ Other:
  - ☐ State or local requirements restrict the use of green infrastructure/LID
  - ☐ State or local requirements restrict water harvesting
  - ☐ Structural, plumbing, or other modifications to existing buildings to manage storm water are infeasible

LID/EISA Constraints Review and Waiver Request

(UNCLASSIFIED)

1. Request Date	1a. Date Needed	**2. Review Number: HI-20 -LID001**

3. eProjects Work Order Number(s) _____ Fiscal Year _____ Project Number _____
Title: _____
Installation, City, State: _____
Fund Type: _____

4. Construction Solicitation or Contract Number(s): N62478-
Task Order Number N/A Modification Number(s) N/A

5. Execution Team: _____
Project Manager (PM): _____
Design Manager (DM): _____
Designer of Record (DOR) A/E Firm & Project Manager (*if applicable*): _____
A/E Contract # (*if applicable*): _____ T.O. # _____

PM Contact Information
Telephone: ( ) ext. N/A
DSN:
DOR (*provide DM information if DOR is In-House*):
Telephone: ( )

6. Construction Office: _____
Responsible Person (*Name & Title or Rank*): _____

Contact Information
Telephone: ( ) ext. N/A
DSN:

7. Project Purpose and Description:

8. Attachments: ☐ Plans ☐ Stormwater Calculations ☐ Other Supporting Documentation

9. Has LID been used to manage any portion of the pre- to post-development increase in stormwater runoff volume or sediment/nutrient loading for the design storm event ? ☐ Yes ☐ No

10. What is the volume increase (for the design storm event) from pre-construction conditions? __ **%**

11. Storm Water Management Features (Planned or Actual, structural and non-structural) that will be implemented by this project: _____

12. Reason(s) that LID goals cannot be achieved for this Project:

- ☐ Technical:
  - ☐ Non-potable water demand (for irrigation, toilets, wash-water, etc.) is too small to warrant water harvesting and reuse systems
  - ☐ Retaining storm water on site would adversely impact receiving water flows
  - ☐ Site has
    - ☐ shallow bedrock
    - ☐ contaminated soils
    - ☐ high groundwater
    - ☐ underground facilities or utilities
  - ☐ Site is too small to infiltrate significant volume
  - ☐ Soil infiltration capacity is limited
- ☐ Economic
- ☐ Other:
  - ☐ State or local requirements restrict the use of green infrastructure/LID
  - ☐ State or local requirements restrict water harvesting
  - ☐ Structural, plumbing, or other modifications to existing buildings to manage storm water are infeasible

LID/EISA Constraints Review and Waiver Request

(UNCLASSIFIED)

REVIEW CHAIN		Comments
Project Manager (PM) Name: Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
Design Manager (DM) Name: Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
Designer of Record (DOR) Name: If in-house DBB, DOR is DM Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
FEAD/ROICC (if Design Build) Name: Title/Rank: Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
Environmental Program Director (N45), NRH Name: Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
Civil Technical Discipline Coordinator, NAVFAC HI Name: Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
Chief Engineer, NAVFAC HI Name: Date: Signature: _____	☐ Concur ☐ **Do Not Concur**	
Regional Engineer (N4), NRH Name: Date: Signature: _____	☐ APPROVED ☐ **DISAPPROVED**	

APPENDIX 6-1

Final Trash Reduction Plan

PRE-FINAL (REDACTED), PREDECISIONAL FOR DISCUSSION PURPOSES ONLY, DO NOT CITE OR QUOTE

TRASH REDUCTION PLAN

Storm Water Management Plan

Navy Region Hawaii

NPDES Permit No. HI S000257

Prepared by:

Navy Region Hawaii

April 2022

Table of Contents

1 Introduction 1
2 Trash Defined 2
3 Navy Region Hawaii Solid Waste Policy and Program 3
3.1 Navy Region Hawaii Solid Waste Policy 3
3.2 Navy Region Hawaii Integrated Solid Waste Management Plan 3
4 Existing Control Measures and BMPs 5
4.1 Public Education and Outreach 5
4.2 Litter Clean Up 5
4.3 Street Sweeping 5
4.4 Trash Pickup 6
4.5 Structural BMPs 6
4.6 Inspections 6
5 Implementation Plan 7
6 Measuring Program Success 8
7 References 9

List of Acronyms and Abbreviations

BMP	Best Management Practice
BSVE	Base Support Vehicles and Equipment
C&D	construction and demolition
DoD	Department of Defense
EO	Executive Order
EV	NRH/NAVFAC Hawaii Environmental Department
FMD	Facility Maintenance Division
ISWMP	Integrated Solid Waste Management Plan
JBPHH	Joint Base Pearl Harbor Hickam
MS4	Municipal Separate Storm Sewer System
NAVFAC	Naval Facilities Engineering Systems Command
NPDES	National Pollutant Discharge Elimination System
NRH	Navy Region Hawaii
OPNAVINST	Office of the Chief of Naval Operations Instruction
Permit	Navy Region Hawaii's NPDES Permit No. HI S000257
PROD	JBPHH Public Works Department Production Division
QRP	Qualified Recycling Program

1 Introduction

As of the effective date, February 1, 2021, the Department of the Navy, Navy Region Hawaii (NRH) is required to comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) Permit No. HIS000257 (referred to hereinafter as the "Permit"). The Permit includes authorized storm water and specified non-storm water discharges into Pearl Harbor, Halawa Stream, Kaiapo Canal, Kaukonahua Stream, Kumumauu Canal, Mailiilii Stream, Mamala Bay, Manuwai Canal, Poamoho Stream, Transportation Canal, Ulehawa Stream, unnamed tributary of Waikele Stream, unnamed gulches in Wahiawa, Waikakalaua, and Waiawa Streams. Per the Permit, Part D.1.f.(i)(e), NRH is required to provide a Trash Reduction Plan. The Permit states:

> *Pollution Prevention/Good Housekeeping, Part D.1.f.(i)(e)*
>
> *"Trash Reduction Plan - The Permittee shall implement, a trash reduction plan which assesses the issue, and identifies and implements control measures, and monitors these activities to reduce trash loads from the Small MS4. The plan shall specify the rationale for specific BMPs considered and implemented by the Permittee, and the method to access the effectiveness of the implemented BMPs. The plan shall include, at a minimum, roadside litter pickup, regularly scheduled litter container servicing, and public outreach.*
>
> *The Annual Report shall include a summary of its trash load reduction actions (control measures and BMPs) including the types of actions and levels of implementation, and a summary of the effectiveness of the implemented control measures and BMPs."*

2 Trash Defined

For the purposes of this plan, "trash" will be considered analogous to "litter" as defined below by the Hawaii Revised Statutes §339-1.

> *"Litter" means rubbish, refuse, waste material, garbage, trash, offal, or any debris of whatever kind or description, whether or not it is of value, and includes improperly discarded paper, metal, plastic, glass, or solid waste.*

A distinction is made that trash is not inclusive of natural materials, such as branches, leaves, and other vegetation, that is deposited into waterbodies naturally.

3 Navy Region Hawaii Solid Waste Policy and Program

3.1 Navy Region Hawaii Solid Waste Policy

NRH's Solid Waste policies are guided by Executive Orders (EO) and the Department of Defense (DoD) strategic plans.

EO 13514, Federal Leadership in Environmental, Energy, and Economic Performance requires the head of each Federal agency to promote pollution prevention and eliminate waste by:

(1) Minimizing the generation of waste and pollutants through source reduction;
(2) Diverting at least 50 percent of non-hazardous solid waste, excluding construction and demolition (C&D) debris by the end of fiscal year 2015;
(3) Diverting at least 50 percent of C&D materials and debris by the end of fiscal year 2015;
(4) Increasing diversion of compostable and organic material from the waste; and
(5) Reducing printing paper use and acquiring uncoated printing and writing paper containing at least 30 percent postconsumer fiber.

Based on this EO, the DoD developed a S*trategic Sustainability Performance Plan* (DoD, 2012). This plan established a policy goal for all DoD component installations to achieve diversion rates of 60 percent for C&D waste, and 50 percent for all other wastes, by fiscal year 2015 and thereafter through fiscal year 2020.

Implementation of these goals is achieved through the development of an Integrated Solid Waste Management Plan (ISWMP) as described in the following section.

3.2 Navy Region Hawaii Integrated Solid Waste Management Plan

The Environmental Readiness Program Manual, OPNAV M-5090.1, implements the policy established by OPNAVINST 5090.1E, Environmental Readiness Program. The Navy's Environmental Readiness Program outlines requirements, responsibilities, and policy for the management of environmental resources. NRH must comply with the environmental policies in OPNAVINST 5090.1E and OPNAV M-5090.1 in addition to Federal, State, and local environmental laws and regulations. OPNAV M-5090.1 Chapter 28, *Solid Waste Management and Resource Recovery Ashore* is applicable to all Navy installations worldwide that generate one or more tons of solid waste per day. These installations must follow the solid waste reporting, solid waste management planning, recycling requirements, and affirmative procurement requirements outlined in Chapter 28. OPNAV M-5090.1 requires that a written ISWMP be developed and implemented. All Navy installations are required to incorporate recycling into their ISWM program. A Qualified Recycling Program (QRP) should be established where economically beneficial to retain the proceeds from the sale of recyclables.

NRH's updated ISWMP was completed in 2014 (NAVFAC, 2014). The ISWMP established historic and existing solid waste generation and recycling quantities. The JBPHH community generates approximately 16,010 tons of municipal solid waste each year with annual recycling rates ranging from 14 to 22 percent.

The ISWMP presents a framework for NRH to increase their solid waste diversion through the following means:

- Source reduction – includes recommendations for administration, custodians, dining facilities, barracks, shops, Navy Exchange, Commissary, and supply departments.
- Recycling – includes recommendations for increasing recycling.
- Green waste management – includes various alternatives for green waste management.
- C&D debris management – includes recommendations for source reduction and recycling of building materials.
- Sustainable acquisition – includes recommendations for acquisition of environmentally friendly products.
- Education – includes recommendations for public awareness outreach to workers and residents.

Additional information about the ongoing base initiatives to reduce solid waste are presented in the ISWMP.

4 Existing Control Measures and BMPs

NRH has already implemented the following control measures to reduce trash.

4.1 Public Education and Outreach

Trash reduction and recycling initiatives are presented to workers and residents through the following means:

- Informational brochures in the orientation packet presented to new arrivals.
- Informational brochures presented to industrial facilities and storefront personnel during annual inspections.

The brochures inform the general public and the industrial facilities of the impact of trash reduction on storm water pollution control. Brochures for industrial facilities stress best management practices (BMPs) and periodic inspections of facility spaces and work areas to ensure that storm water pollution is identified and stopped. Brochures for the general public target military members, their families, and other JBPHH personnel. They provide general information about how storm water will end up in the ocean and how pollutants and waste picked up by storm water and discharged to the ocean can affect marine life and coastal water quality.

NRH will continue collaborating with schools to incorporate storm water education and volunteer events into their curriculum.

4.2 Litter Clean Up

A small team of inspectors is responsible for daily Base-wide monitoring and beautification. These regional ‘zone inspections’ are responsible for picking up litter they encounter during their rounds.

Building managers are responsible for daily policing and routine inspection of grounds around their facility. They ensure that the grounds, sidewalks, curbs, and pavements around the facility are free of debris and trashcans/dumpsters are not overflowing and are regularly picked up.

Additionally, JBPHH also conducts Base-wide cleanups throughout the year as community events on a volunteer basis. The cleanup events focus on the waterfront, perimeter of the base, and high-visibility areas. Regularly cleaning trash, litter, and green wastehelps prevent and minimize pollutants in storm water runoff.

NRH conducts quarterly cleanings along the water, which are regularly attended by local Hawaiian civic groups. Cleanups also regularly include participation of local community groups, schools, and sailors.

4.3 Street Sweeping

Sweeping of major streets and streets in the industrial and commercial areas continue to be conducted regularly in some areas and on an as-needed basis in other areas by the JBPHH Public Works Department Production Division (PROD) and Base Support Vehicles and Equipment (BSVE). BSVE owns two street sweepers and performs sweeping of between 960 and 1080 miles of streets per year. BSVE maintains monthly charts that outline regular cleanings by area. Most areas are swept on a weekly basis while others, Naval Computer and Telecommunications Area Master Station for example, are swept on

an as-needed basis. This sweeping schedule is adjusted in response to observations by inspectors and local personnel. Streets through residential areas are cleaned by the lessees of the land.

Base areas are inspected regularly and additional street sweepings are conducted as needed. Work leaders in the BSVE inspect streets regularly. Furthermore, building managers are required to inspect up to 50 feet from their facilities or half the distance to their adjacent building.

4.4 Trash Pickup

Regular trash pickup is provided to assure proper disposal of solid wastes. Trash pickup in residential areas is performed by contractors twice per week. Trash pickup in industrial and commercial areas of JBPHH is performed by a contractor funded by the Facility Maintenance Division (FMD) on a regular schedule. The pickup frequency is dependent on the amount of trash generated at the facility. Building managers must routinely inspect refuse collection. If the building manager determines that their area needs to be cleaned, they will put in a request to the facilities operations specialist at FMD.

4.5 Structural BMPs

Structural BMPs for trash collection have been installed in a few select locations as follows.

- Navy Housing dumpsters that are placed in roofed areas are to be kept positioned under the roof cover.
- As much as practicable, dumpsters shall remain with their lids/covers in place to prevent contact between storm water and the dumpster contents.

In addition, storm drain lines, manholes, and inlets/catch basins will be inspected in coordination with disaster-preparedness efforts.

4.6 Inspections

Base Inspectors conduct patrols of the industrial and commercial areas of JBPHH. The inspectors will document and report any illicit dumping, including litter. Any illicit dumping observed by the inspectors will be reported to NRH/NAVFAC Hawaii Environmental (EV) for follow-up corrective actions. All litter will be collected and properly disposed.

5 Implementation Plan

NRH will continue to implement their existing control measures and BMPs identified in the previous section. Key components for trash reduction will include:

- **Regular Trash Pickup** – Residential, commercial, and industrial areas will have regular trash pickup. Periodic inspections will be conducted by building managers to determine if the pickup schedule and/or number of trash bins need to be adjusted.
- **Street Sweeping** – Street sweeping will be completed on a routine basis. Periodic inspections will be conducted by PROD or BSVE to determine if the sweeping schedule needs to be adjusted.
- **Litter Cleanup** - Base inspectors conduct daily patrols of the residential, industrial, and commercial areas of JBPHH. The inspectors will document and report any illicit dumping, including litter. Any illicit dumping observed by the inspectors will be reported to EV for follow-up corrective actions. All litter will be collected and properly disposed.
- **Public Outreach** - Base-wide cleanups will be conducted throughout the year as community events on a volunteer basis with focus on the waterfront, perimeter of the base, and high-visibility areas. Brochures will be provided to residents and tenants highlighting the importance of trash reduction and implementation of BMPs.

  Public outreach will occur during events such as Earth Day events on base and at other community events. Small Earth Day events are typically held at several locations on JBPHH, including the Navy Exchange store, the Hickam Marina, and Hickam Communities. Storm water program representatives will attend these fairs to pass out brochures, answer questions, and engage with the public to increase storm water awareness.

  Online public outreach will also be included. Storm water awareness information on the NRH and NAVFAC Hawaii Facebook pages as well as the NRH Storm Water webpage will be used to educate the public on the importance of trash reduction in meeting overall storm water goals. Online resources will be updated periodically.
- **Inspections and BMP Implementation** – Commercial and industrial facilities will be inspected according to the requirements of the Permit and as covered in the pertinent sections of the Storm Water Management Plan. BMPs will be implemented as needed. Informational brochures that are updated annually will also be distributed during the inspections.

6 Measuring Program Success

Program success will be measured both quantitatively and qualitatively. Quantitative measures may include:

- Quantity of trash generated and disposed.
- Miles of streets swept.
- Quantity of road side litter picked up and disposed.
- Number of inspections completed at commercial and industrial facilities to determine if BMPs are being properly implemented.
- Number of corrective actions completed at commercial and industrial facilities.
- Number of special cleanup events conducted and number of public participants.

Qualitative measures may include number of educational materials distributed and increase in public awareness through online resources.

NRH may consider conducting inspections at select structural BMPs annually to establish existing trash loads and the trash reduction over time. These measurements may allow NRH to evaluate whether the trash control measures presented in the previous section are effective in reducing the amount of trash or if additional measures will need to be implemented. A sample inspection form is provided as an attachment to this plan.

7 References

1. *2021 Storm Water Annual Report, Commander, Navy Region Hawaii, NPDES Permits HI S000257.* Naval Facilities Engineering Systems Command, Hawaii.
2. *2014 Integrated Solid Waste Management Plan.* Naval Facilities Engineering Command, Hawaii.
3. *Authorization to Discharge Under the National Pollutant Discharge Elimination System, Permit No. HI S0002257. January 22, 2021.*
4. *Environmental Readiness Program, OPNAVINST 5090.1E.* Department of the Navy. September 3, 2019.
5. *Environmental Readiness Program Manual, OPNAV M*-5090.1. Department of the Navy. September 3, 2019.
6. *Building Manager Handbook*. Joint Base Pearl Harbor-Hickam. November 23, 2015.

Attachment

Trash Survey Inspection Checklist

Trash Survey Inspection Checklist

Inspection Date:		Name and phone # of those present during inspection:	
Time:			

Site Information

Site name:	Inlet/Outlet ID No.(*if available)*:	
Location/Type of Structure:		
Date of Last Inspection:	Weather during inspection:	Amount of Rainfall in past 24 hrs (inches): _____
Site Drainage Description:		

General Observations/Notes:

_____

_____

_____

Describe Type of Trash Observed (if any):

☐ Plastic

☐ Metal

☐ Wood

☐ Rubber

☐ Disposable Food Containers/Wrappers

☐ Clothing

☐ Other *(describe)*:

_____

_____

_____

_____

_____

Estimate Quantity *(approximate volume, or no. of each item if feasible)***:**

Potential Source:

Photos Taken: Yes ☐ No ☐
Photo Reference IDs:

Recommendations/Additional Notes:

_____

_____

_____

_____

_____

Inspector Information

Inspector Name:	Inspector Title:
Signature:	Date:

APPENDIX 6-2

Final Action Plan for Maintenance of Structural Controls

PRE-FINAL (REDACTED), PREDECISIONAL FOR DISCUSSION PURPOSES ONLY, DO NOT CITE OR QUOTE

ACTION PLAN FOR MAINTENANCE OF STRUCTURAL CONTROLS

Storm Water Management Plan

Navy Region Hawaii

NPDES Permit No. HI S000257

Prepared by:

Navy Region Hawaii

April 2022

Table of Contents

1 Introduction 1
2 Structural Controls at JBPHH 3
2.1 Navy Region Hawaii Policy 3
2.2 Program Organization 3
2.3 Existing Structural BMPs 4
3 Proposed Actions 5
3.1 Inventory and Tracking of Structural Controls 5
3.2 Structural Controls Maintenance 5
3.3 Structural Control Improvements and Retrofit Projects 6
4 Implementation Schedule 7
5 Annual Updates 8
6 References 9

Tables

Table 4-1 Implementation Schedule for Maintenance/Improvements of Structural Controls 7

List of Acronyms and Abbreviations

AMS	Asset Management System
BMP	Best Management Practice
DOH	State of Hawaii Department of Health
EISA	Energy Independence and Security Act
EV	NRH/NAVFAC Hawaii Environmental Department
FEAD	NAVFAC Hawaii Facilities Engineering and Acquisition Division
FMD	JBPHH Public Works Department Facilities Management Division
JBPHH	Joint Base Pearl Harbor-Hickam
LID	Low Impact Development
MS4	Municipal Separate Storm Sewer System
NAVFAC	Naval Facilities Engineering Systems Command
NPDES	National Pollutant Discharge Elimination System
NRH	Navy Region Hawaii
PMBP	Permanent Best Management Practice
Permit	Navy Region Hawaii's NPDES Permit No. HI S000257
PROD	JBPHH Public Works Department Production Division
SWMP	Storm Water Management Plan
TMDL	Total Maximum Daily Load

1 Introduction

On January 22, 2021, the Department of the Navy, Navy Region Hawaii (NRH) was issued the National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000257 (referred to hereinafter as the "Permit") by the State of Hawaii Department of Health (DOH), which took effect on February 1, 2021. The Permit expires at midnight on January 31, 2026.

Under the Permit, NRH is authorized to discharge storm water and specified non-storm water discharges into State Waters from the following facilities:

- Joint Base Pearl Harbor-Hickam (JBPHH) Small Municipal Separate Storm Sewer System (Small MS4)
- Navy Industrial areas or facilities (as specified in the Permit)
- Any additional storm sewer outfalls and Navy Industrial areas and facilities identified by NRH, throughout the Permit term, as potentially significant pollutant sources.

The State Waters identified in the Permit consist of inland streams and open coastal waters in and around the Island of Oahu, Hawaii. These include Pearl Harbor, Halawa Stream, Kaiapo Canal, Kaukonahua Stream, Kumumauu Canal, Mailiilii Stream, Mamala Bay, Manuwai Canal, Poamoho Stream, Transportation Canal, Ulehawa Stream, Unnamed tributary of Waikele Stream, unnamed gulches in Wahiawa, Waikakalaua, and Waiawa Streams.

This Action Plan for Maintenance of Structural Controls is outlined in accordance with the Permit requirements, as follows:

Pollution Prevention/Good Housekeeping, Part D.1.f.(i)(d):

> *"Maintenance of Structural Controls - The Permittee shall implement an Action Plan to maintain, and improve, as necessary, structural BMPs. The Action Plan shall cover a 5 year period and be updated annually to include additional retrofit projects with water quality protection measures. At a minimum, annual updates to the Action Plan shall consider system inspection results, storm water monitoring data, recent construction, and required operations and maintenance. The annual updates to the Action Plan shall be included in the Annual Report with a description of the project's status. The Action Plan shall include, but not be limited to projects in compliance with any TMDL implementation and monitoring plan."*

The objectives of this plan are to (1) outline a program of routine inspections and maintenance that will ensure existing structural controls function properly, and (2) improve, as necessary, existing structural controls to optimize function of these resources. By utilizing existing resources more effectively, NRH can more cost-effectively prevent storm water pollution from its Small MS4 and other related facilities.

For the purpose of this plan, "structural controls" are considered to be permanent, structural (vegetated or non-vegetated) best management practices (BMPs). In this Action Plan and the Storm Water Management Plan (SWMP), the terms structural controls, structural BMPs, and permanent BMPs (PBMPs) are used synonymously. These are engineered systems designed to control runoff, store runoff, or remove pollutants from storm water via chemical or physical treatment. These systems are effective

in mitigating storm water quality issues caused by conditions such as erosion and debris. Some examples of structural controls include the following:

- Detention/Retention Basins
- Sand Filters
- Infiltration Trenches
- Permeable Pavement
- Vegetated Swales
- Vegetated Buffers/Biofilters
- Bio-retention Cells
- Storm Water Inlet Water Quality Inserts
- Vortex Separation/Continuous Deflection Systems

2 Structural Controls at JBPHH

2.1 Navy Region Hawaii Policy

In accordance with the Permit, Part D.1.e.(i), NRH uses existing Navy and Department of Defense policies for implementing Low Impact Development (LID). LID aims at preserving or mimicking the site's predevelopment hydrology. This is achieved by minimizing ground disturbance and use of impervious cover, and infiltrating, storing, detaining, evapotranspiring, and/or biotreating storm water runoff as close to its source as reasonably possible. Ideally LID measures are based on the concept of preserving or recreating the natural landscape features, minimizing imperviousness, and treating storm water as a resource rather than a waste product. NRH's LID design standards are intended to prioritize management practices that favor harvesting and use, infiltration, evapotranspiration, or biotreatment, followed by other practices to treat and release storm water.

NRH has already implemented the required LID standards for its projects in accordance with updated LID Standards. These standards are outlined in Section 438 of the Energy Independence and Security Act of 2007 (EISA) and establish strict storm water runoff requirements for federal development and redevelopment projects with a footprint of 5,000 square feet or more. The Under Secretary of Defense released a policy memorandum on January 19, 2010, for DoD Implementation of Storm Water Requirements under Section 438 of EISA, which identified the design storm criteria as the 95th percentile storm. This policy memorandum also includes a flow chart that includes examples of on-site design options and technical constraints. NAVFAC projects are required to follow the requirements of the Unified Facilities Criteria 3-210-10, Low Impact Development, which provides design criteria for LID and technical feasibility criteria.

The NPDES General Permits require projects that disturb one or more acres to return the infiltration capacity of the project area to pre-hydrologic conditions. As part of the National Environmental Policy Act (NEPA) process, Categorical Exclusion reviews are performed and require EV review and comment. NAVFAC Hawaii or NAVFAC Pacific Environmental advise whether LID features are required for a particular project. The actual LID requirements and planning process are overseen by the Regional Engineer and Designer of Record. NRH is developing a Categorical Exclusion comment template to require LID features for all projects over 1 acre, even for projects that the Navy's LID policy would not require LID features.

The Navy LID policy includes a waiver process to be used in the rare instances when LID is not appropriate for the project site. The Regional Engineer must review and approve the LID/EISA Constraints Review and Waiver Request form and process. Refer to Appendix 5-1. The reason that LID cannot be achieved at the site must be justified with supporting documentation such as plans, specifications, and storm water calculations.

2.2 Program Organization

The NRH/NAVFAC Hawaii Environmental Department (EV) is responsible for general oversight and management of this Action Plan, to ensure that it is kept up-to-date and compliant with the Permit. The Facility Management Division (FMD) and Assistant Public Works Officers are responsible for making the action plan available to applicable entities and coordinating its implementation. Inspection/maintenance work may be accomplished by the Production Division (PROD), contractors managed by the Facilities

Engineering and Acquisition Division (FEAD), or by tenants. FMD will modify the prioritized scheduling of these efforts, as needed.

Similar to all other programs in the SWMP, the Joint Base Commander has the authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Post-construction Storm Water Management Program and the Debris Control BMPs Program. Commander, Navy Region Hawaii has ultimate authority for Permit policies and enforcement actions.

2.3 Existing Structural BMPs

Structural BMPs have been constructed throughout JBPHH and will be installed in the future in accordance with the NRH LID Policy. In the past, there has been no formal tracking system to monitor the long-term operation of these structures. Regional zone inspections and routine inspections by building managers have been used to identify functional problems with existing systems. Maintenance has typically been performed on an as-needed basis.

EV is developing a list of known structural BMPs at JBPHH. In 2021, NAVFAC Hawaii Utilities and Energy Management Product Line (UEM) contracted a project to create a new complete storm water map and GIS of the small JBPHH MS4. NRH also contracted a project to evaluate BMPs for JBPHH storm drains in 2021. The results of the storm drain system mapping and BMP projects will be utilized to generate an Asset Management System (AMS). The AMS will be used for inventory and tracking of inspections and maintenance of the entire Small MS4. Structural BMPs will also be identified and tracked as part of this AMS.

3 Proposed Actions

The following sections outline the measures that NRH will take to prevent storm water pollution through maintenance and use of structural controls.

3.1 Inventory and Tracking of Structural Controls

To effectively assess the needs of a Base-wide structural BMPs maintenance program, NRH has started building an inventory of structural BMPs. The information gathered from the storm drain system mapping and BMP projects will be used to develop an AMS, part of which will be used to identify locations of structural BMPs.

The process for a construction contractor to turn over ownership of a new or redeveloped facility to NRH includes:

- Submittal of as-built plans, with clear distinction of all structural BMPs (supplemental written documentation may be submitted for additional clarification);
- Submittal of all relevant documentation outlining structural BMP/LID specifications and required future maintenance; and
- Submittal of proof of structural BMP stabilization (photos, prior maintenance records, etc.), if applicable.

These documents are to be submitted to JB4 who will distribute them to FMD, PROD, EV, and others as necessary. Any newly constructed structural BMPs will be flagged, when as-built construction plans are submitted to FMD, for entry into the Base-wide AMS. At the same time, any BMP-specific maintenance documents will be submitted to FMD and PROD to ensure these are accessible for those conducting routine maintenance.

Once a structural BMP is identified, the AMS will be updated accordingly to include:

- Geographic location;
- Prioritization level for maintenance/required frequency of maintenance;
- Storage location for reference material on BMP-specific maintenance or other general information; and
- Information related to completed inspection/maintenance activities.

3.2 Structural Controls Maintenance

NRH is developing debris and sediment accumulation and vegetation thresholds to define inspection/maintenance priority levels and required frequencies of maintenance. The thresholds and maintenance frequencies will be based on results of the storm drain BMPs project.

Each structural BMP identified in the AMS will be assigned a priority level, ranging from low priority to high priority, based on its potential to negatively impact storm water quality. This priority level will be assigned by FMD.

Subsequent maintenance of all structural BMPs will be based on the prioritization schedule coordinated by FMD for the *Debris Control BMPs Program (Section 6.3),* in the NRH SWMP. Each structural BMP identified in the AMS will be inspected/maintained a minimum of once during the Permit term.

The prioritization and maintenance scheduling for structural BMPs will be reviewed at a minimum of annually and modified, as needed, to most effectively utilize available resources and protect storm water runoff quality. FMD is responsible for coordinating any necessary adjustments.

3.3 Structural Control Improvements and Retrofit Projects

The structural controls maintenance program will continue to evolve as more information is gathered from routine inspections and maintenance, and to comply with changing Total Maximum Daily Load (TMDL) implementation and monitoring plan requirements. This includes ongoing assessment for areas that may qualify for new structural BMPs or retrofit improvements to existing features, such as areas known to flood during heavy rains or those with high levels of erosion and/or trash.

FMD will evaluate potential improvement projects based on feedback during routine inspections and maintenance and information provided by tenants or other entities conducting routine inspections. All major construction and renovation projects will continue to be reviewed for LID Policy compliance during the design phase and identified areas of concern will be considered in this review process.

Once a new or retrofit structural BMP project is identified, it will be prioritized similarly to the prioritization levels for maintenance. Projects identified for areas posing the most significant risk or benefit to storm water quality will be considered as High Priority. Those posing a minimal threat to storm water quality will be classified as Low Priority.

4 Implementation Schedule

This Action Plan is intended to provide a 5-year outline for maintenance and improvement activities for structural controls at JBPHH. Table 4-1 is a tentative schedule based on a preliminary assessment of existing conditions.

Table 4-1 Implementation Schedule for Maintenance/Improvements of Structural Controls

Task	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
Establish AMS and Mapping Tools, Update as Needed	*X*	*X*	*X*	*X*	*X*
Establish Inventory/Assessment of Structural BMPs, Update as Needed	*X*	*X*	*X*	*X*	*X*
Review and Update Prioritized Ranking System for Maintenance and Improvement Projects	*X*	*X*	*X*	*X*	*X*
Address Emergency Maintenance/Repair Issues	*X*	*X*	*X*	*X*	*X*
Appropriation of Funding for Routine Inspection/Maintenance Activities and New/Retrofit Projects: o High Priority o Medium Priority o Low Priority		*X*	*X*	*X*	
Implementation of Inspections/Maintenance Activities and New/Retrofit Projects: o High Priority o Medium Priority o Low Priority			*X*	*X*	*X*
Identify and Evaluate Potential New or Retrofit Structural BMP Projects	*X*	*X*	*X*	*X*	*X*
Evaluate Action Plan and Implementation Schedule, Update as Needed (Changes to be Noted in the Annual Report)	*X*	*X*	*X*	*X*	*X*

This implementation schedule will be subject to change based on changing site conditions, availability of funding, permitting requirements/delays, and other unforeseen circumstances.

5 Annual Updates

The Action Plan for Maintenance of Structural Controls will be reviewed annually by FMD. The review will take into account feedback from inspection and maintenance activities and any applicable reports from other tenants during the past year. Other factors to be considered in the annual review are:

- Program progress;
- Changes to permit requirements;
- Inspection/maintenance results;
- Storm water monitoring data;
- Recent construction and status of ongoing or potential structural BMP projects;
- Required operations and maintenance activities; and
- Evaluation of newly identified areas of concern.

The implementation schedule will also be revised, as needed, to reflect revisions made to the Action Plan. Any modifications will go through EV to be included in the Annual Report as well.

6 References

1. *Pre-Final Storm Water Management Plan for Navy Region Hawaii, JBPHH, Oahu, Hawaii.* Navy Region Hawaii. March 1, 2022.
2. *2021 Storm Water Annual Report, Commander, Navy Region Hawaii, NPDES Permits HI S000257.* Naval Facilities Engineering Systems Command, Hawaii.
3. *Authorization to Discharge Under the National Pollutant Discharge Elimination System, Permit No. HI S0000257. January 22, 2021.*
4. *Building Manager Handbook*. Joint Base Pearl Harbor-Hickam. November 23, 2015.

Appendix A

List of Existing Structural BMPs

Reserved for Future Use

APPENDIX 9-1

Semi-annual Facility Inspection Checklist

Date: _____ **Time**: _____ **Inspector(s)**: _____

Facility Location: _____ **Facility ID**: _____

Facility POC: _____ **POC Phone/Email**: _____

Weather Observations: _____ **Rainfall in 24 hrs:** _____ **48hrs:** _____

#	Compliance Criteria	YES	NO	N/A	Comments
1	**Good Housekeeping** ☐ Compliant ☐ Deficient				
	The facility is clean and orderly.	☐	☐	☐	
	BMPs prevent exposure of potential contaminants to rainfall.	☐	☐	☐	
	BMPs prevent potential contaminants from entering the storm drainage system.	☐	☐	☐	
2	**Spill Prevention** ☐ Compliant ☐ Deficient				
	HAZMAT/HAZWASTE is properly stored.	☐	☐	☐	
	OHS spill procedures prepared for this site.	☐	☐	☐	
	Spill kits available on site.	☐	☐	☐	
3	**Erosion Prevention** ☐ Compliant ☐ Deficient				
	Existing erosion and sediment controls implemented at the facility are effectively installed and maintained.	☐	☐	☐	
	No areas of bare soil were observed.	☐	☐	☐	
	No additional stabilization BMPs are needed onsite.	☐	☐	☐	
4	**HAZMAT & HAZWASTE** ☐ Compliant ☐ Deficient				
	HAZMAT/HAZWASTE is used/stored at this facility.	☐	☐	☐	
	HAZMAT/HAZWASTE storage systems/ containers/lockers are not exposed to rainfall.	☐	☐	☐	
	Containers and secondary containers are intact; no visible damage or holes.	☐	☐	☐	
	No evidence of leakage was observed.	☐	☐	☐	
5	**Leak Prevention** ☐ Compliant ☐ Deficient				
	Onsite vehicles, stationary and portable equipment were checked for signs of leaks (e.g. portable pumps/generators, material handling equipment, etc.).	☐	☐	☐	
	Drip pans or similiar BMP are utiized properly on site.	☐	☐	☐	
	Review documented spills and update EV11 annual spill records.	☐	☐	☐	
6	**Storm Drain Inlets** ☐ Compliant ☐ Deficient				
	Storm drain inlets are relatively clean.	☐	☐	☐	
	Storm drain inlets appear to be functioning properly.	☐	☐	☐	
	Storm drain inlets are not obstructed.	☐	☐	☐	% obstructed:
7	**SWPCP Changes** ☐ Compliant ☐ Deficient				
	The major operations and facilities are unchanged.	☐	☐	☐	
	There are no new industrial operations at this site.	☐	☐	☐	
	The material storage areas have not increased.	☐	☐	☐	
8	**Inventory & Pollutants** ☐ Compliant ☐ Deficient				
	In general, the significant material inventory and potential storm water pollutants are the same [compared to the existing SWPCP].	☐	☐	☐	
9	**Industrial BMPs** ☐ Compliant ☐ Deficient				
	The BMPs associated with the industrial facility are implemented in a satisfactory matter.	☐	☐	☐	

#	Compliance Criteria	YES	NO	N/A	Comments
10	**Recent Rainfall or Allowable Discharge** ☐ Compliant ☐ Deficient				
	No standing water observed.	☐	☐	☐	
	No dry weather flow observed.	☐	☐	☐	
	Observed standing water / dry weather flow is a result of tidal influence in this area.	☐	☐	☐	
	Dry weather flow is a result of a rainfall even within the last 72 hours of this inspection.	☐	☐	☐	
	Dry weather flow is associated with an allowable non-storm water discharge [describe in comments].	☐	☐	☐	
11	**Standing Water / Dry Weather Flows** ☐ Compliant ☐ Deficient				
	No standing water or dry weather flow observed.	☐	☐	☐	
	No notable color/clarity.	☐	☐	☐	
	No presence of floatable materials.	☐	☐	☐	
	No evidence of oil/grease.	☐	☐	☐	
	Analysis of water sample recommended.	☐	☐	☐	
12	**Evidence of Past Pollutants within MS4** ☐ Compliant ☐ Deficient				
	No visual evidence of significant stains.	☐	☐	☐	
	No visual evidence of sediment accumulation.	☐	☐	☐	
	No visual evidence of trash accumulation.	☐	☐	☐	
	No visual evidence of sludge.	☐	☐	☐	
	No visual evidence of vegetation growth.	☐	☐	☐	
	No visual evidence of biological activity.	☐	☐	☐	
	No presence of odors.	☐	☐	☐	
13	**Illicit Connections** ☐ Compliant ☐ Deficient				
	During the inspection, it was verified that there are no illicit connections.	☐	☐	☐	
14	**Education Outreach** ☐ Compliant ☐ Deficient				
	Does the facility's personnel receive annual storm water training?	☐	☐	☐	
	Were handouts provided to facility personnel as part of their annual training requirement?	☐	☐	☐	
15	**Receiving Water** ☐ Compliant ☐ Deficient				
	The facility is adjacent to receiving waters.	☐	☐	☐	
	The receiving waters are free of turbidity.	☐	☐	☐	
	The receiving waters are free of substances of color.	☐	☐	☐	
	The receiving waters are free of floating oil and grease.	☐	☐	☐	
	The receiving waters are free of floating debris.	☐	☐	☐	
	The receiving waters are free of scum.	☐	☐	☐	

Additional Comments:

Tidal influence? Tide times immediately before and after this inspection, or ☐ Not Applicable

High: _____ Low: _____

APPENDIX 9-2

Facility-wide Maintenance BMPs

PRE-FINAL (REDACTED), PREDECISIONAL FOR DISCUSSION PURPOSES ONLY, DO NOT CITE OR QUOTE

FACILITY-WIDE MAINTENANCE BMPs

Storm Water Management Plan

Navy Region Hawaii

NPDES Permit No. HI S000257

Prepared by:

Navy Region Hawaii

April 2022

Table of Contents

1 Introduction 1
2 Roads, Streets, Parking Lots & Sidewalks 2
2.1 Maintenance 2
2.1.1 Patching, Resurfacing & Surface Sealing 2
2.1.2 Pavement Marking 2
2.1.3 Sidewalk, Gutter & Curb Repair 2
2.1.4 Pollution Prevention 2
2.1.5 Material Storage 2
2.1.6 Waste Disposal 3
2.1.7 Illicit Discharge Prevention 3
2.1.8 Spill Response & Prevention 3
2.2 Cleaning 3
2.2.1 Street Sweeping 3
2.2.2 Washing 4
2.2.3 Graffiti Removal/Paint Over 4
2.2.4 Pollution Prevention 4
2.2.5 Waste Disposal 4
2.2.6 Illicit Discharge Prevention 4
2.2.7 Spill Response and Prevention 4
3 Landscape Maintenance 6
3.1 Pesticide Application 6
3.2 Fertilizer Application 6
3.3 Leaf Blowers 6
3.4 Grass Cutting 6
3.5 Irrigation 7
3.6 Pollution Prevention 7
3.7 Waste Disposal 7
3.8 Illicit Discharge Prevention 7
3.9 Spill Response & Prevention 7
4 Vehicle & Equipment Maintenance 9

4.1 Fueling 9
4.2 Repair 9
4.3 Cleaning 9
4.4 Material Storage 9
4.5 Waste Disposal 9
4.6 Illicit Discharge Prevention 10
4.7 Spill Response and Prevention 10
5 Drainage Systems & Utility Maintenance 11
5.1 Boulder/Retention Basin Cleaning 11
5.2 Catch Basin Cleaning 11
5.3 Stream, Ditch & Flood Channel Cleaning 11
5.4 Drainage System Repair 11
5.5 Documentation 11
5.6 Waste Disposal 11
5.7 Illicit Discharge& Illegal Dumping Prevention 12
5.8 Spill Response & Prevention 12
6 Contact Information 13

1 Introduction

This document is a field manual on storm water Best Management Practices (BMPs) for prevention of storm water pollution during maintenance activities. Sections 2 through 5 provide BMPs grouped by related types of tasks/activities. For each group of activities, the first sections are for specific types of activities/tasks (e.g., street sweeping, pavement marking, etc.) and they are accompanied by general BMPs applicable to all activities listed in each section (e.g., material storage, waste disposal, spill response and prevention).

This field manual was adopted from the City and County of Honolulu's Municipal Field Guide revised in November 2015.

What is Storm Water Runoff?

Storm water runoff occurs when rain flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent storm water from naturally soaking into the ground.

Why is Storm Water Runoff an Issue?

Storm water can pick up debris, chemicals, dirt, and other pollutants and flow into a storm drain system or directly to a stream or the ocean. Anything that enters a storm drain system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

What are the Effects of Storm Water Pollution?

Polluted storm water runoff can have many adverse effects on plants, fish, coral, people, and other animals. Examples of adverse effects include: Structural Controls at JBPHH

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris — plastic bags, six-pack rings, bottles, and cigarette butts — washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life.
- Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted storm water often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

The protection of storm water during maintenance field activities contributes to overall water quality. By implementing BMPs we can prevent, reduce and eliminate water pollution.

2 Roads, Streets, Parking Lots & Sidewalks

Street, roads, parking lots and sidewalks can contribute to storm water pollution if they are not maintained properly. The procedures below will help reduce the pollutants in storm water.

2.1 Maintenance

Roads, streets, parking lots & sidewalks routine maintenance includes: patch, resurfacing and surface sealing; pavement marking; sidewalk, gutter and curb repair.

2.1.1 Patching, Resurfacing & Surface Sealing

- Schedule work during dry weather
- Transfer or load hot bituminous material away from drainage systems or water courses
- Before cold planing or resurfacing , cover or seal nearby storm drain catch basins and inlets to prevent excess material from entering the storm drain system
- Avoid overspray of material
- Clean area of loose asphalt and any debris before leaving site

2.1.2 Pavement Marking

- Schedule work during dry weather
- Transfer & load paint and hot thermoplastic away from storm drain inlets
- Place drop cloths in mixing areas
- Consider using water-based paints when appropriate
- Do not overfill equipment
- Dispose of unused paint appropriately

2.1.3 Sidewalk, Gutter & Curb Repair

- Vacuum slurry from the site
- Keep cement powder covered and away from streets, gutters, storm drains, rainfall and runoff
- Return leftover material to the mixer
- Wash concrete trucks off site or in an area designated to preclude discharge of wash water to a drain system or to the ground

2.1.4 Pollution Prevention

- Protect storm drain inlets and adjacent water bodies prior to beginning work
- Do not wash any material into the street, water bodies, or storm drain system
- Schedule repair, resurfacing, or patching work for dry weather; in the event of unexpected rain, divert runoff around work areas
- Use the least toxic materials available
- Use dry cleaning methods
- Cover dumpsters and trash receptacles

2.1.5 Material Storage

- Store maintenance/construction materials under cover, away from drainage facilities and low lying areas

- Secure bags of cement after they are open
- Locate stockpiles away from streets, gutters, storm drain inlets, water courses and rights-of-way
- Provide sediment controls around stockpiles
- Cover stockpiles if needed to prevent wind from carrying material from the site, or into storm drainage system or waterbodies
- Store chemicals in leak-proof containers and in secondary containment

2.1.6 Waste Disposal

- Recycle/reuse whenever possible
- Remove/dispose of wastes as work progresses
- Dispose of waste material appropriately at a properly permitted landfill

2.1.7 Illicit Discharge Prevention

- Use dry cleaning methods where possible
- Do not wash or pour any material into the street, water bodies, or storm drain system
- Protect storm drain inlets and adjacent water bodies prior to beginning work
- Clean inlet and remove plugs (barriers) when job is complete

2.1.8 Spill Response & Prevention

- Inspect equipment and transportation vehicles daily
- Keep spill kits and emergency contact information readily available
- Respond to all spills immediately
- Contain the spill
- Use rags or absorbents for cleanup of liquids
- Use brooms or shovels for cleanup of dry materials
- Dispose of waste material properly
- Report spills to supervisor immediately
- Notify the Deputy Navy On-Scene Coordinator (808) 473-4689 or (808) 864-2463
- If spill impacts environment or public safety or spill cannot be contained, report spill to 911
- If spill impacts Pearl Harbor, report spill to the Port Operations Control Tower (808) 474-6262
- If spills are above reportable quantities, report to agencies listed in Section 6, Contact Information

2.2 Cleaning

Littering and vehicle use are potential sources of pollutants. Several practices will reduce the amount of pollutants in storm water:

2.2.1 Street Sweeping

- Sweep streets according to schedule, and adjust frequency if needed
- Operate sweepers at manufacturer's requested optimal speed
- Keep accurate logs
- Record curb miles swept
- Record amount of waste collected

2.2.2 Washing

- Clean surfaces by sweeping and remove debris and other pollutants prior to wash down
- Wash down of parking lots, piers, and wharves is NOT allowed into storm drains or water bodies
- Use water only (no soaps, detergents, or chemicals) if water is not collected for disposal
- Install storm water socks at drain catch basins and inlets
- Direct runoff into a landscaped or unpaved area if wash water does not contain chemicals
- If cleaning agents are used seal downstream storm drains and vacuum/pump wash water to the sanitary sewer system if allowed, or dispose off-base (may be as hazardous waste), as appropriate

2.2.3 Graffiti Removal/Paint Over

- Transport paint and materials to and from job site in containers with secure lids which are tied down to the transport vehicle
- Do not transfer or load paint near storm drain inlets or water courses
- Test and inspect spray equipment prior to use
- Avoid overspray
- Do not overfill paint container
- Dispose of unused paint appropriately

2.2.4 Pollution Prevention

- Use dry cleaning methods
- Use the least toxic materials available
- Use water-based paints, gels or sprays
- Sweep regularly
- Cover trash receptacles

2.2.5 Waste Disposal

- Do not store swept material along the side of the street or near a storm drain inlet
- Remove/dispose of wastes as work progresses
- Collect sweeping and dispose of in the trash
- Dispose of waste material appropriately at a properly permitted landfill
- Dispose of unused paint/solvents according to the instructions on the container label

2.2.6 Illicit Discharge Prevention

- Use dry cleaning methods where possible
- Do not wash or pour any material into the street, water bodies, or storm drain system
- Protect storm drain inlets and adjacent water bodies prior to beginning work
- Clean inlet and remove plugs (barriers) when job is complete

2.2.7 Spill Response and Prevention

- Inspect equipment and transportation vehicles daily
- Keep spill kits and emergency contact information readily available
- Respond to all spills immediately

- Contain the spill
- Use rags, absorbents for cleanup of liquids
- Use brooms or shovels for cleanup of dry materials
- Dispose waste material properly
- Report spills to supervisor immediately
- Notify the Deputy Navy On-Scene Coordinator (808) 473-4689 or (808) 864-2463
- If spill impacts environment or public safety or spill cannot be contained, report spill to 911
- If spill impacts Pearl Harbor, report spill to the Port Operations Control Tower (808) 474-6262
- If spills are above reportable quantities, report to agencies listed in Section 6, Contact Information

3 Landscape Maintenance

Proper landscape maintenance can minimize the discharge of pesticides, herbicides, fertilizers, clippings and cuttings to the storm drain system and receiving waters. Use of plants that require less herbicides and fertilizers in landscaping would also minimize use of these chemicals.

3.1 Pesticide Application

- Note: Registered pesticides can only be applied under the direction of a certified applicator
- Be familiar with safety data sheets (SDSs)
- Follow the instructions on the label; it is the law
- Use non-chemical pest control, if possible
- Use for spot treatment
- Apply on an as-needed basis; not on a preventative schedule
- Use mulch or other groundcover to suppress weeds (see Waste Disposal below)
- Do not use if rain is expected
- Do not apply during high winds
- Do not mix or prepare near storm drains
- Prepare the minimum amount needed
- Triple rinse containers, and use rinse water as product
- Avoid spraying into storm drains, swales, ditches, and waterbodies
- Do not apply directly to waterbodies unless specifically formulated for use in the water AND required National Pollutant Discharge Elimination System permit coverage is in place

3.2 Fertilizer Application

- Do not dump onto the surface
- Work fertilizer into the soil for new plantings
- Use only the minimum amount needed
- Follow the instructions on the label
- Do not use if rain is expected
- Do not apply during high winds
- Do not mix or prepare near storm drains
- Be extra cautious to prevent applying fertilizers in storm drains, swales, ditches, and waterbodies

3.3 Leaf Blowers

- Gather debris in mounds away from storm drains
- Do not blow mounds from one location to another
- Place debris in trash bags, and seal immediately
- Locate trash in central area for collection (see Waste Disposal below)
- Do not blow bare ground

3.4 Grass Cutting

- Use mulch when soils are exposed (see Waste Disposal below)

- Do not mow before heavy rains
- Collect waste and dispose of at appropriate facility (see Waste Disposal below)

3.5 Irrigation

- Minimize runoff from the landscape area(s)
- Irrigate only as much as is needed
- Irrigate slowly or pulse irrigate to prevent runoff Water in the morning or evening as much as possible
- Repair leaks in irrigation systems immediately

3.6 Pollution Prevention

- Choose flowers, trees, shrubs and groundcover that require minimal amounts of water
- Choose plants that require no fertilizers and pesticides
- Consider use of native plants, if it results in reduction of use pollutant runoff
- Properly time fertilizing, weeding, pest control and pruning
- Minimize excessive watering and repair leaky irrigation systems

3.7 Waste Disposal

- Dispose of empty pesticide, herbicide and fertilizer containers and unused chemicals according to the instructions on the container label
- To prevent the spread of the Coconut Rhinoceros Beetle (CRB), all green waste generated on Navy-owned property on Oahu needs to be taken to a designated green waste collection point on JBPHH. At least one hour advanced notification to the NAVFAC Green Waste Disposal Coordinator (347-2645) is required for all disposals. If any stage of the CRB is suspected in the green waste, do not disturb or transfer material and call the State of Hawaii's Department of Agriculture's Pest Hotline immediately at 679-5244. All material must be free of garbage or any other non-green waste.
- Due to CRB, use of mulch on JBPHH may also be limited.

3.8 Illicit Discharge Prevention

- Do not wash or pour any material into the street, water bodies, or storm drain system
- Place stockpiles away from streets, gutters, storm drain inlets, water courses, and rights-of-way
- Protect storm drain inlets and adjacent water bodies prior to beginning work
- Remove plugs (barriers) when job is complete

3.9 Spill Response & Prevention

- Inspect pesticide/fertilizer equipment and transportation vehicles daily
- Keep spill kits and emergency contact information readily available
- Respond to all spills immediately
- Contain the spill
- Use rags or absorbents for cleanup of liquid
- Use brooms or shovels for cleanup of dry material
- Dispose of waste material properly

- Report spills to supervisor immediately
- Notify the Deputy Navy On-Scene Coordinator (808) 473-4689 or (808) 864-2463
- If spill impacts environment or public safety or spill cannot be contained, report spill to 911
- If spill impacts Pearl Harbor, report spill to the Port Operations Control Tower (808) 474-6262
- If spills are above reportable quantities, report to agencies listed in Section 6, Contact Information

4 Vehicle & Equipment Maintenance

Spills and leaks that occur during vehicle and equipment operation and maintenance can contribute pollutants to storm water runoff. Implementing the following management practices will reduce the potential for pollutant discharge.

4.1 Fueling

- Fuel at designated fueling area over impervious surface
- Locate pump emergency shutoff
- Place drip pans or absorbent pads under leaking vehicle/equipment
- Do not leave vehicle/equipment unattended while fueling
- Do not top off fuel tanks
- Check for leaks or spills during pumping of liquids; repair leaks immediately

4.2 Repair

- Perform maintenance activities indoors or under covered work area, if at all possible
- If maintenance is performed outdoors, it should be done at a designated area over impervious surface
- Place drip pans or absorbent pads under leaking vehicle/equipment
- Perform all liquid cleaning at a centralized station
- Do not pour materials down drains or hose down work areas; dispose according to applicable laws and regulations
- Minimize use of solvents

4.3 Cleaning

- Keep the area clean, sweep up trash and wipe up spills with rags or absorbent material immediately
- Oil changes and other engine maintenance cannot be conducted in the wash area
- Discharge vehicle wash water to an oil-water separator connected to the sanitary sewer, not to the storm drain

4.4 Material Storage

- Clearly tag or label all containers
- Keep an accurate, up-to-date Safety Data Sheets (SDSs)
- Store equipment under cover
- Store used batteries and fluids in a non-leaking covered secondary containment and recycle or dispose of at hazardous waste facility

4.5 Waste Disposal

- Transfer waste fluids to a labeled waste storage container
- Recycle/reuse materials when possible
- Manage used rags through a rag service or as hazardous waste
- Cover trash receptacles

- Do not dispose of leftover or used cleaning solutions, solvents or automotive fluids into the sanitary sewer, storm drainage system, the ground, or any water body
- Dispose of waste material appropriately at a properly permitted landfill

4.6 Illicit Discharge Prevention

- If temporary work is conducted outside use a tarp or drip pans to capture all spills and dispose of the fluids properly
- Protect storm drain inlets and adjacent water bodies prior to beginning work
- Use dry cleaning methods, where possible
- Do not wash or pour any material into the street, water bodies, or storm drain system

4.7 Spill Response and Prevention

- Inspect equipment and transportation vehicles daily
- Keep spill kits and emergency contact information readily available
- “Spot Clean” leaks and drips routinely
- Respond to all spills immediately
- Contain the spill
- Use rags or absorbents for cleanup of liquids
- Use brooms or shovels for cleanup of dry materials
- Dispose of waste material properly
- Report spills to supervisor immediately
- Notify the Deputy Navy On-Scene Coordinator (808) 473-4689 or (808) 864-2463
- If spill impacts environment or public safety or spill cannot be contained, report spill to 911
- If spill impacts Pearl Harbor, report spill to the Port Operations Control Tower (808) 474-6262
- If spills are above reportable quantities, report to agencies listed in Section 6, Contact Information

5 Drainage Systems & Utility Maintenance

Storm water systems collect and transport urban runoff that may contain pollutants. Maintaining catch basins, storm water inlets and other structures will remove pollutants, prevent clogging and restore the system's sediment trapping capability.

5.1 Boulder/Retention Basin Cleaning

- Clear and remove overgrowth, debris, rocks and silt
- Check basins monthly and clean as required

5.2 Catch Basin Cleaning

- Clean drainage structures before the wet season
- Check on whether there are is any potential contamination present
- Clean out the drain structure before it is 40% full
- Capture and contain all sediment, debris, and water from the cleaning process for disposal; ensure that it is not allowed to flow downstream in the drainage system
- Inspect drain line and structures regularly and more often during the rainy season
- Perform daily check on assigned truck and attachments make any repairs
- Keep accurate logs of catch basins cleaned

5.3 Stream, Ditch & Flood Channel Cleaning

- Check with NAVFAC Hawaii that any necessary permits are obtained before any work is done
- Inspect stream, ditch and flood channel regularly and after large storm events
- Clear and remove overgrowth, debris, rocks and silt; do not allow to redeposit in the stream, ditch, or flood channel
- Do not stockpile material, equipment or waste in stream, ditch, flood channel or other waterways

5.4 Drainage System Repair

See Road, Street, Parking Lot and Sidewalk section.

5.5 Documentation

- Log amount of sediment/debris removed per structure
- Use appropriate equipment and procedures for confined space entry
- Document if no cleaning required
- Complete any required inspection/maintenance report, drainage reports and Confined Space Entry Permit

5.6 Waste Disposal

- Transfer waste fluids to appropriate containers
- Do not discharge wastes to the storm drain system or waterbodies
- Dispose of material appropriately at a properly permitted landfill

5.7 Illicit Discharge& Illegal Dumping Prevention

- Record locations of apparent illegal discharges/illicit connections
- Notify NAVFAC Hawaii PRJ4/EV immediately
- Stop the discharge as quickly as possible
- Note evidence of spills such as odor, sheen, discoloring, etc.
- Note any odors associated with the drainage system
- Track flow back to potential dischargers and conduct above ground inspection
- Do not wash or pour any material into the street, water bodies, or storm drain system

5.8 Spill Response & Prevention

- Inspect equipment and transportation vehicles daily
- Keep spill kits and emergency contact information readily available
- Respond to all spills immediately
- Contain the spill
- Use rags or absorbents for cleanup of liquids
- Use brooms or shovels for cleanup of dry materials
- Dispose of waste material properly
- Report spills to supervisor immediately
- Notify the Deputy Navy On-Scene Coordinator (808) 473-4689 or (808) 864-2463
- If spill impacts environment or public safety or spill cannot be contained, report spill to 911
- If spill impacts Pearl Harbor, report spill to the Port Operations Control Tower (808) 474-6262
- If spills are above reportable quantities, report to agencies listed in Section 6, Contact Information

6 Contact Information

Navy Region Hawaii

Emergency Response 911

Environmental Department 471-1171

Storm Water Complaint Hotline 722-1674

Deputy Navy On-scene Coordinator 473-4689

864-2463

Green Waste Disposal Coordinator 347-2645

Cultural Resources (for reporting findings/artifacts) ..... 471-1171 ext 368

After Hours (NAVFAC Hawaii Command Duty Officer) 375-4692

Hawaii State Department of Health

Construction & Demolition Waste, Pollution Prevention & Waste Minimization Program (Solid and Hazardous Waste Program) 568-4226

Hazard Evaluation & Emergency Response Office 568-4249
After Hours 247-2191

United States Coast Guard

National Response Center (oil spills or hazardous materials release) ..... (800) 424-8802

Call "911" to report a situation that may impact public safety or an environmental emergency that requires immediate assistance.

APPENDIX 10-1

List and Maps of Commercial Facilities

[Redacted due to national security concerns]

APPENDIX 10-2

Commercial Activity-Specific BMPs

STORM WATER POLLUTION PREVENTION FOR COMMERCIAL ACTIVITIES

BEST MANAGEMENT PRACTICES (BMPs)

FOR GENERAL COMMERCIAL ACTIVITIES & GOOD HOUSEKEEPING

JOINT BASE PEARL HARBOR - HICKAM (JBPHH) , OAHU, HAWAII

The following are general BMPs to be implemented at all commercial facilities:

TRAINING & EDUCATION

- Train all employees on storm water pollution prevention, pollutant sources, facility specific BMPs, & spill response.
- Stencil storm drain inlets & use signage to inform employees of BMPs.
- Designate a person responsible for effective BMP implementation.

GENERAL

- **Never pour anything into the storm drain system or a water body.**
- Permanently disconnect or seal floor drains, sinks, & other non-storm water sources that discharge to the storm drain system.
- Use temporary BMPs (e.g., filter fabric, portable rubber mat) for additional inlet protection.
- Avoid storing or handling materials & wastes near critical areas, such as storm drain inlets or water bodies.
- Prevent storm water from entering work or storage areas (e.g., repair roof leaks, close bay doors during rain, minimize storm water run-on from adjacent facilities).
- Keep readily available spill kits near work & storage areas. Resupply after each use.
- Keep work & storage areas clean & organized, with adequate spacing, to easily identify & access spills or leaks.
- Properly maintain vehicles & equipment to prevent leaks.
- Conduct routine facility inspections to identify spills, leaks, & other potential pollutant sources.
- **Immediately control & clean all spills.**

WASH OR RINSE WATER

- Use dry methods of cleaning (e.g. absorbents, vacuuming) to remove pollutants, clean residue, & reduce wash water.
- Never hose down work areas to outside or to the storm drain system.
- Discharge wash or rinse water to a sanitary sewer (e.g., janitorial sink, toilet, oil water separator).

GENERAL WASTE DISPOSAL

- Cover trash/recycle bins to prevent windblown trash & keep out rain.
- Inspect trash/recycle bins for leaks & repair or replace, as needed.
- Adjust waste pick-up/disposal frequency to match waste generation.

Storm water is not treated before being discharged to streams & the ocean. This is why storm water pollution prevention is critical to protecting our water resources, & for compliance with JBPHH policies & regulations.

Many commercial activities use or generate common materials/wastes that become pollutants when exposed to "storm water" (rain or runoff) that is carried to nearby storm drains & water bodies. Common pollutants include wash water, dirt or loose debris, cooking oil, metals, vehicle fluids, etc.

General BMPs & good housekeeping not only prevent storm water pollution, but help provide a clean & safe work environment. With proper training, BMPs are easy, cost effective ways to prevent storm water pollution during our daily activities.

Note: Hazardous materials & wastes must also be handled in accordance with Base policy & applicable State/Federal regulations.

LANDSCAPING & FACILITY MAINTENANCE

- Routinely clean outdoor areas, including parking lots, of sediment/debris/litter by sweeping & proper disposal.
- Routinely inspect nearby storm drains & inlet protection BMPs. Maintain or replace, as needed (e.g., clear sediment/debris/vegetation, absorb oily sheen, replace torn filter fabric).
- Protect & stabilize areas of exposed soil to prevent erosion.
- Do not conduct landscape activities before or during rain.
- Adjust sprinkler heads to avoid runoff to pavement areas.
- Minimize use of fertilizers, herbicides, & pesticides. Ensure application is conducted by trained personnel.
- Collect & properly dispose of all green waste.
- Minor painting—Use dry methods to prep surfaces. Collect & dispose of debris (e.g., vacuum dust & paint chips). Do not use sprays outdoors on windy days.

Note: Fresh water ONLY rinsing, to remove salt or dust from exterior surfaces, is permitted. Pavements must be swept or vacuumed prior to rinsing. ***Rinsing of parking areas or pressure washing of any kind is PROHIBITED.***

"Only Rain in the Drain!"

To report spills or illicit discharges, Contact:
(808) 449-3184 or (808) 471-4680

For more information visit:
http://www.cnic.navy.mil/storm_water

Last Revised: April 2022

STORM WATER POLLUTION PREVENTION FOR COMMERCIAL ACTIVITIES

BEST MANAGEMENT PRACTICES (BMPs)

FOR ACTIVITIES RELATED TO MATERIAL & WASTE STORAGE

JOINT BASE PEARL HARBOR - HICKAM (JBPHH) , OAHU, HAWAII

Commercial facilities often store materials & wastes onsite. This can include liquids (hazardous & non-hazardous) & bulk items (e.g., treated wood, scrap metals, new/used vehicle parts, solid waste). If improperly stored or handled, these items may be exposed to rain or runoff & become storm water pollutants.

Common storage related activities known to generate storm water pollutants include:

- Outdoor storage of materials & wastes;
- Outdoor loading & unloading of containers; &
- Transfer of liquids between containers & drums.

Note: Hazardous materials/waste must also be handled in accordance with Base policy & applicable Federal/State regulations.

Photos: (Left) Containers of auto fluids, rusted drum & car parts stored outside without cover or spill pallet. (Right) Proper BMPs for transferring waste to drum (i.e. funnel & absorbent).

In addition to the BMPs identified for general commercial activities & good housekeeping, the following are effective ways to prevent storm water pollution when storing materials & wastes:

GENERAL

- Turn in excess hazardous materials for reuse.
- Reduce waste.
- Substitute for non-toxic or less-toxic materials when possible.
- Restrict access to hazardous materials by storing in locked flammable materials lockers.
- Regularly inspect storage BMPs. Maintain or replace, as needed (e.g., no excessive rust on containers, drip pans or spill pallets are emptied of fluids, no leaks).

STORAGE

- Use designated storage areas only.
- Clearly label all drums, cans, containers, tanks, valves.
- Protect storage containers from being damaged by vehicles.
- Store & handle liquids indoors or with adequate cover & containment (e.g., canopies, overpack containers, spill pallets, impermeable bermed areas, door skirt or seal).
- Ensure containment is covered or kept closed to prevent windblown debris & keep out rain.
- Store & handle liquids, & leachable or loose materials on impervious surfaces.
- Avoid storing containers in high-traffic areas.
- Protect indoor & outdoor surfaces using a tarp or containment (e.g., collapsible containment, drip pans).
- Properly store containers over containment.
- Avoid stacking containers/equipment that will be prone to being knocked over.
- Store bulk items indoors, or with adequate cover (e.g., tarp, covered container).
- Do not store bulk items, used parts, or containers directly on the ground (e.g., pallet or spill pallet, as needed).

LOADING & UNLOADING

- Protect nearby storm drain inlets during loading & unloading activities (e.g., impermeable drain cover, portable rubber mats).
- Only transport tightly sealed containers.
- Use proper techniques (e.g., funnel, drip pans, absorbents) when transferring liquids between containers & drums. Clean residue from containers, funnels, drip pans when finished.

WASTE DISPOSAL

- **NEVER dispose of liquid waste into the storm drain.**
- Do not dispose of liquid wastes into trash bin. Use absorbents to soak up liquid before disposal.
- Completely drain fluids from used parts or salvage vehicles & equipment. Clean of residue prior to storage or disposal.
- Schedule regular removal of waste by appropriately qualified personnel or outside contractor.
- Adjust waste pick-up/disposal frequency to match waste generation.

STORM WATER POLLUTION PREVENTION FOR COMMERCIAL ACTIVITIES

BEST MANAGEMENT PRACTICES (BMPs)

FOR ACTIVITIES RELATED TO VEHICLE, BOAT & EQUIPMENT MAINTENANCE

JOINT BASE PEARL HARBOR - HICKAM (JBPHH) , OAHU, HAWAII

Commercial maintenance activities for vehicles (including boats) & equipment often use or generate common materials/wastes (e.g., vehicle fluids, metals, oil, grease) that can become storm water pollutants when improperly stored or handled.

Maintenance facilities are typically at an increased risk of exposing storm water to pollutants. These facilities often have limited availability of indoor or covered workspaces, & routine activities are susceptible to accidental spills or leaks.

Common maintenance-related activities, known to contribute to storm water pollution include:

- Outdoor storage or maintenance of leaking vehicles & equipment; &
- Improper storage of waste items (e.g., used oil, oil filters, tires or batteries).

<u>Note:</u> Hazardous materials/waste must be handled in accordance with Base policy & applicable Federal/State regulations.

Photos: (Top Left) Used parts improperly stored outside without adequate cover & containment. (Top Right) Used drip pans stacked over edge of spill pallet. (Bottom Left) Clearly labelled & accessible spill kit near work area. (Bottom Right) Improper placement of drip pan & absorbent.

In addition to the BMPs identified for general commercial activities & good housekeeping, material storage, & waste storage, the following are effective ways to incorporate storm water pollution prevention into maintenance activities:

GENERAL

- Park vehicles, or equipment indoors or under a roof.
- Park vehicles, or equipment on an impervious surface.
- Inspect vehicles & equipment upon arrival for leaks. Use drip pans or spill containment, as needed.
- Install filter fabric, intended for absorption of oil/grease/fuel, on all nearby storm drain inlets.
- Regularly inspect BMPs. Maintain or replace, as needed (e.g., no excessive rust on containers, drip pans or spill pallets are emptied of fluids, no leaks).
- **NEVER dispose of liquid waste into the storm drain.**

WASH WATER

- Use dry methods of cleaning (e.g., absorbents, vacuuming) to remove pollutants, clean residue, & reduce wash water.
- Use parts washers to minimize use of solvents.
- Never hose down work areas to outside or to the storm drain system.
- Designate areas for washing non-vehicular air filters & other greasy equipment.
- Discharge wash or rinse water to a sanitary sewer (e.g., janitorial sink, toilet, oil water separator).

MAINTENANCE

- Perform equipment maintenance at designated areas.
- Conduct maintenance within a building or covered area.
- Store & handle liquids indoors or with adequate cover & containment (e.g., canopies, overpack containers, spill pallets, impermeable bermed areas, door skirt or seal).
- Keep containers sealed between uses.
- Do not store bulk items, used parts, or containers directly on the ground (e.g., pallet or spill pallet, as needed).
- Protect indoor & outdoor surfaces using a tarp or containment (e.g., collapsible containment, drip pans).
- Completely drain fluids from used parts or salvage vehicles & equipment. Clean of residue prior to storage or disposal.

PAINTING/SANDING

- Enclose outdoor sanding & painting operations. Use tarps to contain & collect solid wastes.
- Avoid sanding or painting in windy weather. Use tarps to contain overspray.
- Vacuum particulate wastes from sanding or painting operations.
- When possible, paint in designated paint booth or well ventilated indoor area, with containment.
- Properly empty spray cans & allow paint to completely dry before disposal.

STORM WATER POLLUTION PREVENTION FOR COMMERCIAL ACTIVITIES

BEST MANAGEMENT PRACTICES (BMPs)

FOR ACTIVITIES RELATED TO VEHICLE & BOAT WASHING

JOINT BASE PEARL HARBOR - HICKAM (JBPHH) , OAHU, HAWAII

Wash or rinse water from commercial vehicles & boats (except allowable fresh water boat rinsing, as specified below) is **PROHIBITED** from entering the storm drain system or surrounding land & waters.

Vehicle & boat wash or rinse water often contains cleaners & detergents. It then becomes contaminated with dirt, metals, oil, grease, & other pollutants as it washes over dirty surfaces. To prevent pollutants from being washed into the storm drain system, all washing must be conducted at designated wash facilities (i.e., equipped with containment, & collection or treatment systems).

Photos: (Top) Overspray leaving wash bay. (Bottom) Sump drain system collects wash water overflowing from wash bay for treatment.

ALLOWABLE FRESH WATER BOAT RINSING: A conditional exemption allows fresh water ONLY rinsing of boats or gear, with the intention of removing salt residue, to discharge to the storm drain system or percolate into the ground. The exemption only applies if there is no evidence of odor, sheen, debris (e.g., rust, paint chips), or other contaminants in rinse water. **Pressure washing of any kind is prohibited.**

In addition to the BMPs identified for general commercial activities & good housekeeping, material storage, & waste storage, the following are effective ways to incorporate storm water pollution prevention into vehicle & boat washing activities:

GENERAL

- Use signage to discourage patrons from conducting maintenance in wash areas & report illicit discharges observed on the property.
- Substitute phosphate-free, biodegradable detergents, & less harmful cleaners.
- Minimize quantities of cleaners & detergents stored onsite.

WASHING

- Wash vehicles & equipment in designated areas only.
- If there is no designated wash rack, when possible, conduct washing at an offsite wash facility.
- Conduct washing indoors or with adequate cover & containment.
- Conduct washing on impervious surfaces with berms or containment to prevent runoff from site or storm water run-on from adjacent areas.
- Control overspray (e.g., use wash bay curtains, size properly for washing, install impermeable berm).
- Prohibit fueling & maintenance in wash bays.
- Always contain & discharge wash water to an appropriate recycling, treatment (e.g., sanitary sewer), or containment system (for collection by an offsite disposal facility).
- Ensure wash water is properly pre-treated (meets wastewater pretreatment requirements) before being discharged to the sanitary sewer.
- Use low pressure to avoid generating debris from loose paint or rust.
- After washing, clean pavements of residue that may be exposed to storm water.

OIL WATER SEPARATORS (OWS)

- Don't use detergents. These disperse oils & contaminants, making an OWS less effective.
- Prior to washing, remove & properly dispose of heavy build up of dirt & debris to reduce load on the OWS.
- Do not use the OWS to treat wash water from spills.
- Routinely inspect & maintain the OWS to ensure proper function.

STORM WATER POLLUTION PREVENTION FOR COMMERCIAL ACTIVITIES

BEST MANAGEMENT PRACTICES (BMPs)

FOR ACTIVITIES RELATED TO VEHICLE FUELING

JOINT BASE PEARL HARBOR - HICKAM (JBPHH) , OAHU, HAWAII

Due to the volume & frequent handling of hazardous materials, commercial fueling facilities pose a high risk for contributing to storm water pollution if BMPs are not properly implemented.

When possible, fueling should be conducted at a designated facility equipped with structural BMPs to prevent storm water from being exposed to pollutants. Common structural BMPs include secondary containment, overflow protection, & isolation valves for aboveground storage tank (AST) filling areas.

Although commercial fueling facilities are subject to additional Federal/State regulations for spill prevention & control measures, proper employee training & BMPs are still important to ensure day-to-day operations minimize potential impacts to storm water quality. This is especially true of facilities that conduct mobile fueling, where use of offsite fuel facilities is not feasible.

Note: Hazardous materials/waste must be handled in accordance with Base policy & applicable Federal/State regulations.

Photos: (Top) Improper storage of fuel containers for small equipment. (Bottom) Tank filling instructions & BMPs clearly posted by AST fuel filling area.

In addition to the BMPs identified for general commercial activities & good housekeeping, material storage, & waste storage, the following are effective ways to incorporate storm water pollution prevention into your fueling activities:

GENERAL

- Perform regular inspections of facility & equipment to ensure structural controls are functioning correctly. Clean up spills with absorbents.
- Protect tanks & fuel pumps from collisions with vehicles/ equipment with curbs & bollards.
- Use temporary BMPs (e.g., filter fabric, portable rubber mat) for additional inlet protection.
- Install filter fabric, intended for absorption of oil/grease/ fuel, on all nearby storm drain inlets.
- Stencil storm drain inlets & use signage to inform employees of BMPs, such as tank filling & spill response procedures.
- **Immediately control & clean all spills.**

FUELING

- Only conduct fueling at designated onsite or offsite fueling areas. If mobile fueling is required, when possible, use drip pans & absorbents to catch spills.
- Conduct fueling on impervious surfaces with berms or containment to prevent runoff from site or storm water run-on from adjacent areas.
- Provide absorbent booms in unbermed fueling areas.
- Avoid fueling activities near critical areas, such as storm drain inlets or water bodies.
- Protect nearby storm drain inlets during fueling activities
- Clearly label all drums, cans, containers, tanks, & valves.
- Regularly test & inspect equipment.
- Conduct preventative maintenance to keep equipment (e.g., tanks, piping, valves, pumps) in good condition.
- Keep readily available spill kits near fueling areas. Resupply after each use. Store drip pans nearby & use them near hoses or other areas prone to spills & leaks.
- Use dry methods of cleaning (e.g. absorbents) to remove pollutants, clean residue, & reduce wash water.
- Do not hose down or bury spills. If needed, remove soiled material & properly dispose of it.
- Discourage “topping off” of fuel tanks.
- Use spill & overflow protection devices.
- Keep containment area valves closed at all times.
- Clean containment areas of residue & potential pollutants. Inspect storm water for sheen/signs of pollutants & remove pollutants prior to discharge.

STORM WATER POLLUTION PREVENTION FOR COMMERCIAL ACTIVITIES

BEST MANAGEMENT PRACTICES (BMPs)

FOR ACTIVITIES RELATED TO RESTAURANTS & FOOD SERVICE

JOINT BASE PEARL HARBOR - HICKAM (JBPHH) , OAHU, HAWAII

Restaurants & food service facilities (including food trucks) generate waste (e.g., disposable food containers, used cooking oil/grease), wash or rinse water, & other pollutants that can impact storm water quality when improperly handled or disposed of.

Examples of related activities known to generate potential storm water pollutants include:

- Routine cleaning;
- Improper disposal of food waste & disposable containers; &
- Improper disposal of fats, oils & grease (FOG) to the sewer system or poorly maintained grease traps that can cause sewage clogs or spills.

In addition to BMPs identified for general commercial activities & good housekeeping, material storage, & waste storage, the following are effective ways to incorporate storm water pollution prevention into activities related to restaurants & food service:

GENERAL

- **NEVER pour anything (including wash water, FOG) into the storm drain system or a water body.**
- Train all employees on storm water pollution prevention, pollutant sources, facility specific BMPs, & spill response.
- Use signage to inform employees of BMPs & encourage patrons to properly dispose of their waste in trash bins.

ROUTINE CLEANING:

- Routinely clean outdoor areas, including parking lots, of sediment/debris/litter by sweeping & proper disposal.
- Store cleaners & detergents indoors.
- Clean equipment & floor mats in a designated wash area, such as in a janitorial sink or over floor drains.
- Use dry methods of cleaning (e.g. absorbents, sweeping) to remove pollutants, clean residue, & reduce wash water. *This is useful for trash/recycle bins, bin storage areas, oil & grease spills.*
- If washing is needed, discharge wash water to a sanitary sewer (e.g., janitorial sink, toilet, floor drains).
- **Never dispose of wash or rinse water outside or to the storm drain system.**

WASTE DISPOSAL:

- Reduce waste. Utilize recycling/reuse programs.
- If there are no nearby public trash bins, provide your own for patrons' trash.
- Do not dispose of liquid wastes into trash bin. Use absorbents to soak up liquid before disposal.

Photos: (Top) Litter & windblown trash from parking lots is washed into the storm drain system & discharged to our ocean waters. (Bottom) Improper cleaning practices & disposal of wash water can carry pollutants (such as cooking oil, grease, dirt, food, & other waste) into the storm drain system.

- Cover trash/recycle bins to prevent windblown trash & keep out rain.
- Inspect trash/recycle bins for leaks & repair or replace, as needed.
- Schedule regular removal of trash & other collection bins to prevent overflow.
- Adjust waste pick-up/disposal frequency to match waste generation.

USED COOKING OIL DISPOSAL/GREASE TRAPS:

- If needed, for discharges of FOG, ensure that kitchen fixtures connect to a grease trap.
- Never pour oil or grease directly into the sanitary sewer (e.g., sinks, toilets).
- Scrape grease & food scraps into trash to prevent overloading of grease trap.
- Use proper techniques (e.g., funnel, drip pans, absorbents when transferring used cooking oil to drums or tanks. Clean residue from containers, funnels, drip pans when finished.
- Keep containers & drums sealed between uses.
- Store used cooking oil drums/tanks indoors or with adequate cover & containment.
- Routinely inspect grease trap. Schedule routine maintenance or removal of FOG to ensure proper function & prevent overflow.

APPENDIX 10-3

Commercial Inspection Schedule

[Redacted due to national security concerns]

APPENDIX 10-4

Commercial Training Brochures

Photos: (Left) Containers of auto fluids, rusted drum & car parts stored outside without cover or spill pallet. (Right) Proper BMPs for transferring waste to drum (i.e. funnel & absorbent).

Common Deficiencies & Recommendations:

- Uncovered, leaking trash bins.

  Do not dispose of liquid wastes or use absorbents to soak up liquid before disposal. Cover trash bins to prevent windblown trash & keep out rain. Inspect trash bins for leaks & repair or replace, as needed.

- Improper material/waste storage outside (e.g. containers, used parts, bulk items, trash)

  Completely drain fluids from used parts, or salvage vehicles & equipment. Clean of residue prior to storage or disposal. Store liquids or bulk items indoors, or with adequate cover & containment (e.g., canopies, overpack containers, impermeable bermed areas). Schedule regular removal of waste.

- Improper disposal of wash water.

  Use dry methods of cleaning to reduce wash water. Discharge wash or rinse water to a sanitary sewer (e.g., janitorial sink, toilet, oil water separator).

- Poorly maintained BMPs & storm drains (e.g., torn filter fabric, accumulated sediment/ debris).

  Routinely inspect BMPs & nearby storm drains. Maintain as needed (e.g., clear sediment/debris/vegetation, absorb oily sheen, replace temporary BMPs if needed).

Under authority delegated by the Environmental Protection Agency (EPA), the Hawaii Department of Health - Clean Water Branch (DOH-CWB) has issued NRH a National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000257 (the "Permit").

The Permit covers JBPHH, and other Navy and industrial facilities located throughout Oahu. It protects Hawaii's waters by prohibiting most non-storm water discharges to the storm drain system and surrounding water bodies, with a few allowable exceptions (e.g., air conditioner condensate, clean potable water). The Permit also requires implementation of best management practices (BMPs), to minimize the discharge of pollutants (e.g., chemicals, fuel, grease, trash, dirt).

Who is Responsible for Storm Water Pollution Prevention?

The Permit applies to all tenants at JBPHH, making storm water pollution prevention everyone's responsibility.

Objective

This brochure has been developed as a reference document for personnel conducting commercial activities at JBPHH. It is intended to be used as guidance for storm water related training and BMPs. This document is not comprehensive and should be supplemented with activity-specific training, as needed.

"Only Rain in the Drain!"

For more information about Navy Region Hawaii's storm water program visit:

http://www.cnic.navy.mil/storm_water

To report a storm water illicit discharge contact the **Installation Environmental Compliance Hotline**:

(808) 449-3184

Storm Water Pollution Prevention for

COMMERCIAL ACTIVITIES

Related to:

- General Information
- Good Housekeeping
  - ◊ Storage, handling, and disposal of common materials and wastes
  - ◊ Routine cleaning & facility maintenance

Navy Region Hawaii (NRH)
Joint Base Pearl Harbor Hickam (JBPHH),
Oahu, Hawaii

Why is Storm Water Important?

- As rain or runoff ("storm water") flows the ground and other outdoor surfaces, it can pick up and transport pollutants to nearby storm drain inlets and waterways.
- Storm water is **not** treated before it is discharged to our valuable water resources.
- Storm water pollutants end up in our streams and oceans, where they can cause harm to human health, and water ecosystems.
- Non-compliance with Federal and State regulations can lead to fines, enforcement action, or removal from JBPHH.

What are Storm Water Pollutants?

Storm water pollutants include materials and wastes that can cause harm to human health, canals, ponds, streams, or the ocean. Common storm water pollutants (e.g., chemicals, fuel, grease, trash, dirt) can be generated from routine household, commercial and industrial activities.

Note: NRH's Permit (described on the back of this brochure) prohibits most non-storm water discharges.

Good housekeeping, such as routine cleaning, and proper material/waste storage, handling and disposal practices, help minimize potential pollutant sources from being exposed to storm water. These practices not only play an important role in storm water pollution prevention, but also promote a clean and safe workplace.

The best management practices (BMPs) listed here are a good start. More information can be found online at:

https://www.cnic.navy.mil/regions/cnrh/om/environmental/storm_water_program.html

Where to Start?

- The first step to prevent storm water pollution is to identify potential pollutant sources.
- Know how storm water flows at your facility & identify critical areas to protect from potential pollutants (e.g. nearby storm drains, wetlands, water bodies).
- Familiarize yourself with facility-specific BMPs and incorporate them into your daily activities to minimize potential pollutant sources .
- Keep potential pollutants away from critical areas and quickly respond to protect these areas in the event of a spill or release.

Remember…

Preventing potential pollutants, such as liquids or loose materials, from coming into contact with storm water (also known as "Pollutant source control") is the most cost effective method of storm water pollution prevention!

Best Management Practices (BMPs)

TRAINING & EDUCATION

- ☐ Train all employees on storm water pollution prevention, pollutant sources, facility specific BMPs, & spill response.
- ☐ Stencil storm drain inlets & use signage inform employees of BMPs.
- ☐ Designate a person responsible for effective BMP implementation.

GENERAL

- ☐ **Never pour anything into the storm drain system or a water body**.
- ☐ Permanently disconnect or seal floor drains, sinks, & other non-storm water sources, that discharge to the storm drain system.
- ☐ Avoid storing or handling materials & wastes near critical areas, such as storm drain inlets or water bodies.
- ☐ Keep readily available spill kits near work & storage areas. Refill as needed.
- ☐ Keep work & storage areas clean & organized, with adequate spacing, to easily identify & access spills or leaks.
- ☐ Properly maintain vehicles & equipment to prevent leaks.
- ☐ Conduct routine facility inspections to identify spills, leaks, & other potential pollutant sources.
- ☐ **Immediately control & clean all spills.**

WASH OR RINSE WATER

- ☐ Use dry methods of cleaning (e.g. absorbents, vacuuming) to remove pollutants, clean residue, & reduce wash water.
- ☐ **Never hose down work areas to outside or to the storm drain system.**
- ☐ Discharge wash or rinse water to a sanitary sewer (e.g., janitorial sink, toilet, oil water separator).

MATERIAL/WASTE STORAGE

- ☐ Turn in excess hazardous materials for reuse.
- ☐ Reduce waste.
- ☐ Substitute for non-toxic or less-toxic materials when possible.
- ☐ Use designated storage areas only.
- ☐ Regularly inspect storage BMPs. Maintain or replace, as needed (e.g., no excessive rust on containers, drip pans or spill pallets are emptied of fluids, no leaks).
- ☐ Store & handle liquids indoors, or with adequate cover & containment (e.g., canopies, overpack containers, spill pallets, impermeable bermed areas, door skirt or seal).
- ☐ Store & handle liquids, & leachable or loose materials on impervious surfaces.
- ☐ Store bulk items indoors, or with adequate cover (e.g., tarp, covered container). Do not store bulk items, used parts, or containers directly on the ground (e.g., pallet or spill pallet, as needed).
- ☐ Use proper techniques (e.g., funnel, drip pans, absorbents) when transferring liquids between containers & drums. Clean residue from containers, funnels, drip pans when finished.

WASTE DISPOSAL

- ☐ Completely drain fluids from used parts, or salvage vehicles & equipment. Clean of residue prior to storage or disposal.
- ☐ Cover trash/recycle bins to prevent windblown trash & keep out rain.
- ☐ Inspect trash/recycle bins for leaks & repair or replace, as needed.
- ☐ Adjust waste pick-up/disposal frequency to match waste generation.

LANDSCAPING & FACILITY MAINTENANCE

- ☐ Routinely clean outdoor areas, including parking lots, of sediment/debris/litter by sweeping & proper disposal.
- ☐ Routinely inspect nearby storm drains & inlet protection BMPs. Maintain or replace, as needed (e.g., clear sediment/debris/vegetation, absorb oily sheen, replace torn filter fabric).
- ☐ Do not conduct landscape activities before or during rain.

Note: Fresh water ONLY rinsing, to remove salt or dust from exterior surfaces, is permitted. Pavements must be swept or vacuumed prior to rinsing. ***Rinsing of parking areas or pressure washing of any kind is PROHIBITED.***

Photo: Wash water overflowing out of wash bay to parking lot.

Common Deficiencies & Recommendations:

- Washing (or pressure washing) of equipment outside, with wash water discharging to the ground.

  Conduct washing indoors, or with adequate cover and containment. Wash water must be recycled, treated (i.e. discharged to sanitary sewer), or collected by an offsite disposal facility. Use low pressure to avoid generating debris from loose paint or rust.

- Overspray and runoff overflowing from wash area.

  Control overspray with an impermeable barrier, such as wash bay curtains, or a berm.

- Fuel containment area isolation valves left open, allowing discharge of storm water runoff prior to inspection for pollutants.

  Keep containment valves closed at all times. Inspect storm water for sheen/signs of pollutants & remove pollutants before valve is opened.

Under authority delegated by the Environmental Protection Agency (EPA), the Hawaii Department of Health - Clean Water Branch (DOH-CWB) has issued NRH a National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000257 (the "Permit").

The Permit covers JBPHH, and other Navy and industrial facilities located throughout Oahu. It protects Hawaii's waters by prohibiting most non-storm water discharges to the storm drain system and surrounding water bodies, with a few allowable exceptions (e.g., air conditioner condensate, clean potable water). The Permit also requires implementation of best management practices (BMPs), to minimize the discharge of pollutants (e.g., chemicals, fuel, grease, trash, dirt).

Who is Responsible for Storm Water Pollution Prevention?

The Permit applies to all tenants at JBPHH, making storm water pollution prevention everyone's responsibility.

Objective

This brochure has been developed as a reference document for personnel conducting commercial activities at JBPHH. It is intended to be used as guidance for storm water related training and BMPs. This document is not comprehensive and should be supplemented with activity-specific training, as needed.

"Only Rain in the Drain!"

For more information about Navy Region Hawaii's storm water program visit:

http://www.cnic.navy.mil/storm_water

To report a storm water illicit discharge contact the **Installation Environmental Compliance Hotline**:

(808) 449-3184

Storm Water Pollution Prevention

BEST MANAGEMENT PRACTICES (BMPs) FOR COMMERCIAL ACTIVITIES

Related to:

- Vehicle, Boat & Equipment Washing
- Fueling

Navy Region Hawaii (NRH)
Joint Base Pearl Harbor Hickam (JBPHH), Oahu, Hawaii

Photo: Clearly labelled spill kit stored beside fuel pump.

Background

Under the 1972 Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permitting program was established to protect our Nation's waters from discharge of pollutants. Under the NPDES program, Federal and delegated State agencies use NPDES permits to monitor and regulate potential discharges of pollutants to storm drain systems and water bodies. In Hawaii NPDES permits are issues by the Hawaii Department of Health—Clean Water Branch (DOH-CWB).

As part of its NPDES permit compliance, Navy Region Hawaii (NRH) has developed a Commercial Activities Discharge Management Program (CADMP) to reduce the discharge of pollutants, to the maximum extent practicable, from its commercial facilities and activities.

Important parts of the CADMP include keeping an inventory of commercial facilities, requiring implementation of BMPs (like those identified in this brochure!), and routine compliance inspections.

How Does Storm Water Become Polluted?

As rain or runoff ("storm water") flows over the ground and other outdoor surfaces, it can pick up and transport pollutants to nearby storm drain inlets and waterways.

Storm water pollutants (e.g., chemicals, fuel, grease, trash, dirt) can cause harm to the human health, canals, streams, ponds, or oceans, and need to be prevented from entering the storm drain system and surrounding water bodies. NRH's Permit (described on the back of this brochure) prohibits most discharges other than storm water into its storm drainage system and surrounding water bodies.

Where to Start?

- The first step to prevent storm water pollution is to identify potential pollutant sources.
- Know how storm water flows at your facility & identify critical areas to protect from potential pollutants (e.g. nearby storm drains, wetlands, water bodies).
- Familiarize yourself with facility-specific BMPs and incorporate them into your daily activities to minimize potential pollutant sources .
- Keep potential pollutants away from critical areas and quickly respond to protect these areas in the event of a spill or release.

Remember…

Preventing potential pollutants, such as liquids or loose materials, from coming into contact with storm water (also known as "Pollutant source control") is the most cost effective method of storm water pollution prevention!

Best Management Practices (BMPs)

The following are some BMPs that can help to prevent storm water pollution related to washing and fueling activities. More information can be found online at:

https://www.cnic.navy.mil/regions/cnrh/om/environmental/storm_water_program.html

GENERAL

- ☐ Stencil storm drain inlets & use signage inform patrons & employees of BMPs.
- ☐ Substitute phosphate-free, biodegradable detergents, & less harmful cleaners.
- ☐ Perform regular inspections of facility & equipment to ensure structural controls are functioning correctly.
- ☐ Use temporary BMPs (e.g., filter fabric, portable rubber mat) for additional inlet protection.
- ☐ Only conduct washing or fueling at designated onsite facilities, or offsite facilities (when possible).
- ☐ Conduct washing or fueling on impervious surfaces with berms or containment to prevent runoff from site or storm water run-on from adjacent areas.
- ☐ **Immediately control & clean all spills.**

WASHING

- ☐ Conduct washing indoors, or with adequate cover and containment.
- ☐ Control overspray (e.g., use wash bay curtains, size properly for washing, install impermeable berm).
- ☐ Prohibit fueling & maintenance in wash bays.
- ☐ Always contain & discharge wash water to an appropriate recycling, treatment (e.g., sanitary sewer), or containment system (for collection by an offsite disposal facility).

Note: A conditional exemption allows fresh water ONLY rinsing of boats or gear, with the intention of removing salt residue, to discharge to the storm drain system or percolate into the ground. This only applies if there is no evidence of odor, sheen, debris (e.g., rust, paint chips), or other contaminants in rinse water. ***Pressure washing of any kind is prohibited.***

OIL WATER SEPARATOR (OWS)

- ☐ Don't use detergents. These disperse oils & contaminants, making an OWS less effective.
- ☐ Remove and properly dispose of heavy build up of dirt & debris, prior to washing, to reduce load on the OWS.
- ☐ Do not use the OWS to treat wash water from spills.
- ☐ Routinely inspect & maintain the OWS to ensure proper function.

FUELING

- ☐ If mobile fueling is required, when possible, use drip pans & absorbents to catch spills.
- ☐ Avoid fueling activities near critical areas, such as storm drain inlets or water bodies.
- ☐ Clearly label all drums, cans, containers, tanks, and valves.
- ☐ Conduct preventative maintenance to keep equipment (e.g., tanks, piping, valves, pumps) in good condition.
- ☐ Keep readily available spill kits near fueling areas. Refill as needed.
- ☐ Do not hose down or bury spills. If needed, remove soiled material & properly dispose of.
- ☐ Use spill & overflow protection devices.
- ☐ Keep containment area valves closed at all times.
- ☐ Clean containment areas of residue & potential pollutants. Inspect storm water for sheen/signs of pollutants & remove pollutants prior to discharge.

Photo: (Top Left) Improper stacking of used drip pans. (Top Right) Heavy staining on pavement from leaking vehicles. (Bottom) Used parts and rusted metal stored outside, uncovered.

Common Deficiencies & Recommendations:

- Evidence of spills outside, near work and storage areas.

  Immediately control & clean all spills. Store & handle liquids indoors, or with adequate cover & containment. Keep containers sealed between uses. Inspect vehicles & equipment upon arrival for leaks. Use drip pans, or spill containment, as needed.

- Improper storage of used drip pans, broken parts.

  Drain fluids before storing or use absorbents to clean leftover residue. Store on top of spill pallets, indoors or covered from exposure to rain.

- Spill kits with insufficient supplies.

  Regularly inspect BMPs, including spill kits. Resupply after each use.

Under authority delegated by the Environmental Protection Agency (EPA), the Hawaii Department of Health - Clean Water Branch (DOH-CWB) has issued NRH a National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000257 (the "Permit").

The Permit covers JBPHH, and other Navy and industrial facilities located throughout Oahu. It protects Hawaii's waters by prohibiting most non-storm water discharges to the storm drain system and surrounding water bodies, with a few allowable exceptions (e.g., air conditioner condensate, clean potable water). The Permit also requires implementation of best management practices (BMPs), to minimize the discharge of pollutants (e.g., chemicals, fuel, grease, trash, dirt).

Who is Responsible for Storm Water Pollution Prevention?

The Permit applies to all tenants at JBPHH, making storm water pollution prevention everyone's responsibility.

Objective

This brochure has been developed as a reference document for personnel conducting commercial activities at JBPHH. It is intended to be used as guidance for storm water related training and BMPs. This document is not comprehensive and should be supplemented with activity-specific training, as needed.

"Only Rain in the Drain!"

For more information about Navy Region Hawaii's storm water program visit:

http://www.cnic.navy.mil/storm_water

To report a storm water illicit discharge contact the **Installation Environmental Compliance Hotline**:

(808) 449-3184

Storm Water Pollution Prevention

BEST MANAGEMENT PRACTICES (BMPs) FOR COMMERCIAL ACTIVITIES

Related to:

- Vehicle, Boat & Equipment Maintenance
  - Preventative Maintenance
  - Mechanical Repair
  - Painting/Sanding

Navy Region Hawaii (NRH)
Joint Base Pearl Harbor Hickam (JBPHH), Oahu, Hawaii

Photos: Proper source control BMPs are the best way to prevent spills/leaks that can wash pollutants into the storm drain. (Top) Clean and indoor storage areas. (Bottom) Heavy pavement staining from leaking vehicles.

Background

Under the 1972 Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permitting program was established to protect our Nation's waters from discharge of pollutants. Under the NPDES program, Federal and delegated State agencies use NPDES permits to monitor and regulate potential discharges of pollutants to storm drain systems and water bodies. In Hawaii NPDES permits are issues by the Hawaii Department of Health—Clean Water Branch (DOH-CWB).

As part of its NPDES permit compliance, Navy Region Hawaii (NRH) has developed a Commercial Activities Discharge Management Program (CADMP) to reduce the discharge of pollutants, to the maximum extent practicable, from its commercial facilities and activities.

Important parts of the CADMP include keeping an inventory of commercial facilities, requiring implementation of BMPs (like those identified in this brochure!), and routine compliance inspections.

How Does Storm Water Become Polluted?

As rain or runoff ("storm water") flows over the ground and other outdoor surfaces, it can pick up and transport pollutants to nearby storm drain inlets and waterways.

Storm water pollutants (e.g., chemicals, fuel, grease, trash, dirt) can cause harm to the human health, canals, streams, ponds, or oceans, and need to be prevented from entering the storm drain system and surrounding water bodies. NRH's Permit (described on the back of this brochure) prohibits most discharges other than storm water into its storm drainage system and surrounding water bodies.

Where to Start?

- The first step to prevent storm water pollution is to identify potential pollutant sources.
- Know how storm water flows at your facility & identify critical areas to protect from potential pollutants (e.g. nearby storm drains, wetlands, water bodies).
- Familiarize yourself with facility-specific BMPs and incorporate them into your daily activities to minimize potential pollutant sources .
- Keep potential pollutants away from critical areas and quickly respond to protect these areas in the event of a spill or release.

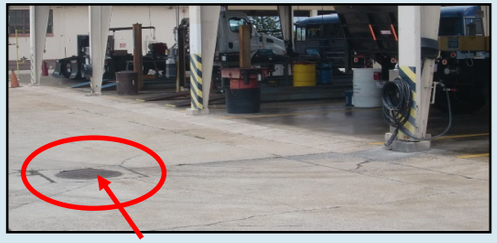


Photo: An unprotected storm drain inlet, located downstream of work areas, is a critical area to protect from potential pollutants.

Best Management Practices (BMPs)

The following are some BMPs that can help to prevent storm water pollution related to vehicle, boat & equipment maintenance. More information can be found online at:

https://www.cnic.navy.mil/regions/cnrh/om/environmental/storm_water_program.html

GENERAL

- ☐ Park vehicles, or equipment indoors or under a roof.
- ☐ Park vehicles, or equipment on an impervious surface.
- ☐ Keep readily available spill kits near work & storage areas. Refill as needed.
- ☐ Inspect vehicles & equipment upon arrival for leaks. Use drip pans, or spill containment, as needed.
- ☐ Install filter fabric, intended for absorption of oil/grease/fuel, on all nearby storm drain inlets.
- ☐ Regularly inspect BMPs. Maintain or replace, as needed (e.g., no excessive rust on containers, drip pans or spill pallets are emptied of fluids, no leaks).
- ☐ **NEVER dispose of liquid waste into the storm drain.**

WASH WATER

- ☐ Use dry methods of cleaning (e.g. absorbents, vacuuming) to remove pollutants, clean residue, & reduce wash water.
- ☐ Use parts washers to minimize use of solvents.
- ☐ Never hose down work areas to outside or to the storm drain system.
- ☐ Designate areas for washing non-vehicular air filters and other greasy equipment.
- ☐ Discharge wash or rinse water to a sanitary sewer (e.g., janitorial sink, toilet, oil water separator).

MAINTENANCE

- ☐ Perform equipment maintenance at designated areas.
- ☐ Conduct maintenance within a building or covered area.
- ☐ Store & handle liquids indoors, or with adequate cover & containment (e.g., canopies, overpack containers, spill pallets, impermeable bermed areas, door skirt or seal).
- ☐ Keep containers sealed between uses.
- ☐ Do not store bulk items, used parts, or containers directly on the ground (e.g., pallet or spill pallet, as needed).
- ☐ Protect indoor & outdoor surfaces using a tarp or containment (e.g., collapsible containment, drip pans).
- ☐ Completely drain fluids from used parts, or salvage vehicles & equipment. Clean of residue prior to storage or disposal.

PAINTING/SANDING

- ☐ Enclose outdoor sanding and painting operations & use tarps to contain and collect solid wastes.
- ☐ Avoid sanding or painting in windy weather. Use tarps to contain overspray.
- ☐ Vacuum particulate wastes from sanding or painting operations.
- ☐ When possible, paint in designated paint booth or well ventilated indoor area, with containment.
- ☐ Properly empty spray cans & allow paint to completely dry before disposal.

Note: Hazardous materials/waste must be handled in accordance with Base policy and applicable Federal/State regulations.

Remember…

Preventing potential pollutants, such as liquids or loose materials, from coming into contact with storm water (also known as "Pollutant source control") is the most cost effective method of storm water pollution prevention!

Photos: (Left) Inadequate maintenance of a grease trap can lead to overflows of wastewater, food waste, oil, and grease. (Right) Improper disposal of rinse water to a nearby storm drain inlet.

Common Deficiencies & Recommendations:

- Litter or windblown trash that can be washed into the storm drain.
  Cover trash/recycle bins to prevent windblown trash & keep out rain. Routinely clean outdoor areas, including parking lots, of sediment/ debris/litter by sweeping & proper disposal.
- Outdoor rinsing of equipment (e.g., dishes, floor mats), and improper disposal of mop water to the ground or storm drain system.
  Clean equipment in a designated wash area, such as in a janitorial sink or over floor drains. Use dry methods of cleaning (e.g. absorbents, sweeping) to remove pollutants, clean residue, & reduce wash water.
- Poorly maintained or leaking grease trap, that may discharge wastewater to ground.
  Scrape grease & food scraps into trash to prevent overloading of grease trap. Routinely inspect & schedule routine maintenance to ensure proper function & prevent overflows.

Under authority delegated by the Environmental Protection Agency (EPA), the Hawaii Department of Health - Clean Water Branch (DOH-CWB) has issued NRH a National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000257 (the "Permit").

The Permit covers JBPHH, and other Navy and industrial facilities located throughout Oahu. It protects Hawaii's waters by prohibiting most non-storm water discharges to the storm drain system and surrounding water bodies, with a few allowable exceptions (e.g., air conditioner condensate, clean potable water). The Permit also requires implementation of best management practices (BMPs), to minimize the discharge of pollutants (e.g., chemicals, fuel, grease, trash, dirt).

Who is Responsible for Storm Water Pollution Prevention?

The Permit applies to all tenants at JBPHH, making storm water pollution prevention everyone's responsibility.

Objective

This brochure has been developed as a reference document for personnel conducting commercial activities at JBPHH. It is intended to be used as guidance for storm water related training and BMPs. This document is not comprehensive and should be supplemented with activity-specific training, as needed.

"Only Rain in the Drain!"

For more information about Navy Region Hawaii's storm water program visit:

http://www.cnic.navy.mil/storm_water

To report a storm water illicit discharge contact the **Installation Environmental Compliance Hotline**:

(808) 449-3184

Storm Water Pollution Prevention

BEST MANAGEMENT PRACTICES (BMPs) FOR COMMERCIAL ACTIVITIES

Related to:

- Restaurants & Food Service

Navy Region Hawaii (NRH)
Joint Base Pearl Harbor Hickam (JBPHH),
Oahu, Hawaii

Photo: Disposable food containers are a common and preventable source of pollution in our waters.

Background

Under the 1972 Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permitting program was established to protect our Nation's waters from discharge of pollutants. Under the NPDES program, Federal and delegated State agencies use NPDES permits to monitor and regulate potential discharges of pollutants to storm drain systems and water bodies. In Hawaii NPDES permits are issues by the Hawaii Department of Health—Clean Water Branch (DOH-CWB).

As part of its NPDES permit compliance, Navy Region Hawaii (NRH) has developed a Commercial Activities Discharge Management Program (CADMP) to reduce the discharge of pollutants, to the maximum extent practicable, from its commercial facilities and activities.

Important parts of the CADMP include keeping an inventory of commercial facilities, requiring implementation of BMPs (like those identified in this brochure!), and routine compliance inspections.

How Does Storm Water Become Polluted?

As rain or runoff ("storm water") flows over the ground and other outdoor surfaces, it can pick up and transport pollutants to nearby storm drain inlets and waterways.

Storm water pollutants (e.g., chemicals, fuel, grease, trash, dirt) can cause harm to the human health, canals, streams, ponds, or oceans, and need to be prevented from entering the storm drain system and surrounding water bodies. NRH's Permit (described on the back of this brochure) prohibits most discharges other than storm water into its storm drainage system and surrounding water bodies.

Where to Start?

- The first step to prevent storm water pollution is to identify potential pollutant sources.
- Know how storm water flows at your facility & identify critical areas to protect from potential pollutants (e.g. nearby storm drains, wetlands, water bodies).
- Familiarize yourself with facility-specific BMPs and incorporate them into your daily activities to minimize potential pollutant sources .
- Keep potential pollutants away from critical areas and quickly respond to protect these areas in the event of a spill or release.

Best Management Practices (BMPs)

The following are some BMPs that can help to prevent storm water pollution related to restaurants & food service. More information can be found online at:

https://www.cnic.navy.mil/regions/cnrh/om/environmental/storm_water_program.html

GENERAL

- ☐ NEVER pour anything (including wash water, FOG) into the storm drain system or a water body.
- ☐ Train all employees on storm water pollution prevention, pollutant sources, facility specific BMPs, & spill response.
- ☐ Use signage to inform employees of BMPs & encourage patrons to properly dispose of their waste in trash bins.

ROUTINE CLEANING

- ☐ Routinely clean outdoor areas, including parking lots, of sediment/debris/litter by sweeping & proper disposal.
- ☐ Store cleaners & detergents indoors.
- ☐ Clean equipment & floor mats in a designated wash area, such as in a janitorial sink or over floor drains.
- ☐ Use dry methods of cleaning (e.g. absorbents, sweeping) to remove pollutants, clean residue, & reduce wash water. *This is useful for trash/recycle bins, bin storage areas, oil & grease spills.*
- ☐ If washing is needed, discharge wash water to a sanitary sewer (e.g., janitorial sink, toilet, floor drains).
- ☐ **Never dispose of wash or rinse water outside or to the storm drain system.**

USED COOKING OIL DISPOSAL/GREASE TRAPS

- ☐ Reduce waste. Utilize recycling/reuse programs.
- ☐ If there are no nearby public trash bins, provide your own for patrons' trash.
- ☐ Do not dispose of liquid wastes into trash bin. Use absorbents to soak up liquid before disposal.
- ☐ Cover trash/recycle bins to prevent windblown trash & keep out rain.
- ☐ Inspect trash/recycle bins for leaks & repair or replace, as needed.
- ☐ Schedule regular removal of trash & other collection bins to prevent overflow.
- ☐ Adjust waste pick-up/disposal frequency to match waste generation.

WASTE DISPOSAL

- ☐ Reduce waste. Utilize recycling/reuse programs.
- ☐ If there are no nearby public trash bins, provide your own for patrons' trash.
- ☐ Do not dispose of liquid wastes into trash bin. Use absorbents to soak up liquid before disposal.
- ☐ Cover trash/recycle bins to prevent windblown trash & keep out rain.
- ☐ Inspect trash/recycle bins for leaks & repair or replace, as needed.
- ☐ Schedule regular removal of trash & other collection bins to prevent overflow.
- ☐ Adjust waste pick-up/disposal frequency to match waste generation.

Remember…

Preventing potential pollutants, such as liquids or loose materials, from coming into contact with storm water (also known as "Pollutant source control") is the most cost effective method of storm water pollution prevention!

APPENDIX 10-5

NPDES Compliance Commercial Inspection Form

NPDES Permit No. HI S000257

COMMERCIAL INSPECTION CHECKLIST			
Bldg. No./Area:		Facility Description:	
Inspection Date:		Priority Ranking: _____ Inspection Type: Permit Required ☐ Follow-up ☐	
Time:	Weather:	Facility POC	Name:
Inspected by:			Email/Phone:

ITEM	Y	N	N/A	COMMENTS
SECTION 1 - TRAINING/EDUCATION				
Employees receive training for storm water pollution prevention.	☐	☐	☐	
Employees demonstrate awareness of activity-specific BMPs, and willingness to implement these practices.	☐	☐	☐	
Training brochure was provided during inspection.	☐	☐	☐	
SECTION 2 – MATERIAL/WASTE HANDLING AND STORAGE				
Safety Data Sheets (SDS) are easily accessible.	☐	☐	☐	
Potential storm water pollutants are properly stored (i.e. labelled, adequate secondary containment)	☐	☐	☐	
Loading and unloading occurs indoors or with adequate BMPs to prevent pollutant exposure to storm water.	☐	☐	☐	
Activities that generate dust/paint chips (e.g., sand-blasting, wood/metal work) are contained and wastes collected and properly disposed of.	☐	☐	☐	
Waste and recycling is collected regularly, by qualified personnel.	☐	☐	☐	
Storage and disposal BMPs adequately minimize risk of pollutant exposure to storm water.	☐	☐	☐	
Spill kits are readily available and sufficiently stocked.	☐	☐	☐	
SECTION 3 - GOOD HOUSEKEEPING				
Outdoor areas (e.g., sidewalks, parking lots) are clear of sediment and debris.	☐	☐	☐	
Trash and recycling bin are kept covered and contained (i.e., leak free).	☐	☐	☐	
Unused equipment and supplies are properly disposed of	☐	☐	☐	
Work areas kept orderly - spills/leaks can be easily identified and cleaned.	☐	☐	☐	
Site surfaces are free of spills and stains.	☐	☐	☐	
Wash water is properly contained and disposed of (e.g., to sewer or offsite contractor).	☐	☐	☐	
SECTION 4 - RESTAURANT/FOOD SERVICE				
Grease trap(s)/interceptor(s) are adequately maintained and function properly.	☐	☐	☐	
Floor, floor mats, trays, range hoods, etc. are washed to utility sink or drain connected to the sewer system.	☐	☐	☐	

BLDG. NO./AREA: _____

ITEM	Y	N	N/A	COMMENTS
SECTION 5 – VEHICLE/EQUIPMENT MAINTENANCE AND STORAGE				
Onsite equipment appears well maintained.	☐	☐	☐	
Maintenance is conducted indoors or with adequate BMPs to prevent pollutant exposure to storm water.	☐	☐	☐	
BMPs (e.g., drip pans, absorbents) are used to contain spills/leaks during maintenance and storage.	☐	☐	☐	
Painting operations are contained to prevent overspray or conducted at a paint booth.	☐	☐	☐	
Salvage equipment is drained of fluids prior to outdoor storage.	☐	☐	☐	
SECTION 6 - VEHICLE/EQUIPMENT WASHING				
When possible, vehicle and equipment washing is conducted at a designated wash rack or offsite location.	☐	☐	☐	
Wash water, wash residue, and debris is properly contained and disposed of.	☐	☐	☐	
SECTION 7 – FUELING				
When possible, fueling is conducted at a designated fueling area.	☐	☐	☐	
Fueling is conducted on a covered, paved surface. **Concrete is more resistant to fuel and oil than asphalt.*	☐	☐	☐	
BMPs for fueling appear to be adequate and well maintained.	☐	☐	☐	
SECTION 8 - STORM DRAIN SYSTEM				
Storm drain inlets and waterways are adequately protected.	☐	☐	☐	
Storm drain inlets and BMPs are adequately maintained.	☐	☐	☐	
Storm drain stenciling or signage to promote pollution prevention.	☐	☐	☐	
SECTION 9 - GENERAL OBSERVATIONS				
Dry weather discharge.	☐	☐	☐	
Illicit connections to the MS4 (e.g., floor drains).	☐	☐	☐	
Subject to flooding/impacts from offsite storm water.	☐	☐	☐	
Evidence of erosion.	☐	☐	☐	
Other *(specify)*:	☐	☐	☐	

Structural BMPs *(check all that apply)*:

☐ Grease Trap (indoor)/ Grease Interceptor (outdoor)
☐ Vacuum System for Sanding/Sawdust
☐ Wash Rack
☐ Oil Water Separator
☐ Sediment/Debris Trap
☐ Berm Around Critical Areas
☐ Impervious Surfaces Used at Critical Areas
☐ Detention/Retention Basin
☐ Inlet Protection (i.e. filter fabric, filter sock)
☐ Hydrodynamic Separator
☐ Infiltration Pit (i.e. gravel or sand)
☐ Vegetated Swale
☐ Erosion/Slope Protection (i.e. rip rap, geotextiles)
☐ Other *(specify)* -

BLDG. NO./AREA: _____

ADDITIONAL COMMENTS

#	DEFICIENCIES *Note: Deficiencies types and procedures for corrective action are described in the Storm Water Management Plan for Navy Region Hawaii, Chapter 10.4*	DEFICIENCY TYPE	PHOTO ID	CORRECTIVE ACTION DEADLINE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

BLDG. NO./AREA: _____

#	**DEFICIENCIES** *Note: Deficiencies types and procedures for corrective action are described in the Storm Water Management Plan for Navy Region Hawaii, Chapter 10.4*	**DEFICIENCY TYPE**	**PHOTO ID**	**CORRECTIVE ACTION DEADLINE**
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

APPENDIX 11-1

SIC Codes for Industrial Facilities Requiring Permit Coverage

Primary Activities &
Standard Industrial Classification (SIC) Codes

Federal regulations require sites with **primary activities and/or SIC codes** that fall under any of the eleven categories of industrial activity, defined at 40 CFR 122.26(b)(14)(i)-(xi) except category (x) to obtain permit coverage or certify a condition of no exposure. The facilities classified with the following **primary activities and/or SIC codes** are required to obtain NPDES storm water permit coverage or certify a condition of no exposure.

Primary Activities:

- **Hazardous waste treatment, storage, or disposal facilities** (including those that are operating under interim status or a permit under Subtitle C of the RCRA).
- **Landfills** (active, inactive, or closed) and land application sites that receive or have received industrial wastes.
- **Steam electric power generating facilities**, including coal handling sites.
- **Wastewater Treatment Facilities** (or other treatment works) with a design flow of at least 1.0 million gallons per day (MGD).
- Facilities involved in the recycling of material, including **metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards**, including, but not limited to those classified as SIC 5015 and 5093.
- **Transportation activities** at facilities classified by the SIC codes listed in the box on Page 5 are required to obtain coverage if the facility conducts any vehicle maintenance and/or it operates maintenance shops, equipment cleaning, or airport de-icing. Vehicle maintenance means fueling, vehicle rehabilitation, mechanical repairs, painting, and lubrication. Includes SIC groups 40-45, (except 4221-4225) and 5171. For a complete description see listing under **Transportation** (box, Page 5).

SIC Codes:

Mining

Metal Mining
1011 Iron ores
1021 Copper ores
1031 Lead and zinc ores
1041 Gold ores
1044 Silver ores
1061 Ferroalloy ores (except vanadium)
1081 Metal Mining Services
1094 Uranium-radium-vanadium ores
1099 Miscellaneous metal ores, not elsewhere classified (NEC)

Coal Mining
1221 Bituminous coal and lignite surface mining
1222 Bituminous coal underground mining
1231 Anthracite mining
1241 Coal Mining Services

Oil and Gas Extraction
1311 Crude petroleum and natural gas
1321 Natural gas liquids
1381 Oil and gas well drilling
1382 Oil and gas field exploration services
1389 Oil and gas field services, NEC

Mining and Quarrying of Nonmetallic Minerals (except fuels)
1411 Dimension stone
1422 Crushed and broken limestone
1423 Crushed and broken granite
1429 Crushed and broken stone, NEC
1442 Construction sand and gravel
1446 Industrial sand
1455 Kaolin and ball clay
1459 Clay, ceramic and refractory minerals, NEC
1474 Potash, soda and borate minerals
1475 Phosphate rock
1479 Chemical and fertilizer minerals mining NEC
1481 Nonmetallic minerals services
1499 Miscellaneous nonmetallic minerals except fuels

Manufacturing

Food and Kindred Products
2011 Meat packing plants
2013 Sausages and other prepared meat products
2015 Poultry slaughtering and processing
2021 Creamery butter
2022 Natural, processed and imitation cheese
2023 Dry, condensed and evaporated dairy products
2024 Ice cream and frozen desserts
2026 Fluid milk
2032 Canned specialties
2033 Canned fruits, vegetables, preserves, jams and jellies
2034 Dried & dehydrated fruits, vegetables and soup mixes
2035 Pickled fruits & vegetables sauces, seasonings, and salad dressings
2037 Frozen fruits, fruit juices, and vegetables
2038 Frozen specialties, NEC
2041 Flour and other grain mill products
2043 Cereal breakfast foods
2044 Rice milling
2045 Prepared flour mixes and doughs
2046 Wet corn milling
2047 Dog and cat food
2048 Prepared animal and foul feeds (except dog and cat food)
2051 Bread and other bakery products (except cookies and crackers)
2052 Cookies and crackers
2053 Frozen bakery products (except bread)
2061 Cane sugar (except refining)
2062 Cane sugar refining
2063 Beet sugar
2064 Candy and other confectionary products
2066 Chocolate and other cocoa products
2067 Chewing gum
2068 Salted & roasted nuts and seeds
2074 Cottonseed oil mills
2075 Soybean oil mills
2076 Vegetable oil mills, except corn, cottonseed and soybean
2077 Animal & marine fats and oils
2079 Shortening margarine & other fats and oils NEC

2082 Malt beverages
2083 Malt
2084 Wines, brandy and brandy spirits
2085 Distilled and blended liquors
2086 Bottled & canned soft drinks and carbonated waters
2087 Flavoring extracts and flavoring syrups, NEC
2091 Canned & cured fish and seafoods
2092 Prepared fresh or frozen fish and seafoods
2095 Roasted coffee
2096 Potato chips, corn chips and similar snacks
2097 Manufactured ice
2098 Macaroni, spaghetti, vermicelli and noodles
2099 Food preparations NEC

Tobacco Products
2111 Cigarettes
2121 Cigars
2131 Chewing & smoking tobacco and snuff
2141 Tobacco stemming and redrying

Textile Mill Products
2211 Broadwoven cotton mills
2221 Broadwoven manmade fiber and silk mills
2231 Broadwoven wool mills
2241 Narrow cotton, wool, silk, and manmade fiber mills
2251 Women's full-length and knee-length hosiery (except socks)
2252 Hosiery, NEC
2253 Knit outerwear mills
2254 Knit underwear and nightwear mills
2257 Weft knit fabric mills
2258 Lace and warp knit fabric mills
2259 Knitting mills, NEC
2261 Broadwoven cotton finishing plants
2262 Broadwoven manmade fiber and silk finishing plants
2269 Textile finishing plants, NEC
2273 Carpets and rugs
2281 Yarn spinning mills
2282 Yarn texturizing, throwing, twisting, and winding mills
2284 Thread mills
2295 Coated fabrics, not rubberized
2296 Tire cord and fabrics
2297 Nonwoven fabrics
2298 Cordage and twine
2299 Textile goods, NEC

Apparel and Other Finished Products Made from Fabrics and Similar Materials
2311 Men's and boys' suits, coats, and overcoats
2321 Men's and boys' shirts (except work shirts)
2322 Men's and boys' underwear and nightwear
2323 Men's and boys' neckwear
2325 Men's and boys' separate trousers and slacks
2326 Men's and boys' work clothing
2329 Men's and boys' clothing, NEC
2331 Women's, misses' & juniors' blouses and shirts
2335 Women's, misses' & juniors' dresses
2337 Women's, misses' & juniors' suits, skirts, and coats
2339 Women's, misses' & juniors' outerwear
2341 Women's, misses children's, and infants' underwear and nightwear
2342 Brassieres, girdles and allied garments
2353 Hats, caps and millinery
2361 Girl's, children's & infants' dresses, blouses & shirts
2369 Girl's, children's & infants' outerwear NEC
2371 Fur goods
2381 Dress and work gloves (except knit and all-leather)
2384 Robes and dressing gowns
2385 Waterproof outerwear
2386 Leather and sheep-lined clothing
2387 Apparel belts
2389 Apparel and accessories, NEC
2391 Curtains and draperies
2392 Housefurnishings (except curtains and draperies)
2393 Textile bags
2394 Canvas and related products
2395 Pleating, decorative and novelty stitching, tucking for the trade
2396 Automotive trimmings, apparel findings and related products
2397 Schiffli machine embroideries
2399 Fabricated textile products, NEC

Lumber and Wood Products
2421 Sawmills and planning mills-general
2426 Hardwood dimension and flooring mills
2429 Special products sawmills, NEC
2431 Millwork
2434 Wood kitchen cabinets
2435 Hardwood veneer and plywood
2436 Softwood veneer and plywood
2439 Structural wood members, NEC
2441 Nailed and lock corner wood boxes and shook
2448 Wood pallets and skids
2449 Wood containers, NEC
2451 Mobile homes
2452 Prefabricated wood buildings and components
2491 Wood preserving
2493 Reconstituted wood products
2499 Wood products, NEC

Furniture and Fixtures
2511 Wood household furniture (except upholstered)
2512 Upholstered wood household furniture
2514 Metal household furniture
2515 Mattresses, foundations, & convertible beds
2517 Wood TV, radio, phonograph and sewing machine cabinets
2519 Household furniture, NEC
2521 Wood office furniture
2522 Office furniture (except wood)
2531 Public building and related furniture
2541 Wood office & store fixtures, partitions, shelving and lockers
2542 Office & store fixtures, partitions and shelving (except wood)
2591 Drapery hardware, window blinds and shades
2599 Furniture and fixtures, NEC

Paper and Allied Products
2611 Pulp mills
2621 Paper mills
2631 Paperboard mills
2652 Setup paperboard boxes
2653 Corrugated and solid fiber boxes
2655 Fiber cans, tubes, drums, and similar products
2656 Sanitary food containers (except folding)
2657 Folding paperboard boxes, including sanitary
2671 Packaging paper & plastics film (coated and laminated)
2672 Coated and laminated paper, NEC
2673 Plastics, foil and coated paper bags
2674 Uncoated paper and multiwall bags
2675 Die-cut paper, paperboard and cardboard
2676 Sanitary paper products
2677 Envelopes
2678 Stationary, tablets, and related products
2679 Converted paper and paperboard products NEC

Printing, Publishing and Allied Industries
2711 Newspaper publishing or newspaper publishing and printing
2721 Periodical publishing or periodical publishing and printing
2731 Book publishing or book publishing and printing
2732 Book printing
2741 Miscellaneous publishing
2752 Commercial lithographic printing
2754 Commercial gravure printing
2759 Commercial printing, NEC
2761 Manifold business forms
2771 Greeting cards
2782 Blankbooks, looseleaf binders, and devices
2789 Bookbinding and related work
2791 Typesetting
2796 Platemaking and related services

Chemicals and Allied Products
2812 Alkalies and chlorine
2813 Industrial gases
2816 Inorganic pigments
2819 Industrial inorganic pigments, NEC
2821 Plastic materials, synthetic resins and elastomers
2822 Synthetic rubber (vulcanizable elastomers)
2823 Cellulosic manmade fibers
2824 Manmade organic fibers, except cellulosic
2833 Medicinal chemicals and botanical products
2834 Pharmaceutical preparations
2835 In vitro and in vivo diagnostic substances
2836 Biological products (except diagnostic substances)
2841 Soap and other detergents, except specialty cleaning
2842 Specialty cleaning, polishing and sanitation preparations
2843 Surface active agents, finishing agents and sulfonated oils
2844 Perfumes, cosmetics and other toilet preparations
2851 Paints, varnishes, lacquers, enamels and allied products
2861 Gum and wood chemicals
2865 Cyclic organic crudes and intermediates and organic dyes
2869 Industrial organic chemicals, NEC
2873 Nitrogenous fertilizers
2874 Phosphatic fertilizers
2875 Fertilizers, mixing only
2879 Pesticides and agricultural chemicals, NEC
2891 Adhesives and sealants
2892 Explosives
2893 Printing ink
2895 Carbon black
2899 Chemicals and chemical preparations, NEC

Petroleum Refining and Related Industries
2911 Petroleum refining
2951 Asphalt paving mixtures and blocks
2952 Asphalt felts and coatings
2992 Lubricating oils and greases
2999 Petroleum and coal products, NEC

Rubber and Miscellaneous Plastic Products
3011 Tires and inner tubes
3021 Rubber and plastic footwear
3052 Rubber, plastic hose, and belting
3053 Gaskets, packing and sealing devices
3061 Molded, extruded and lathe-cut mechanical rubber goods
3069 Fabricated rubber products, NEC
3081 Unsupported plastics film and sheet
3082 Unsupported plastics profile shapes
3083 Laminated plastics plate, sheet and profile shapes
3084 Plastics pipe
3085 Plastics bottles
3086 Plastics foam products
3087 Custom compounding of purchased plastics resins
3088 Plastics plumbing, fixtures
3089 Plastics products NEC

Leather and Leather Products
3111 Leather tanning and finishing
3131 Boot & shoe cut stock and findings
3142 House slippers
3143 Men's footwear (except athletic)
3144 Women's footwear (except athletic)
3149 Footwear (except rubber), NEC
3151 Leather gloves and mittens
3161 Luggage
3171 Women's handbags and purses
3172 Personal leather goods (except women's handbags and purses)
3199 Leather goods, NEC

Stone, Clay, Glass and Concrete Products
3211 Flat glass
3221 Glass containers
3229 Pressed & blown glass and glassware
3231 Glass products, made of purchased glass
3241 Hydraulic cement
3251 Brick and structural clay tile
3253 Ceramic wall and floor tile
3255 Clay refractories
3259 Structural clay products, NEC
3261 Vitreous china plumbing fixtures and bathroom fittings
3262 Vitreous china table and kitchen articles
3263 Fine earthenware (whiteware) table and kitchen articles
3264 Porcelain electrical supplies
3269 Pottery products, NEC
3271 Concrete block and brick
3272 Concrete products, except block and brick
3273 Ready-mixed concrete
3274 Lime
3275 Gypsum products
3281 Cut stone and stone products
3291 Abrasive products
3292 Asbestos products
3295 Ground or otherwise treated minerals and earths
3296 Mineral wool
3297 Nonclay refractories
3299 Nonmetallic mineral products, NEC

Primary Metal Industries
3312 Steel works, blast furnaces (including coke ovens) and rolling mills
3313 Electrometallurgical products except steel
3315 Steel wiredrawing, nails, and spikes
3316 Cold-rolled steel sheet, strip and bars
3317 Steel pipe and tubes
3321 Gray and ductile iron foundries
3322 Malleable iron foundries
3324 Steel investment foundries
3325 Steel foundries, NEC
3331 Primary copper smelting and refining
3334 Primary aluminum production
3339 Primary nonferrous metals smelting and refining, NEC
3341 Secondary nonferrous metals smelting and refining
3351 Copper rolling, drawing and extruding
3353 Aluminum sheet, plate and foil
3354 Aluminum extruded products
3355 Aluminum rolling and drawing, NEC
3356 Nonferrous metals rolling, drawing, and extruding NEC
3357 Nonferrous wire drawing and insulating
3363 Aluminum die-castings
3364 Nonferrous die-castings, except aluminum

3365 Aluminum foundries
3366 Copper foundries
3369 Nonferrous foundries, except aluminum and copper
3398 Metal heat treating
3399 Primary metal products, NEC

Fabricated Metal Products except Machinery and Transportation Equipment
3411 Metal cans
3412 Metal shipping barrels, drums, kegs, and pails
3421 Cutlery
3423 Hand and edge tools (except machine tools and handsaws)
3425 Saw blades and handsaws
3429 Hardware, NEC
3431 Enameled iron and metal sanitary ware
3432 Plumbing fixtures and trim
3433 Heating equipment (except electric and warm air furnaces)
3441 Fabricated structural metal
3442 Metal doors, frames, sash, molding and trim
3443 Fabricated plate work (boiler shops)
3444 Sheet metal work
3446 Architectural and ornamental metal work
3448 Prefabricated metal buildings and components
3449 Miscellaneous structural metal work
3451 Screw machine products
3452 Bolts, nuts, screws, rivets, and washers
3462 Iron and steel forgings
3463 Nonferrous forgings
3465 Automotive stampings
3466 Crowns and closures
3469 Metal stampings, NEC
3471 Electroplating, plating, polishing, anodizing, and coloring
3479 Coating, engraving, and allied services, NEC
3482 Small arms ammunition
3483 Ammunition (except small arms)
3484 Small arms
3489 Ordnance and accessories, NEC
3491 Industrial valves
3492 Fluid power valves and hose fittings
3493 Steel springs (except wire)
3494 Valves and pipe fittings, NEC
3495 Wire springs
3496 Miscellaneous fabricated wire products
3497 Metal foil and leaf
3498 Fabricated pipe and pipe fittings
3499 Fabricated metal products, NEC

Industrial and Commercial Machinery and Computer Equipment
3511 Steam, gas & hydraulic turbines and generator units
3519 Internal combustion engines, NEC
3523 Farm machinery and equipment
3524 Lawn & garden tractors and home lawn & garden equipment
3531 Construction machinery and equipment
3532 Mining machinery and equipment (except oil and gas field)
3533 Oil & gas machinery and equipment
3534 Elevators and moving stairways
3535 Conveyors and conveying equipment
3536 Overhead traveling cranes, hoists, and monorail systems
3537 Industrial trucks, tractors, trailers, and stackers
3541 Metal cutting machine tools
3542 Metal forming machine tools
3543 Industrial patterns
3544 Special dies, tools, die sets, jigs, fixtures and molds
3545 Cutting tools, accessories and precision measuring devices
3546 Power-driven handtools
3547 Rolling mill machinery and equipment
3548 Electric & gas welding and soldering equipment
3549 Metalworking machinery, NEC
3552 Textile machinery
3553 Woodworking machinery
3554 Paper industries machinery
3555 Printing trades machinery and equipment
3556 Food products machinery
3559 Special industry machinery, NEC
3561 Pumps and pumping equipment
3562 Ball and roller bearings
3563 Air and gas compressors
3564 Industrial & commercial fans, blowers and air purification equipment
3565 Packaging machinery
3566 Speed changers, industrial high speed drives and gears
3567 Industrial process furnaces and ovens
3568 Mechanical power transmission equipment, NEC
3569 General industrial machinery and equipment, NEC
3571 Electronic computers
3572 Computer storage devices
3575 Computer terminals
3577 Computer peripheral equipment, NEC
3578 Calculating and accounting machines (except electronic computers)
3579 Office machines, NEC
3581 Automatic vending machines
3582 Commercial laundry, drycleaning, and pressing machines
3585 Air-conditioning, heating, and refrigeration equipment
3586 Measuring and dispensing pumps
3589 Service industry machinery, NEC
3592 Carburetors, pistons, piston rings, and valves
3593 Fluid power cylinders and actuators
3594 Fluid power pumps and motors
3596 Scales and balances (except laboratory)
3599 Industrial & commercial machinery and equipment, NEC

Electronic and other Electrical Equipment and Components (except Computer Equipment)
3612 Power, distribution and specialty transformers
3613 Switchgear and switchboard apparatus
3621 Motors and generators
3624 Carbon and graphite products
3625 Relays and industrial controls
3629 Electrical industrial apparatus, NEC
3631 Household cooking equipment
3632 Household refrigerators and home & farm freezers
3633 Household laundry equipment
3634 Electric housewares and fans
3635 Household vacuum cleaners
3639 Household appliances, NEC
3641 Electric lamp bulbs and tubes
3643 Current-carrying wiring devices
3644 Noncurrent-carrying wiring devices
3645 Residential electric lighting fixtures
3646 Commercial, industrial and institutional electric lighting fixtures
3647 Vehicular lighting equipment
3648 Lighting equipment, NEC
3651 Household audio and video equipment
3652 Phonograph records and prerecorded audio tapes & disks
3661 Telephone and telegraph apparatus
3663 Radio and TV broadcasting & communications equipment
3669 Communications equipment NEC
3671 Electron bulbs
3672 Printed circuit boards
3674 Semiconductors and related devices
3675 Electronic capacitors
3676 Electronic resistors
3677 Electronic coils, transformers, and other inductors

3678 Electronic connectors
3679 Electronic components NEC
3691 Storage batteries
3692 Primary batteries (dry and wet)
3694 Electrical equipment for internal combustion engines
3695 Magnetic and optical recording media
3699 Electrical machinery, equipment and supplies, NEC

Transportation Equipment
3711 Motor vehicles and passenger car bodies
3713 Truck and bus bodies
3714 Motor vehicle parts and accessories
3715 Truck trailers
3716 Motor homes
3721 Aircraft
3724 Aircraft engines and engine parts
3728 Aircraft parts and auxiliary equipment, NEC
3731 Ship building and repairing
3732 Boat building and repairing
3743 Railroad equipment
3751 Motorcycles, bicycles, and parts
3761 Guided missiles and space vehicles
3764 Guided missile and space vehicle propulsion units & parts
3769 Guided missile and space vehicle parts & equipment, NEC
3792 Travel trailers and campers
3795 Tanks and tank components
3799 Transportation equipment, NEC

Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; and Watches and Clocks
3812 Search, detection, navigation, and guidance systems
3821 Laboratory apparatus and furniture
3822 Automatic environmental and appliance controls
3823 Process measurement, display, and control instruments
3824 Totalizing fluid meters and counting devices
3825 Electricity & signal measurement and testing instruments
3826 Laboratory analytical instruments
3827 Optical instruments and lenses
3829 Measuring and controlling devices, NEC
3841 Surgical & medical instruments and apparatus
3842 Orthopedic, prosthetic and surgical appliances and supplies
3843 Dental equipment and supplies
3844 X-Ray apparatus & tubes and related irradiation apparatus
3845 Electromedical and electrotherapeutic apparatus
3851 Ophthalmic goods
3861 Photographic equipment and supplies
3873 Watches, clocks, clockwork operated devices & parts

Miscellaneous Manufacturing Industries
3911 Precious metal jewelry
3914 Silverware, plated ware, and stainless steel ware
3915 Jewelers' findings and materials and lapidary work
3931 Musical instruments
3942 Dolls and stuffed toys
3944 Games, toys, and children s vehicles (except dolls and bicycles)
3949 Sporting and athletic goods, NEC
3951 Pens, mechanical pencils, and parts
3952 Lead pencils, crayons and artists' materials
3953 Marking devices
3955 Carbon paper and inked ribbons
3961 Costume jewelry and novelties (except precious metal)
3965 Fasteners, buttons, needles and pins
3991 Brooms and brushes
3993 Signs and advertising specialties
3995 Burial caskets
3996 Linoleum and other hard surface floor coverings NEC
3999 Manufacturing industries NEC

Transportation Activities
4011 – 4215 *(see below)*
4221 Farm product warehousing and storage
4222 Refrigerated warehousing and storage
4225 General warehousing and storage
4226 – 4581 *(see below)*

Durable Goods
5015 Used motor vehicle parts
5093 Scrap and waste materials

Transportation *(see note in Primary Activities)*

Railroad Transportation
4011 Line-haul railroad operation
4013 Railroad switching and terminal establishments

Local and Suburban Transit and Interurban Highway Passenger Transportation
4111 Local and suburban transit
4119 Local passenger transportation, NEC
4121 Taxicab service
4131 Intercity and rural bus transportation
4141 Local bus charter service
4142 Bus charter service, except local
4151 School bus operation
4173 Terminal and service facilities for passenger transportation

Motor Freight Transportation and Warehousing
4212 Local trucking without storage
4213 Trucking, except local
4214 Local trucking with storage
4215 Courier service, except by air
4226 Special warehousing and storage, NEC
4231 Trucking terminal and maintenance facilities

United States Post Office
4311 United States Postal Service

Water Transportation
4412 Deep sea foreign freight transportation
4424 Deep sea domestic freight transportation
4432 Freight transportation on the Great Lakes/Saint Lawrence Seaway
4449 Water freight transportation, NEC
4481 Deep sea passenger transportation, NEC
4482 Ferry operation
4489 Water passenger operation NEC
4491 Marine cargo handling
4492 Towing and tugboat services
4493 Marina operation
4499 Water transportation services, NEC

Transportation by Air
4512 Scheduled air transportation
4513 Air courier services
4522 Nonscheduled air transportation
4581 Airports, flying fields, and airport terminal services

Nondurable Goods
5171 Petroleum bulk stations and terminals

APPENDIX 11-2

Industrial Storm Water Pollution Control Plans

[Redacted due to national security concerns]

APPENDIX 11-3

Best Management Practices Fact Sheets

APPENDIX 11-3

SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES

This appendix presents generic descriptions of the site specific Best Management Practices (BMPs) for facilities. Some of these BMPs are currently employed at the Activity and others will be implemented as outlined in Section 11. Some additional BMPs are included here since they may be applicable in the future to new or modified facilities. The BMPs are listed by number (or letter), name, functional category, and implementation category. Following Table 11-3-1, the BMPs are expanded upon. The information provided for each BMP includes:

- Description of potential pollutants and their sources addressed by the BMP
- Description of the BMP
- Frequency of BMP application (if applicable)
- Training needs
- Effectiveness and cost
- Limitations

Each of the BMPs has been assigned a number or letter to facilitate reference.

TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES(1)

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
001	Label All Drums, Cans, Containers, Tanks, and Valves	SC	NS	
002	Restrict Access to Area and Equipment	SC	S	
003	Perform Regular Cleaning	SC	NS	
004	Avoid Hosing Down the Site	SC	NS	
005	Perform Regular Pavement Sweeping	SC	NS	
006	Control Spills	SC	NS	
007	Place Trash Receptacles at Appropriate Locations	SC	NS	
008	DELETED			
009	Train Employees to Properly Dispose of Wastes	SC	NS	
010	Permanently Seal Floor Drains that Discharge to the Storm Drain System	SC	S	
011	Confirm that No Industrial Sinks are Connected to the Storm Drain System	SC	NS	
012	Construct Berm or Dike Around Critical Areas	SC	S	
013	Pave Bermed Areas	SC	S	
014	Provide Valve for Outlet Pipe in Containment Area	SC	S	
015	Recycle	SC	NS	
016	Store Waste and Recycling Materials in Proper Containers	SC	NS	
017	Limit Significant Materials Inventory	SC	NS	
018	Provide Roof to Cover Source Area	SC	S	
019	Control Roof Downspout Discharge	SC	S	
020	Minimize Storm Water Run-On from Adjacent Facilities and Properties	SC	S	
021	Reduce Waste	SC	NS	

TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES[(1)]

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
021A	Repair Leaky Roofs	SC	NS	
022	Permanently Seal Drains Within Critical Areas that Discharge to the Storm Drain	SC	S	
023	Place Portable Rubber Mats over Storm Drain Inlets	SC	NS	
024	Insert Filter in Catch Basin	Other	NS	
025	Place Absorbent Blankets in Catch Basin	Other	NS	
026	Routinely Clean Catch Basins	SC	NS	
027	Stencil Signs on Storm Drain Inlets	SC	NS	
028	Keep Equipment and Vehicles Clean	SC	NS	
029	Maintain Equipment in Good Condition	SC	NS	
030	Implement Qualifying Tests for Equipment and Vehicle Operators	SC	NS	
031	Conduct Refresher Courses in Operating and Safety Procedures	SC	NS	
032	Dispose of Obsolete Equipment, Inoperable Vehicles, and Surplus Materials	SC	NS	
033	Check Vehicles and Equipment for Leaks	SC	NS	
034	DELETED			
035	DELETED			
036	Park Vehicles or Equipment Indoors or under a Roof	SC	NS	
037	Park Vehicles on an Impervious Surface	SC	NS	
038	Designate Special Areas for Draining or Replacing Fluids	SC	NS	
039	Drain All Fluids from Stored or Salvaged Vehicles and Equipment	SC	NS	
040	Completely Drain Oil Filters Before Disposal	SC	NS	
041	Wash Equipment and Vehicles in Designated Area	SC	NS	

TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES(1)

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
042	Discharge Wash Water to a Sanitary Sewer	SC	NS	
043	Recycle Pressure Wash Solvents	SC	NS	
044	Use Drip Pans under Leaking Equipment	SC	NS	
045	Perform Equipment Maintenance at Designated Areas	SC	NS	
046	Designate Areas for Washing Non-Vehicular Air Filters and Other Greasy Equipment	SC	NS	
047	Conduct Maintenance within a Building or Covered Area	SC	NS	
048	Reduce the Amount of Liquid Cleaning Agents Used	SC	NS	
049	Centralize Liquid Solvent Cleaning to One Location	SC	NS	
050	Substitute Non-Toxic or Less-Toxic Cleaning Solvents	SC	NS	
051	Use Solvents Efficiently	SC	NS	
052	Use Outside Contractor for Handling Used Solvents and Other Significant Materials	SC	NS	
053	Protect Storage Containers from Being Damaged by Vehicles	SC	S	
054	Properly Store Containers	SC	NS	
055	Use Overpack Containers or Containment Pallets to Store 1 Pint to 55 Gallon Drums or Containers Outside of Storage Areas	SC	NS	
056	Use "Doghouse" Design for Outdoor Storage of Small Liquid Containers	SC	S	
057	Do Not Store Used Parts or Containers Directly on Ground	SC	NS	
058	Store Batteries in a Secondary Container	SC	NS	
059	Do Not Allow Open Flames Near Flammable Material	SC	NS	

TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES(1)

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
060	Use Door Skirt or Seal	SC	S	
061	Employ Proper Handling Procedures to Transport Materials and Waste	SC	NS	
061B	Store Liquids and Significant Materials within a Building or Covered Area	SC	NS	
062	Provide Overfill Protection	SC	NS	
063	DELETED			
064	Monitor Major Fueling Operations	SC	NS	
065	Provide Absorbent Booms in Unbermed Fueling Areas	SC	NS	
066	Eliminate Topping off Tanks	SC	NS	
067	Install Leak Detection System	SC	NS	
068	Designate Areas for Fueling from Mobile Fuel Tankers	SC	NS	
069	Restrict Access to Tanks	SC	S	
070	Lock Fuel Tanks When Not in Use or on Standby	SC	NS	
071	Keep Tanks, Piping, and Valves in Good Condition	SC	NS	
072	Protect Tanks from Being Damaged by Vehicles	SC	S	
073	Protect Fill Pipe from Being Damaged by Vehicles	SC	S	
074	Provide Protection for Permanent Aboveground Tanks from Discharge of Firearms	SC	NS	
075	DELETED			
076	Enclose Outdoor Sanding and Painting Operations and Use Tarps to Contain and Collect Solid Wastes	SC	NS	

TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES(1)

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
077	Vacuum Particulate Wastes from Sanding or Painting Operations	SC	NS	
078	DELETED			
079	Conduct Indoor Sanding and Painting in an Enclosed Area	SC	NS	
080	DELETED			
081	Avoid Sanding or Painting in Windy Weather	SC	NS	
082	Use Efficient Painting Equipment	SC	NS	
083	Do Not Empty Toilet Tanks During Transit or in the Port	SC	NS	
084	DELETED			
085	Do Not Discharge Bilge Water in Harbor	SC	NS	
086	DELETED			
087	Use Oil Containment Booms	SC	NS	
088	DELETED			
089	DELETED			
090	DELETED			
091	DELETED			
092	Properly Dispose of Sediment Generated by Cleaning Sanitary Sewer Lines	SC	NS	
093	Eliminate Treated Wood Products or Use Wood Treated with Less-Toxic Chemicals	SC	NS	
094	Establish Integrated Pest Control	SC	NS	
095	Conduct Pesticide Operations under the Supervision of Licensed Applicator	SC	NS	
096	Divert Drainage to Treatment Facility/Sanitary Sewer	SC	S	
097	Divert Drainage to a Low-Flow Sump	Other	S	
098	Construct Oil/Water Separator	Other	S	

TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES[(1)]

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
099	Construct Water Quality Inlet-Catch Basin	Other	S	
100	Use Grassed Swales	Other	S	
101	Provide Vegetative Filter Strips	SC	S	
102	Construct Extended-Detention Dry Ponds	Other	S	
103	Construct Wet Detention Ponds	Other	S	
104	Provide Constructed Wetlands	Other	S	
105	Construct Infiltration Basins	Other	S	
106	Construct Infiltration Trenches	Other	S	
107	Construct Filtration Basins	Other	S	
108	Construct Porous Pavement	SC	S	
109	Construct Concrete Grid Pavement	Other	S	
110	Regularly Inspect and Maintain Storm Water Conveyance System	SC	NS	
111	Regularly Inspect and Test Equipment	SC	NS	
112	Prepare Appropriate Spill Prevention and Response Plans	SC	NS	
113	Conduct Personnel Training Regarding the SWPCP	SC	NS	
114	DELETED			
115	Store Containers Inside Secondary Containment	SC	NS	
116	Control Dust and Particulates	SC	S	
117	Do Not Pour or Deposit Waste into Storm Drains	SC	NS	
118	Routinely Report Any Observed Non-Storm Water Discharges	SC	NS	
A	Revegetate Barren Areas	SC	NS	
B	Mulch Exposed Areas	SC	NS	

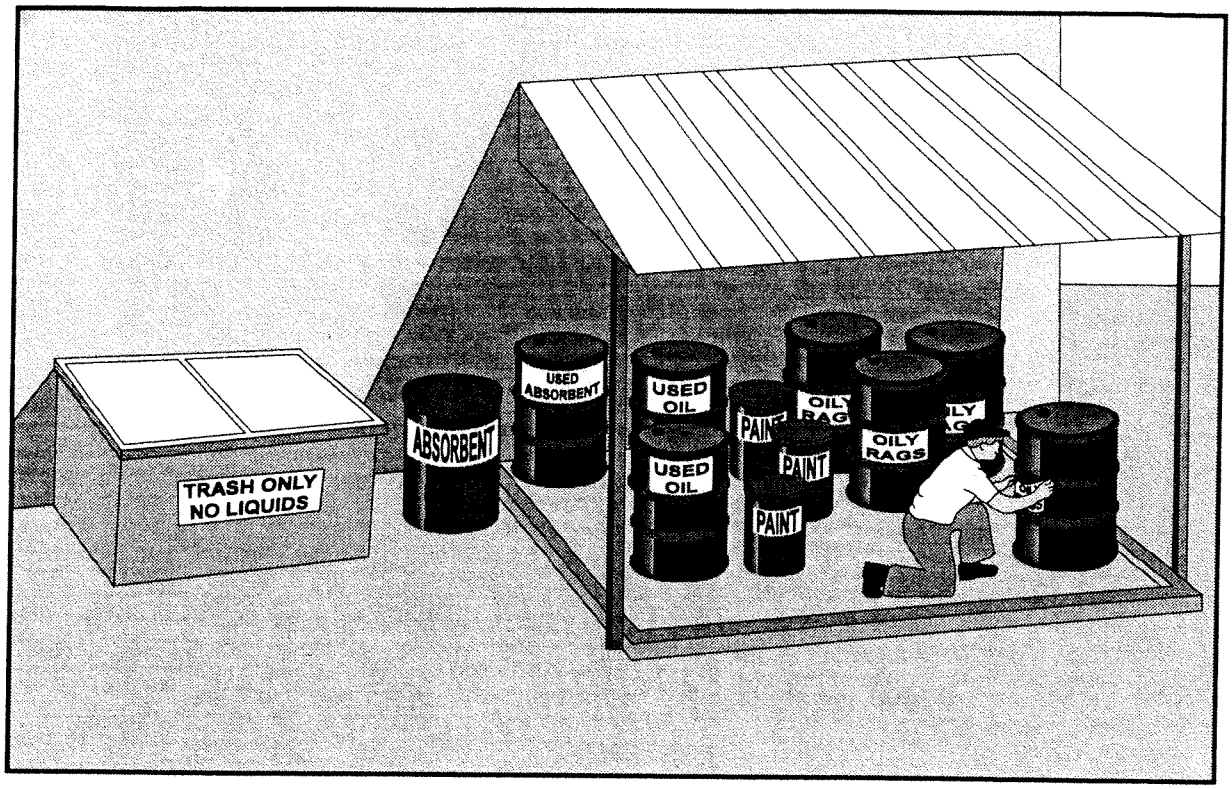
TABLE 11-3-1
LIST OF SITE SPECIFIC BEST MANAGEMENT PRACTICES FOR FACILITIES(1)

BMP No.	BMP Title	Functional Category	Implementation Category	Implementation Schedule
C	Use Soil Binders	SC	NS	
D	Use Check Dams to Reduce Runoff Velocity	Other	S	
E	Reduce Flow Velocity at Outlet	SC	S	
F	Use Erosion Control Blankets	SC	NS	

NOTES:

(1) BMP Best Management Practice
NS Non-Structural
Other Management practice other than source control
S Structural
SC Source control

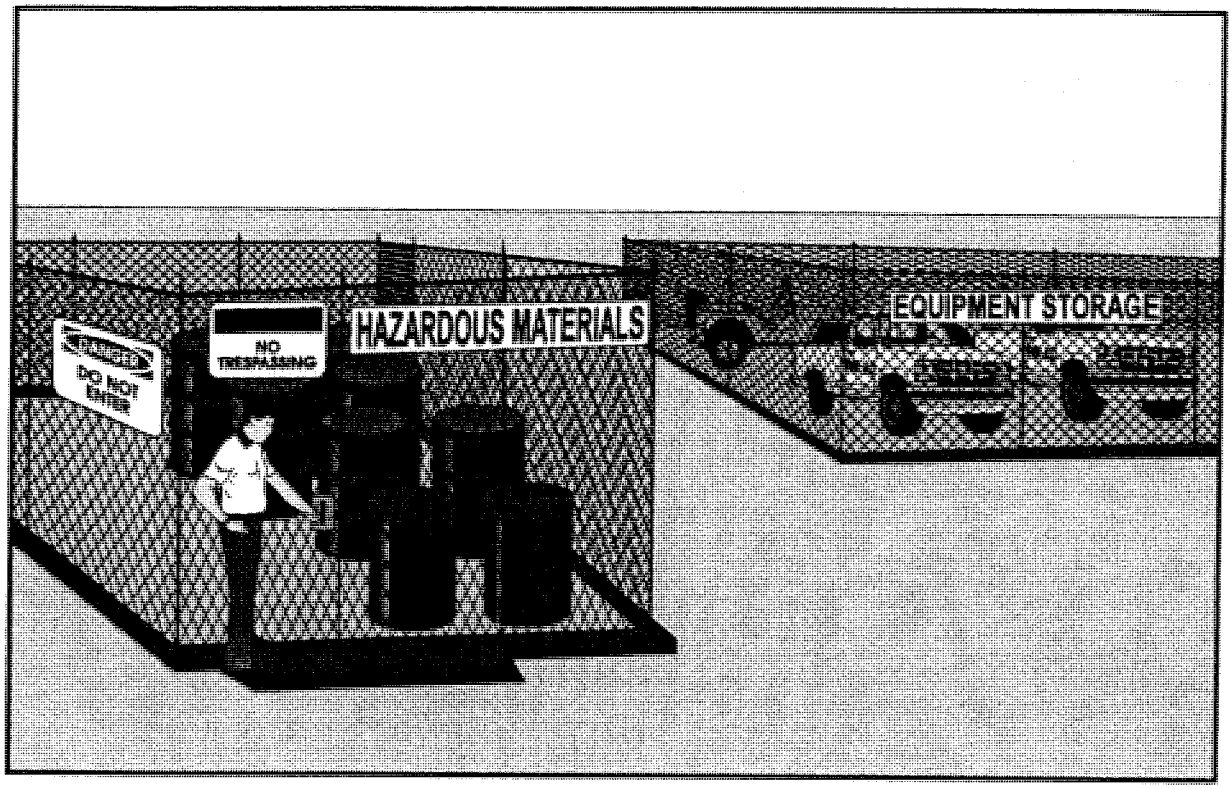
BMP 001 - LABEL ALL DRUMS, CANS, CONTAINERS, AND TANKS



Description of Potential Pollutant and Source: Drums, cans, and containers can be improperly managed and disposed of due to uncertainty of the container's contents. Tanks which are not labeled may result in improper use of the tank or fuel, which may result in the exposure of significant materials to storm water and/or receiving waters. Similarly, unlabeled valves may be opened without proper precaution due to lack of user information. Storm water quality will be affected if significant materials are improperly disposed to the storm drain and/or receiving waters. Lack of labeling will also make it difficult to quickly identify the type of material released so facility personnel can respond correctly. Labels also identify hazardous materials at the facility and are a good way to request caution in certain areas (e.g., drums indicating flammability).

Description of BMP: Label all drums, valves, pumps, cans, tanks, and containers to reduce the chance of misuse and eventual spills. Labeling ensures that the appropriate procedures, equipment, and storage containers are used. All containers will be labeled as to what is in the

BMP 002 - RESTRICT ACCESS TO AREA AND EQUIPMENT



Description of Potential Pollutant and Source: Vandalism of vehicles and facility property may result in the release of significant materials.

Description of BMP: Provide fences and gate areas where vehicles, equipment and materials are stored and are accessible to the public to discourage trespassing. Access to equipment will also be restricted. Only authorized personnel will be allowed to operate equipment. The fences and gates will be properly maintained, and additional security measures including lighting of the area will be implemented if the fencing alone proves insufficient. Where appropriate, security guards or alarms will be used.

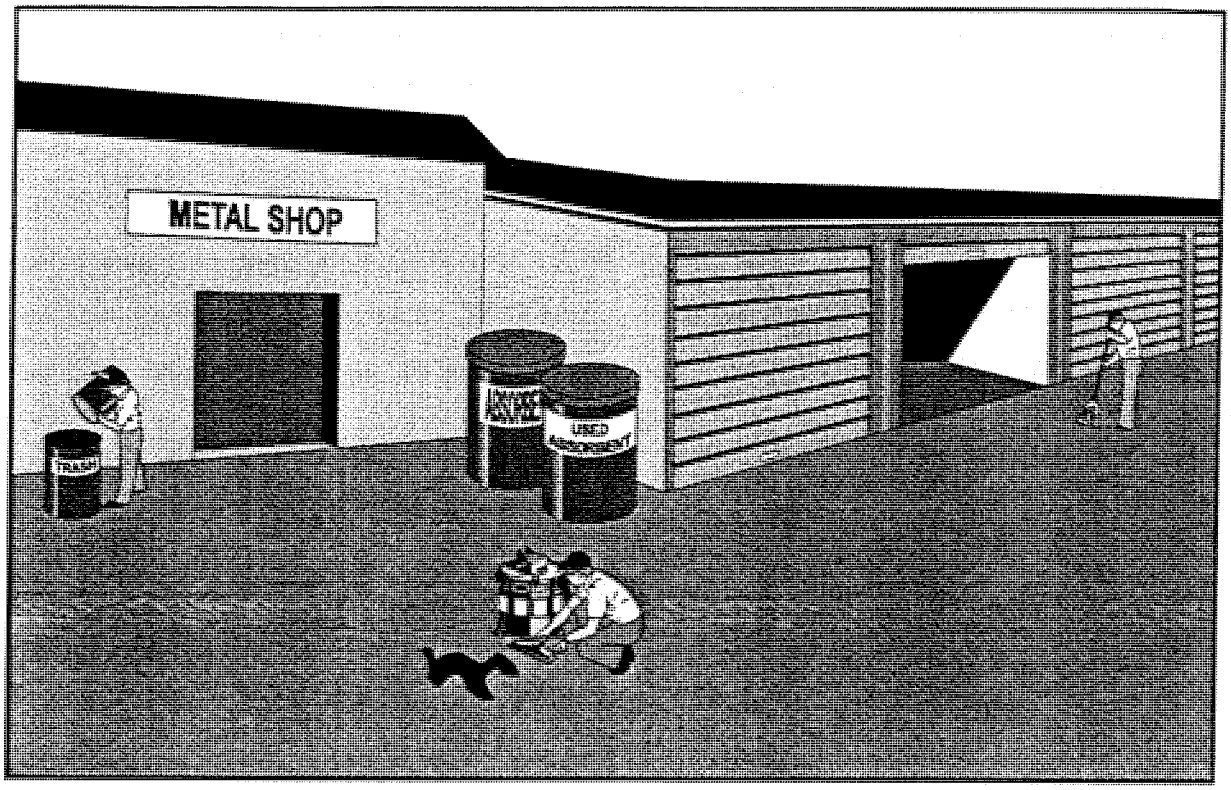
Application Guidance: As needed.

Training: N/A

Effectiveness and Cost: Effectiveness and costs will vary depending on the application.

Limitations: None

BMP 003 - PERFORM REGULAR CLEANING



Description of Potential Pollutant and Source: Dirt, surplus materials, and spilled or dropped materials are often allowed to accumulate in areas such as maintenance shops, manufacturing facilities, metal fabrication shops, loading docks, and storage areas. Pollutants from the accumulated material can be transported by storm water to the storm drain system. A clean and orderly work area reduces the possibility of accidental spills caused by mishandling of chemicals and equipment and should reduce safety hazards to personnel.

Description of BMP: Maintain a regular general sweeping and cleaning schedule to reduce buildup of waste materials and minimizes the amount of significant materials exposed to storm water. General cleaning includes dusting and keeping work areas neat and organized.

Floors and ground surfaces will be kept dry using brooms, shovels, vacuum cleaners, or cleaning machines. It is important to perform dry sweeping and dry cleaning (as opposed to hosing down areas as discussed in BMP 004). Garbage and waste materials will be collected

and disposed regularly. Particular emphases will be placed on sweeping and cleaning outdoor areas as close as possible to a forecasted rainfall. Any granular absorbent materials used for spill cleanup will be removed and properly disposed before a rainfall.

Application Guidance: Cleanup and sweeping will be performed daily and more often as necessary to remove all loose trash, paint cans, discarded construction materials, sediment, oil, solvents, plastics and other significant materials. Additional clean up and sweeping will be performed before anticipated storm events. Additionally, a regular sweeping schedule will be maintained.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementor to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

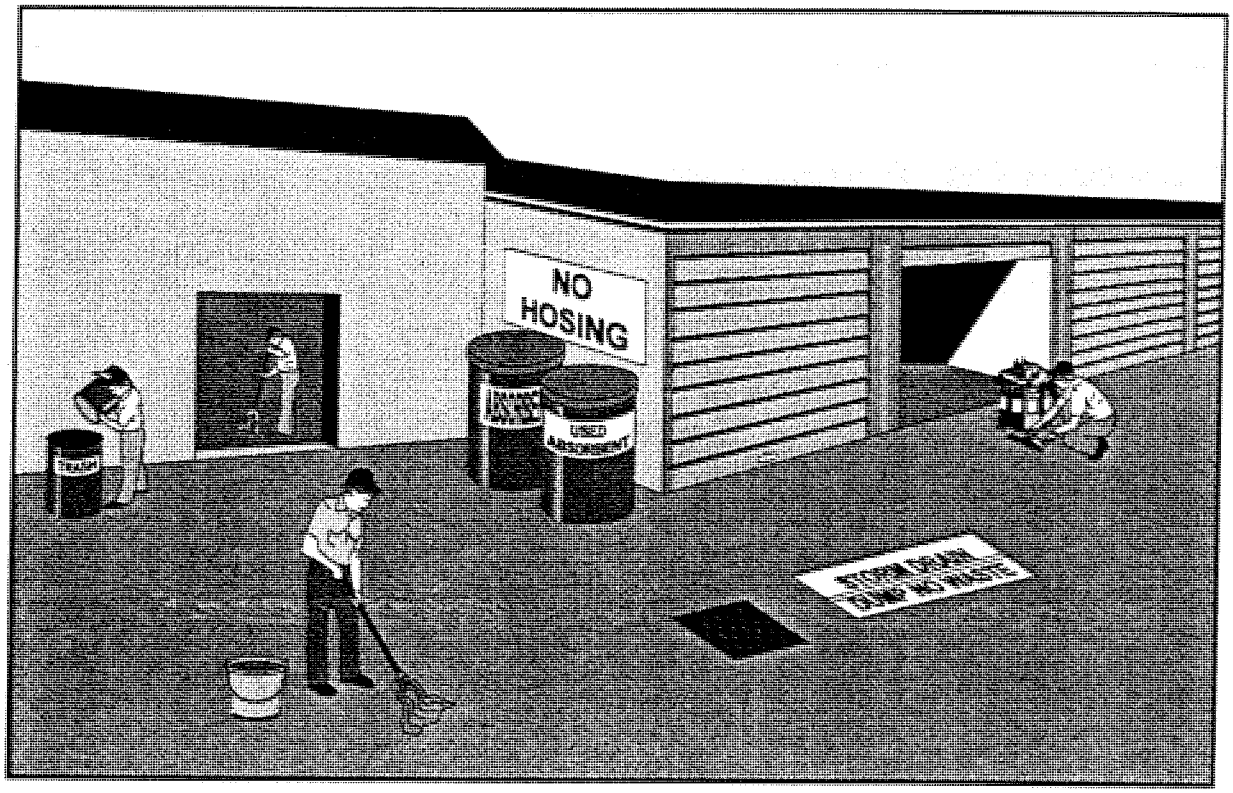
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained to ensure that all waste be managed within guidelines of applicable federal, state, and local regulations. Signs will be posted as reminders.

Effectiveness and Cost: Regular general cleaning is a highly effective, low-cost BMP.

Limitations: None

BMP 004 - AVOID HOSING DOWN THE SITE



Description of Potential Pollutant and Source: Cleaning work sites by hosing down causes wash water to transport pollutants to the storm drain where it can be exposed to storm water.

Description of BMP: Use dry methods to clean work sites. Dry methods include sweeping or using damp rags or mops. If possible or practical, hoses will be removed. If hosing down is unavoidable, the downstream drain will be temporarily plugged as described in the following BMPs:

- BMP 032 - Place portable Rubber Mats Over Storm Drain Inlets
- BMP 024 - Insert Filter in Catch Basin
- BMP 025 - Place Absorbent Blankets in Catch Basin

Application Guidance: Methods of dry cleaning will be used whenever possible at all work stations, loading/unloading sites, storage areas, and parking lots.

Training: New personnel will be notified of the policy and signs will be posted. If possible or practical, hoses will be removed.

Effectiveness and Cost: Eliminating hosing down is a highly effective, low-cost BMP.

Limitations: None

BMP 005 - PERFORM REGULAR PAVEMENT SWEEPING

Description of Potential Pollutant and Source: Trash, litter and particulate matter typically accumulate on paved surfaces. These materials are then transported during storm events into the storm water system or directly into receiving waters (e.g., from piers).

Description of BMP: Dry sweep paved areas regularly to prevent pollutants and debris from entering storm drains.

Application Guidance: Dry sweeping of paved areas will be performed semi-monthly. Particular emphasis will be placed on sweeping the paved areas prior to the wet season and frequently during the wet season.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a

frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

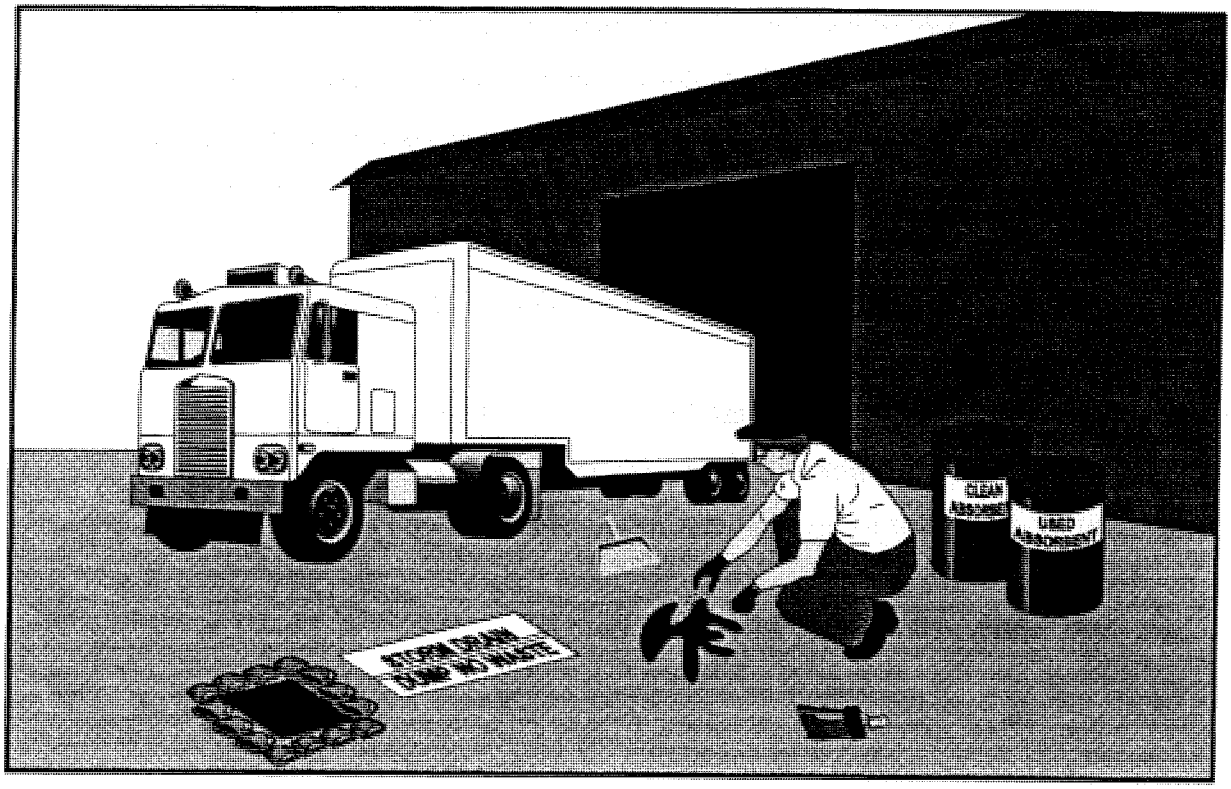
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained to use a small vacuum sweeper, if available, instead of a mechanical brush sweeper since the vacuum is more effective at removing fine particulate matter.

Effectiveness and Cost: Dry sweeping is a moderately effective, high-cost BMP, especially if a vacuum sweeper must be purchased.

Limitations: Layout of the site, amount of paved surface area, and the availability of funds for purchase of equipment may limit the use of this practice.

BMP 006 - CONTROL SPILLS



Description of Potential Pollutant and Source: Spills of significant materials may be exposed to storm water and transported to storm drains and/or receiving waters.

Description of BMP: Follow material safety data sheets (MSDS) for handling, storage, and cleanup of all significant materials to reduce the potential for spills.

Any spill, large or small, of significant materials will be controlled to prevent pollutants from being transported to storm drains and/or receiving waters. Appropriate spill control material will be kept on site. Smaller spills will be contained using absorbent material such as kitty litter, straw, or sawdust. Drums of absorbent material will be easily accessible and clearly marked, and containers for spent absorbent material will be readily available. Spent absorbent material will be managed appropriately and disposed of in accordance with applicable regulations.

Larger spills will be controlled using spill kits, brooms, and other response equipment commensurate with the size of the spill. The methods outlined in the Activity's spill prevention and response plans (BMP 112) for hazardous materials will be followed for spills of any potential storm water pollutants. The date, time, nature and volume of material spilled, and cleanup measures taken will be recorded for all spills and kept as part of the SWPCP.

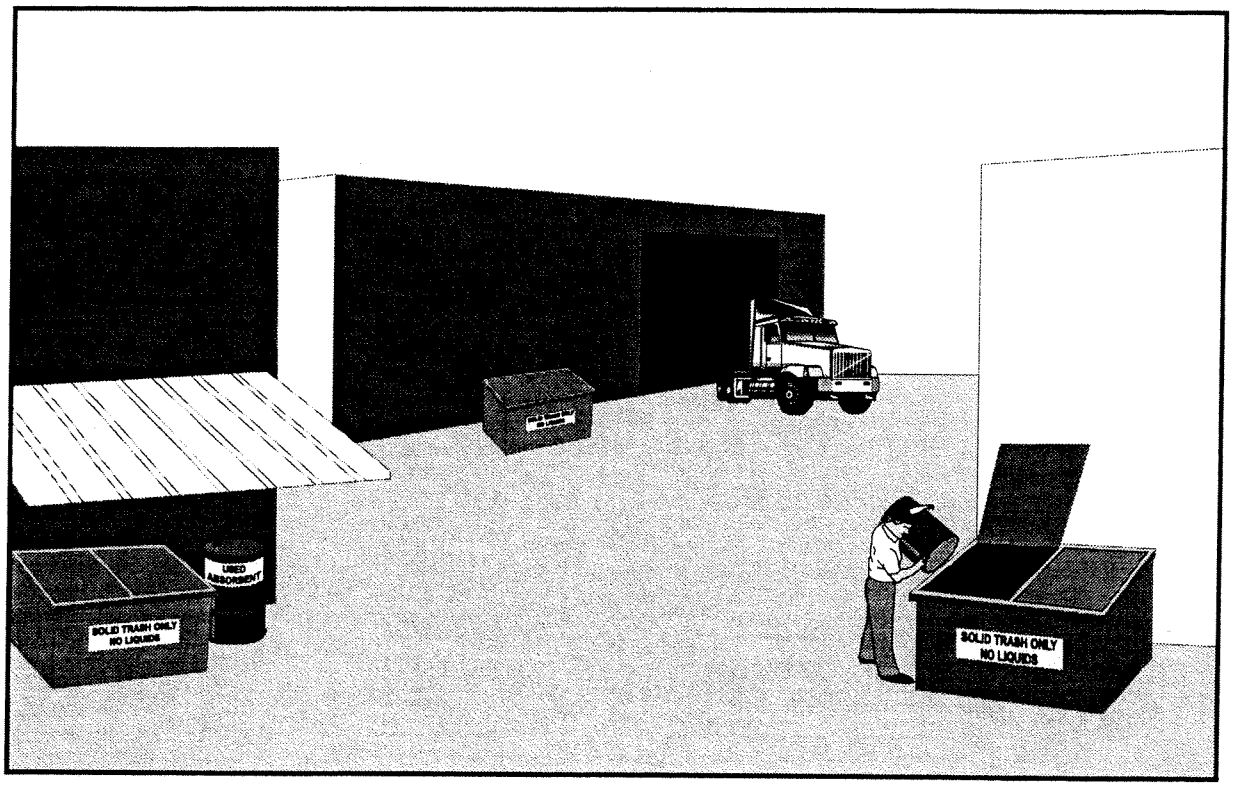
Application Guidance: Controlling spills will be practiced under all working conditions.

Training: Personnel will be trained in spill prevention and response procedures including the use of personal protection equipment (gloves, eye and face protection, etc.). This will include what absorbent or equipment to use, how to use the absorbent or equipment, where to find it, how to dispose of the spent absorbent or other material, and who to notify in the event of a spill.

Effectiveness and Cost: Spill control is a moderately effective, low-cost BMP.

Limitations: None

BMP 007 - PLACE TRASH RECEPTACLES AT APPROPRIATE LOCATIONS



Description of Potential Pollutant and Source: Improperly located or insufficient numbers of trash receptacles will promote poor housekeeping practices. This will increase the opportunity for pollutants from all source areas to reach storm water.

Description of BMP: Properly located and sufficient numbers of trash receptacles will promote the proper disposal of waste materials. This reduces the opportunity for pollutants to reach storm water. Trash receptacles will be easily accessible for personnel.

Application Guidelines: Placement of trash receptacles at appropriate locations will always be practiced.

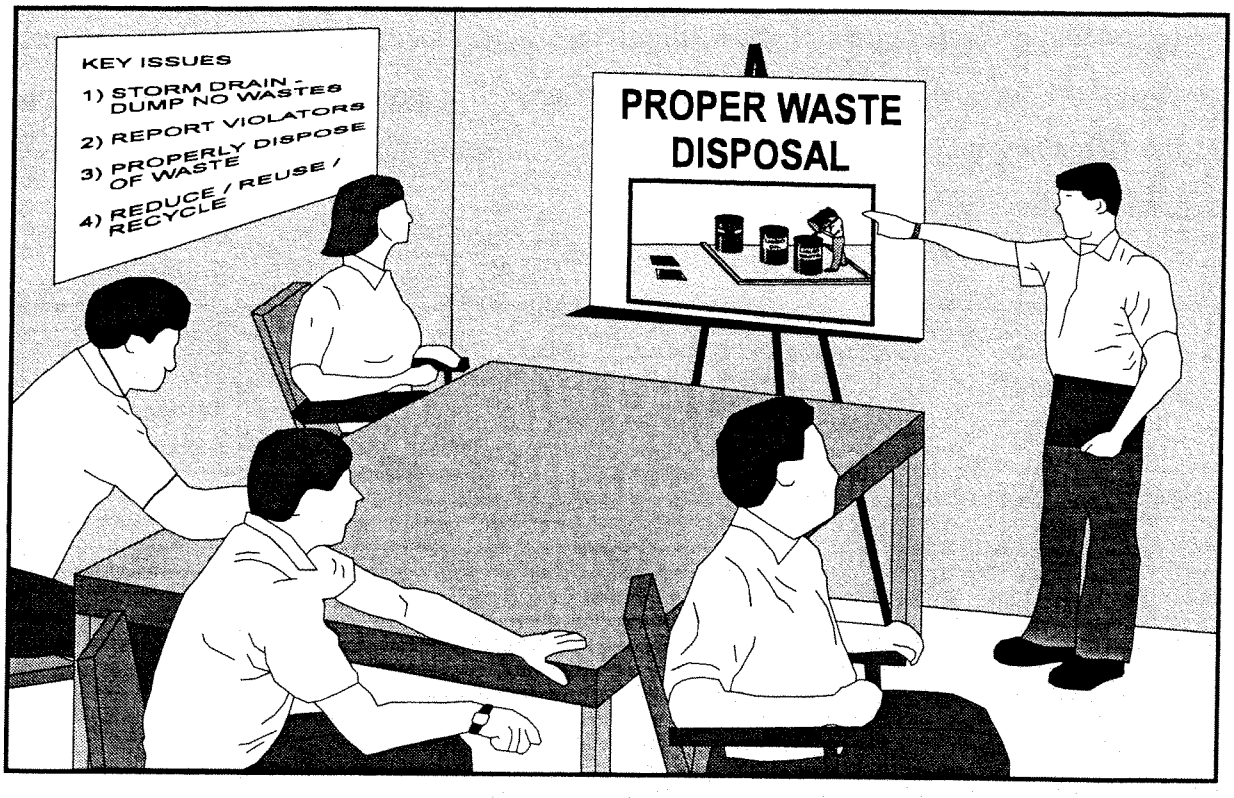
Training: Personnel will be trained as to the location of trash receptacles.

Effectiveness and Cost: Appropriately located trash receptacles are an effective, low-cost BMP.

Limitations: None

BMP 008 - DELETED

BMP 009 - TRAIN EMPLOYEES TO PROPERLY DISPOSE OF WASTES



Description of Potential Pollutant and Source: Waste poured or deposited into storm drains contains pollutants which will enter the storm drain system and receiving waters without treatment.

Description of BMP: Train employees on proper waste disposal and recycling procedures. Refer also to BMP 118, "Routinely Report Any Observed Non-Storm Water Discharges," and BMP 027, "Stencil Signs On Storm Drain Inlets."

Application Guidance: Training will be performed for all new personnel and semi-annually for all personnel.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a

frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	
Frequency of personnel turnover	

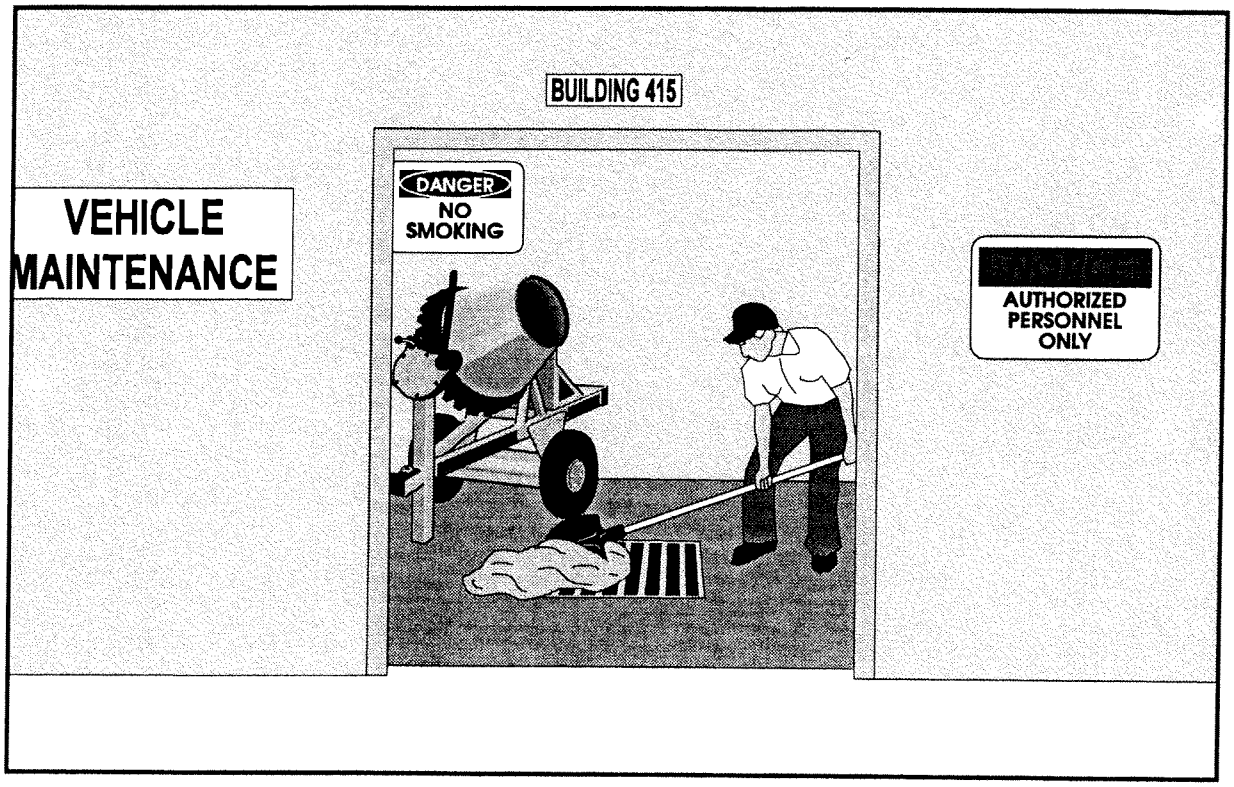
Training: Training will include the following:

- Train personnel at all levels not to pour or deposit wastes into storm drains or storm drain connections.
- Train personnel to properly dispose or recycle materials.
- Train personnel at all levels to report any observable non-storm water discharges.

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: None

BMP 010 - PERMANENTLY SEAL FLOOR DRAINS THAT DISCHARGE TO THE STORM DRAIN SYSTEM



Description of Potential Pollutant and Source: Floor drains that are connected to the storm drain system provide a pathway for spilled or leaked material to enter the system.

Description of BMP: Permanently seal floor drains inside buildings (whenever this would not adversely affect safety or structural integrity) to prevent accidental illegal dumping of pollutants into the storm water system.

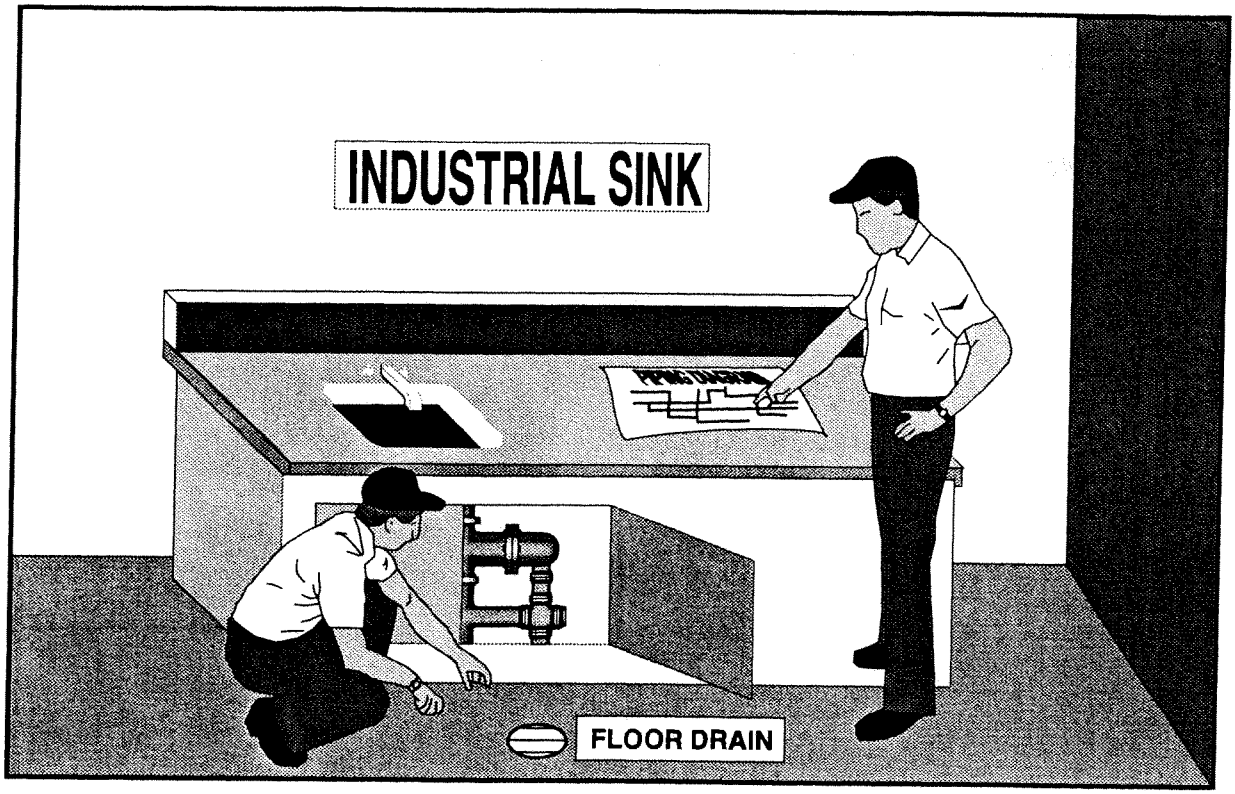
Application Guidance: N/A

Training: N/A

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: None

BMP 011 - CONFIRM THAT NO INDUSTRIAL SINKS ARE CONNECTED TO THE STORM DRAIN SYSTEM



Description of Potential Pollutant and Source: Industrial sinks and floor drains connected to the storm drain system can introduce pollutants directly to the storm drain system and receiving waters without treatment.

Description of BMP: Connect sinks and floor drains in industrial areas to a sanitary sewer or other disposal location. "As-builts," piping diagrams, and building or site plans will be inspected to verify that the sinks and floor drains are not connected to the storm drain system, especially in casually constructed shop areas. Additional reconnaissance may be performed to look for plumbing changes not shown on available plans. If an illicit connection to the storm drain system is suspected, additional testing will be performed.

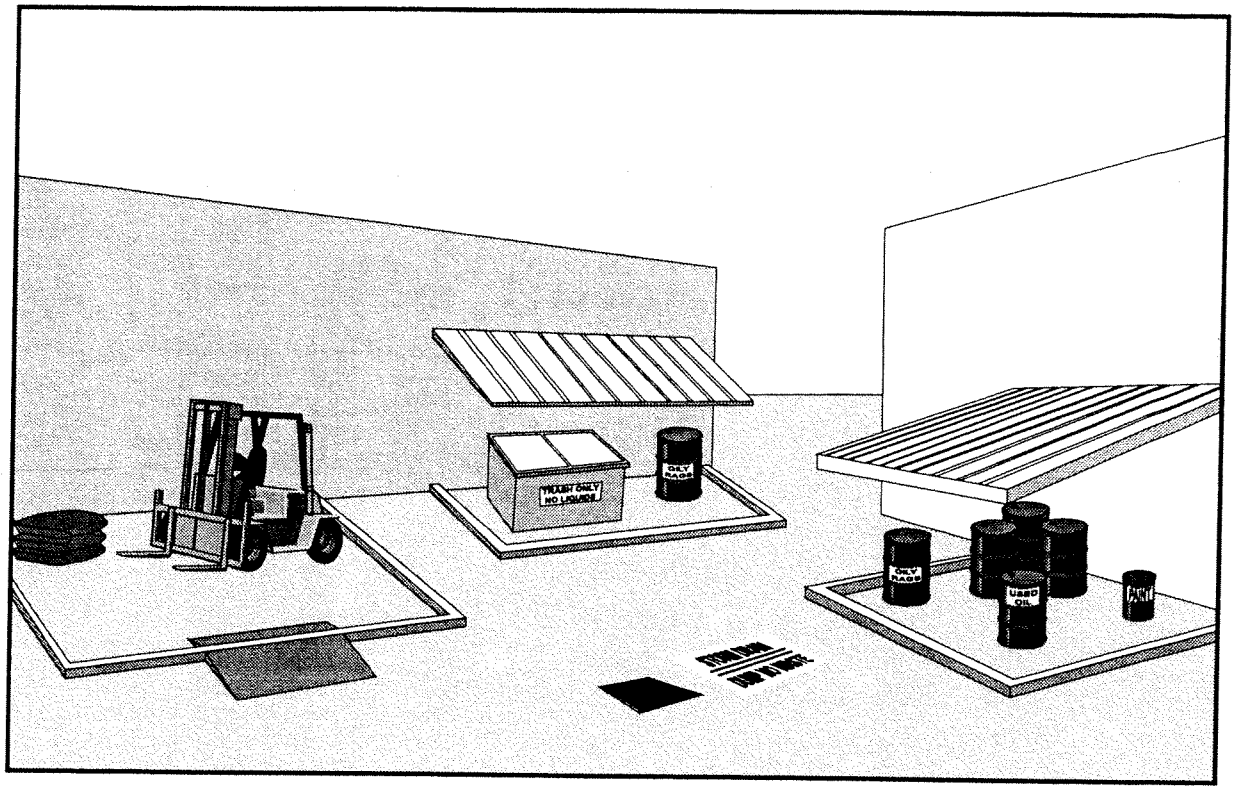
Application Guidance: N/A

Training: N/A

Effectiveness and Cost: This is a highly effective, low- to moderate-cost BMP.

Limitations: None

BMP 012 - CONSTRUCT BERM OR DIKE AROUND CRITICAL AREAS



Description of Potential Pollutant and Source: Critical areas are source areas that have a high likelihood for the release of pollutants. This includes material handling areas, material storage areas, and equipment repair and maintenance areas. As a result of spills and leaks or exposure to storm water, pollutants can flow from critical areas into the storm water system. In addition, small spills and leaks can accumulate on the surface area and be washed away by storm water.

Description of BMP: Construct a raised berm or dike around critical areas. This will provide secondary containment and prevent any spills or leaks from leaving the area. This secondary containment will also be provided where mobile tankers containing fuel are customarily stationed. Construct a ramp to allow vehicle access into the area. (Note: double walled tanks do not require this BMP. Also, 40 CFR 112.7 requires bulk petroleum storage tanks be provided with secondary containment.) A drain valve will be installed and procedures to drain storm water from the bermed area will be posted (see BMP 014).

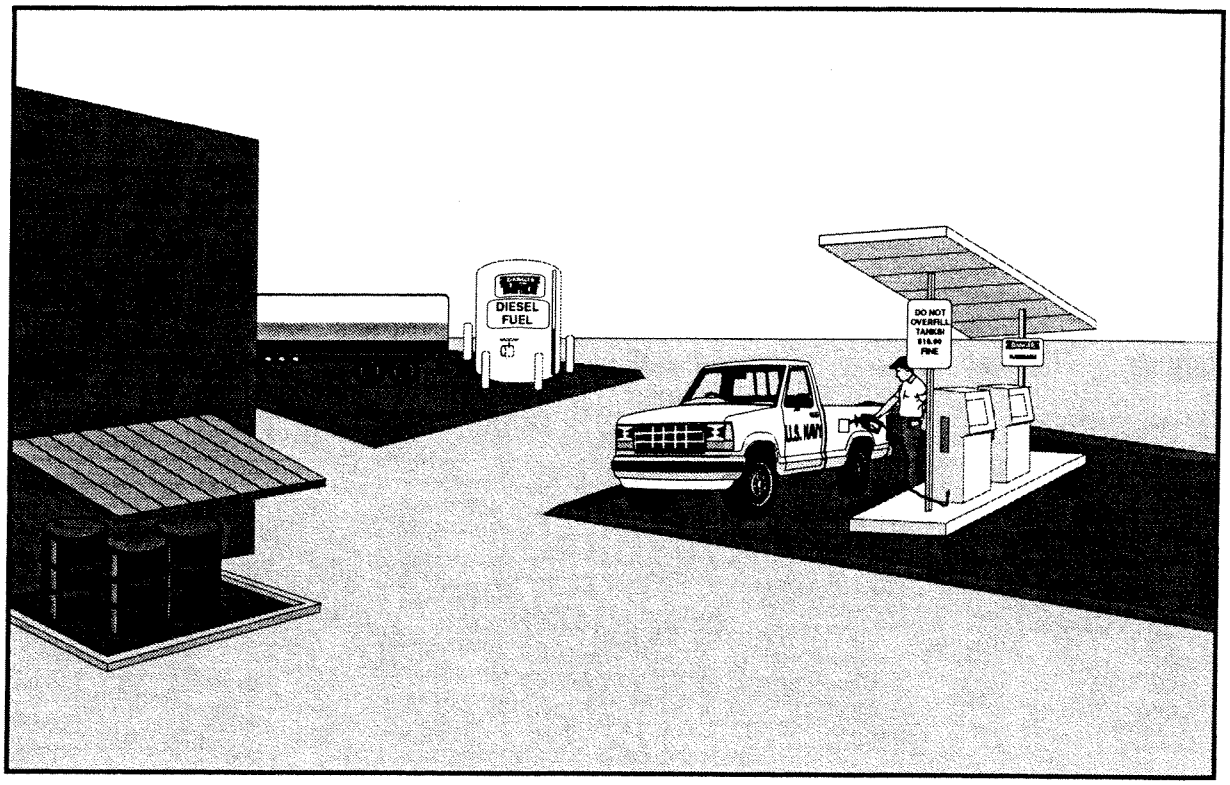
Application Guidance: Install as needed.

Training: N/A

Effectiveness and Cost: This is a highly effective BMP. The cost will vary depending on the size of the fueling operation.

Limitations: The size of some tank and fueling operations areas could make this BMP relatively expensive.

BMP 013 - PAVE BERMED AREAS



Description of Potential Pollutant and Source: Critical areas are source areas that have a high likelihood for the release of pollutants. This includes material handling areas, material storage areas, and equipment repair and maintenance areas. Material which has leaked or spilled on the ground surface may infiltrate into the soil and then be transported to storm drains by storm water.

Description of BMP: Pave bermed areas. (See BMP 012, "Construct Berm or Dike Around Critical Area."). The area within the berm will be sufficiently impervious to prevent infiltration of the material in the event of a spill. The impervious material will be concrete, asphalt concrete, or other impervious paving material. The lining material will also be clay, plastic or another impervious material. A storm drain must not be located within the impervious area. (Note: 40 CFR 112.7 requires bulk petroleum storage tanks be provided with secondary containment.)

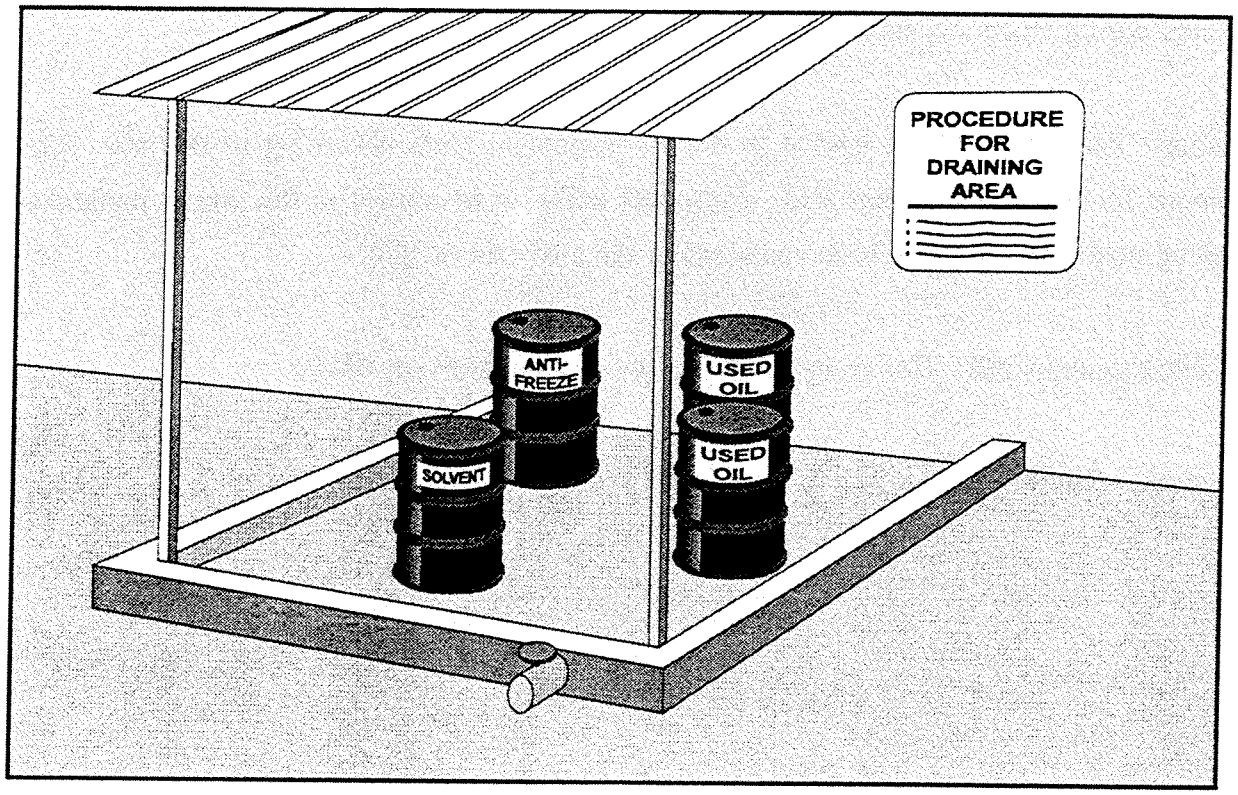
Application Guidance: Install as needed.

Training: N/A

Effectiveness and Cost: This is an effective BMP. Costs will vary based on the size of the area.

Limitations: The size of some tank and fueling operations areas could make this BMP expensive.

BMP 014 - PROVIDE VALVE FOR OUTLET PIPE IN CONTAINMENT AREA



Description of Potential Pollutant and Source: Spilled or leaked material may be discharged from containment areas through open outlet pipe valves or by overflowing.

Description of BMP: Install outlet pipe valves and keep closed. During storm events, containment areas will be drained following guidelines specifically developed for that area. Storm water accumulated in containment areas may be released to the storm drain system after the water quality has been evaluated based on the types of materials stored in the containment area and/or after laboratory analyses. If sheening, discoloration, odor, or evidence of spills is observed, the water will not be discharged to the storm drain system prior to treatment or further evaluation.

In containment areas where oils are stored, skimming spilled oil off the water using absorbents will be adequate treatment prior to discharge to storm drain system. However, the water will either be pumped out and stored pending chemical analytical results or properly disposed.

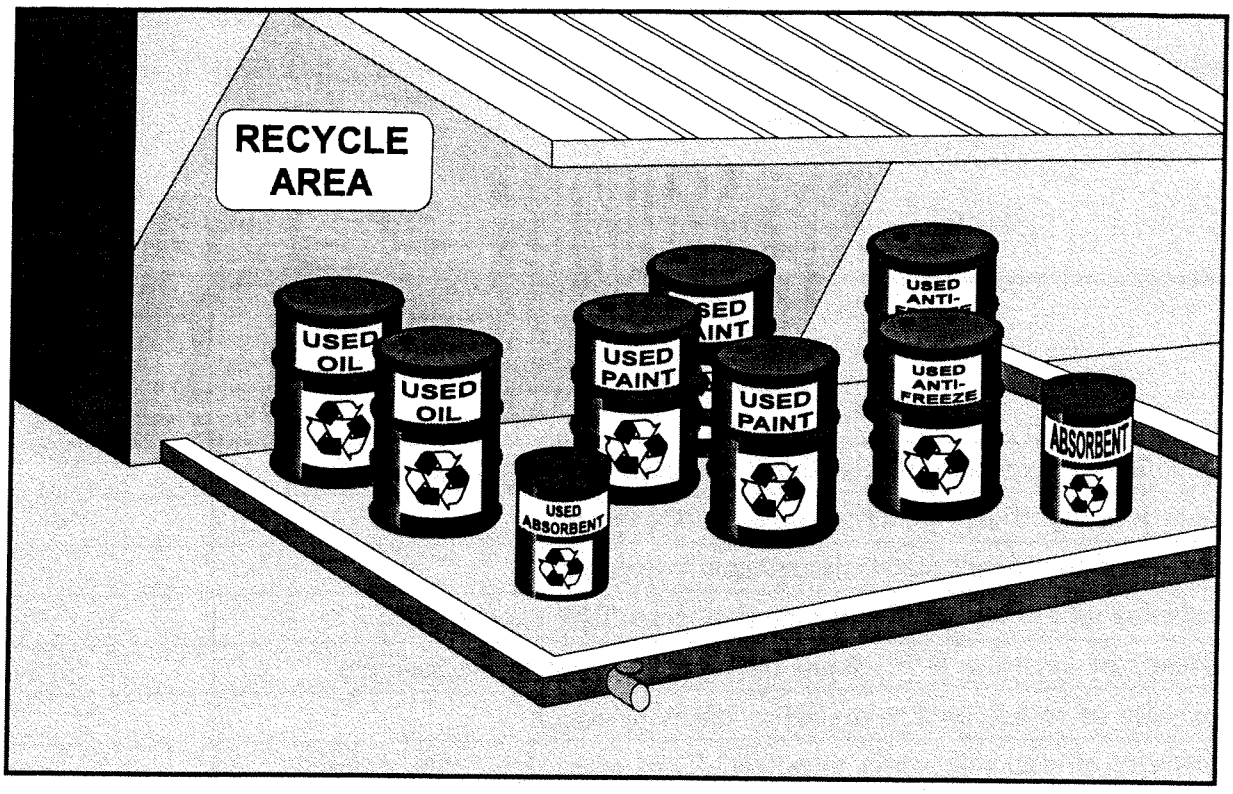
Application Guidance: The accumulated storm water will be released or removed at least every 24 hours during storm events.

Training: Personnel will be trained to drain containment areas according to the procedures developed for each containment area. Personnel will also be trained in the proper method of disposing materials that have been contained in the area after a spill.

Effectiveness and Cost: This is an effective, low to moderate-cost BMP.

Limitations: None

BMP 015 - RECYCLE



Description of Potential Pollutant and Source: Many materials, both hazardous and non-hazardous, can be sources of pollutants. Recycling will be employed to reduce the amount of waste material exposed to storm water on the Activity.

Description of BMP: Recycle materials to the fullest extent possible in all situations.

Application Guidance: Recycling collections will be conducted at least weekly for recyclable items such as solvents, oil, scrap metals, wash water and absorbent materials. Separating the recyclable items facilitates recycling.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria

will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

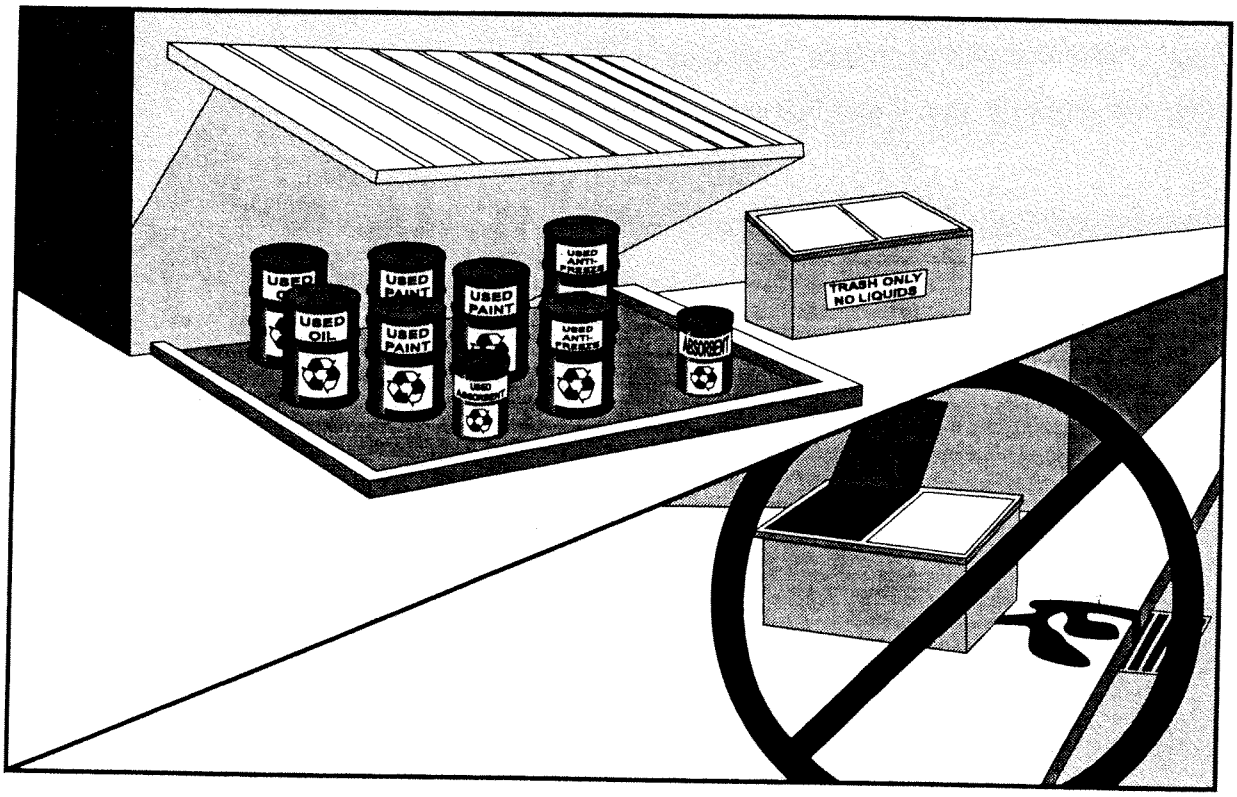
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Evidence of exposure (e.g., stains on pavement, etching of concrete	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained on proper recycling techniques along with posting and maintenance of signs.

Effectiveness and Cost: Effectiveness and cost will be site specific.

Limitations: Local vendors may not be available to receive certain recyclable materials.

BMP 016 - STORE WASTE AND RECYCLING MATERIALS IN PROPER CONTAINERS



Description of Potential Pollutant and Source: Dry waste, including items such as scrap metal, floor sweepings, metal chips, and paper goods, can be dispersed by wind or operational error if not stored properly. If a dumpster's lid is not kept closed, animals may carry garbage out of the containers. Uncovered dumpsters also expose waste to storm water, which may leak out of the dumpster and into the storm sewer system.

Description of BMP: Locate waste and recycling drums and containers in centralized areas, using proper labeling (both containers and location) and providing easy access. If possible, the area will have secondary containment (see BMPs 012, 013, and 014). Waste containers will be emptied regularly. Dumpsters will all have lids; lids will be kept closed when not in use. If the dumpster has inadequate capacity and it is not possible to keep the cover closed, the frequency of pick-up will be increased, or the dumpster will be replaced with a model of greater capacity.

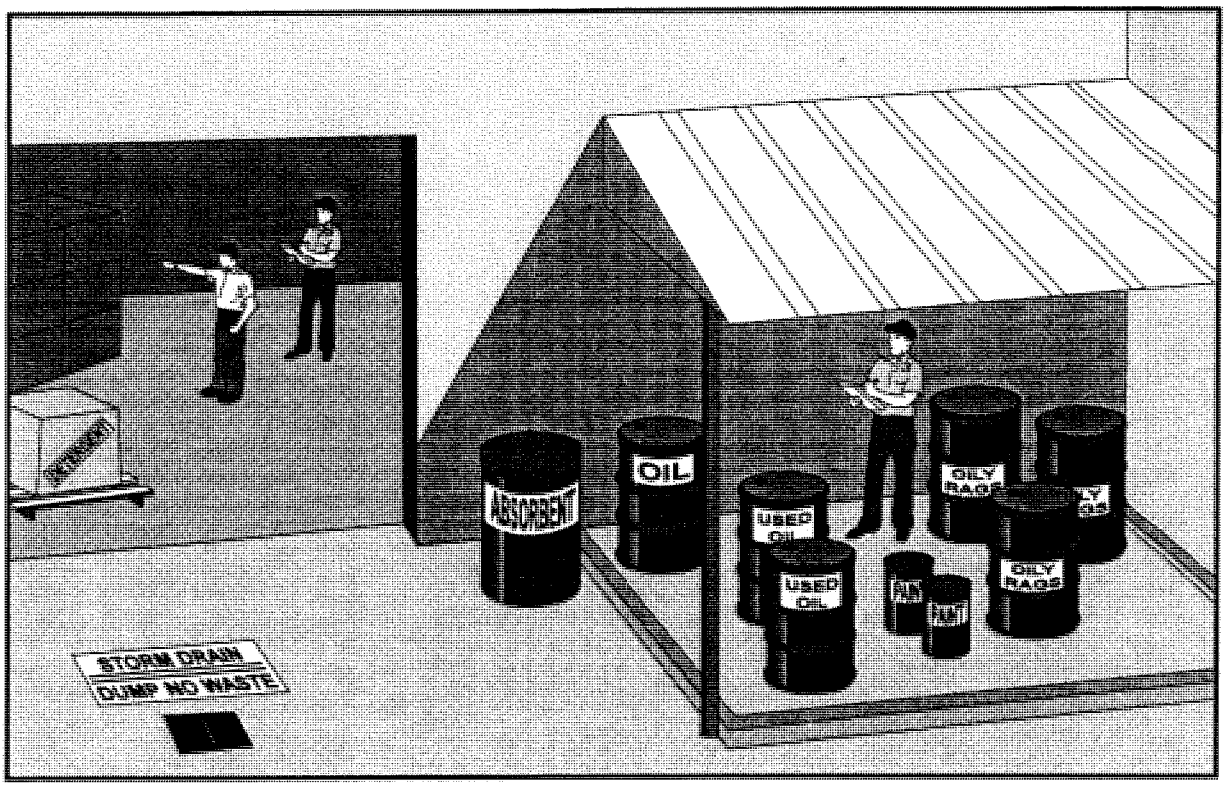
Application Guidance: This BMP will be applied to all waste and recycling storage areas.

Training: Personnel will be trained to monitor waste and recycling storage sites to ensure there materials are properly stored and that there are no overflowing containers.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: None

BMP 017 - LIMIT SIGNIFICANT MATERIALS INVENTORY



Description of Potential Pollutant and Source: Reducing the amount of significant materials reduces the potential for the material to enter the storm drain system.

Description of BMP: Control inventory control to prevent excess storage of unnecessary or infrequently used significant materials.

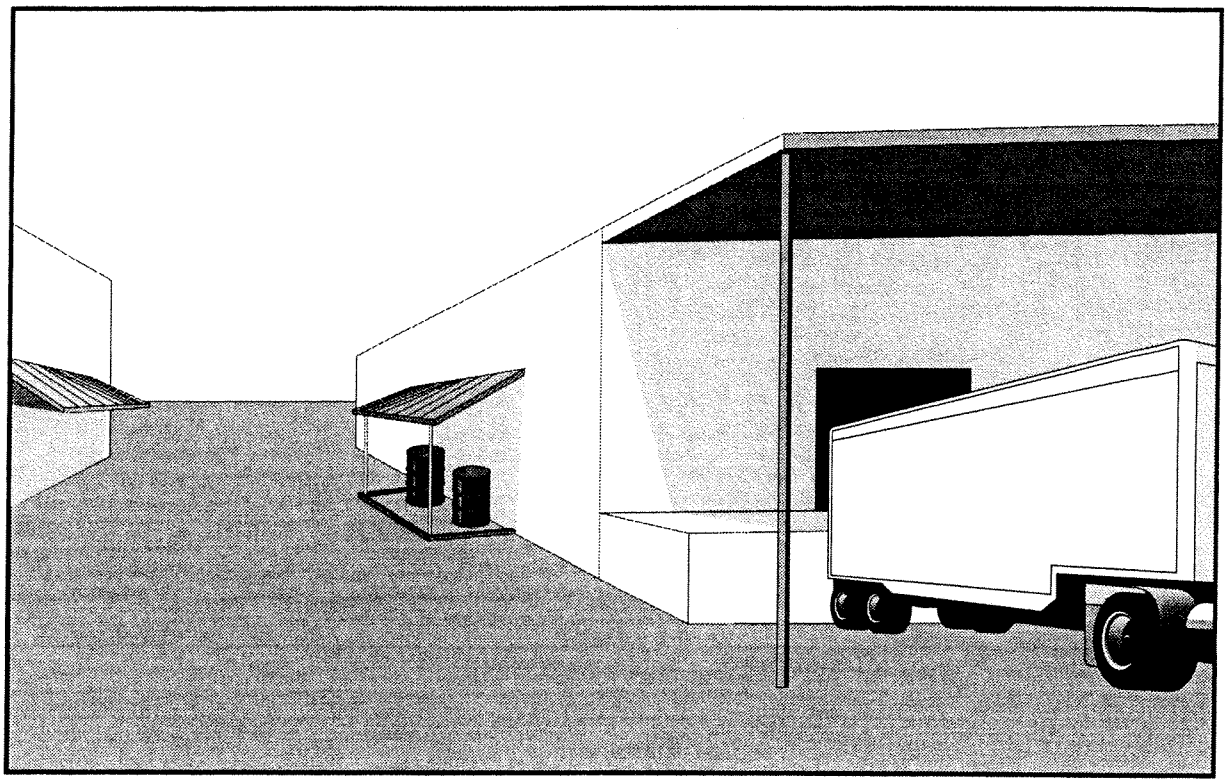
Application Guidance: This BMP will be used in all cases where significant materials are stored.

Training: Procurement officers and warehouse managers will be trained to accurately estimate delivery schedules and user's needs.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: **None**

BMP 018 - PROVIDE ROOF TO COVER SOURCE AREA



Description of Potential Pollutant and Source: Spills, leaks and outdoor storage of materials can result in the exposure of significant materials to storm water.

Description of BMP: Construct roofs over areas with significant materials to minimize contact with storm water. Roofs are effective covering for fuel transfer areas, material loading/unloading areas, equipment maintenance, metal fabrication, hazardous waste storage, and materials storage areas.

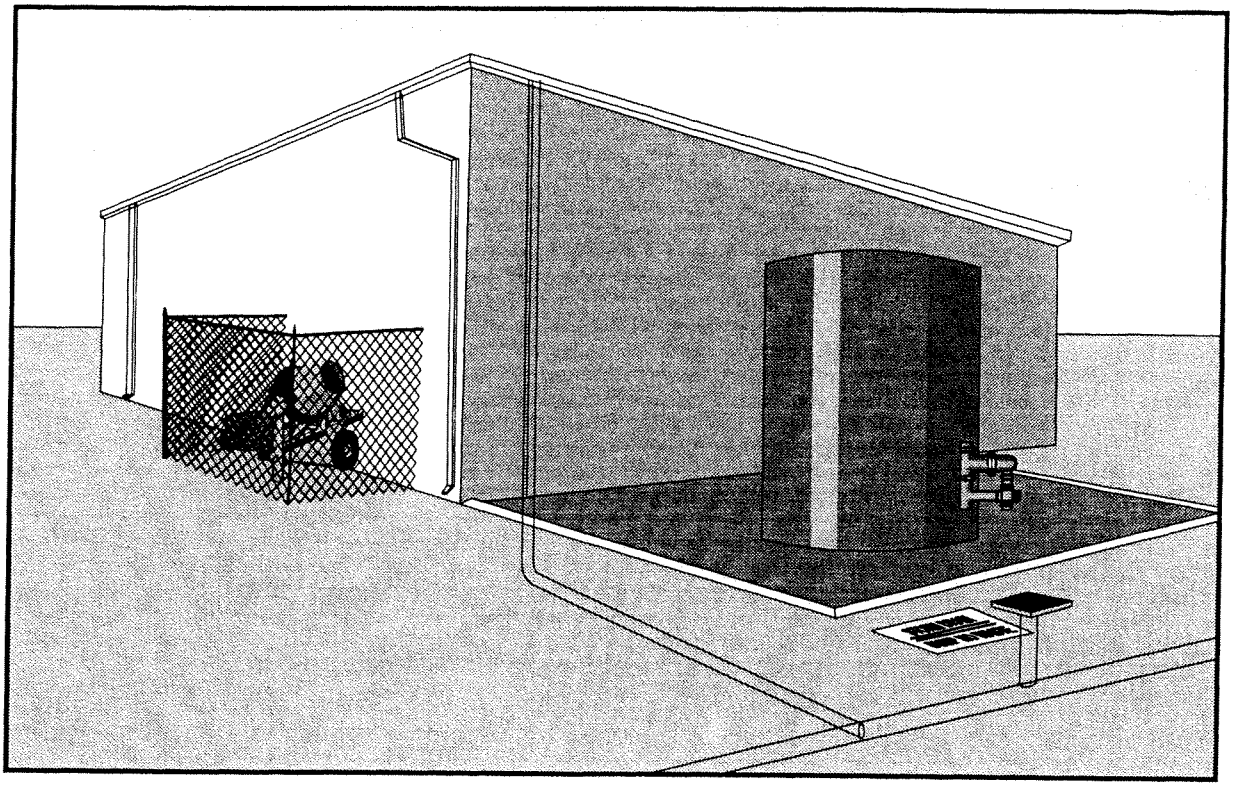
Application Guidance: Install as needed.

Training: N/A

Effectiveness and Cost: Roofs are an effective, variable-cost BMP. Cost can be high for large areas.

Limitations: The height of the equipment or the size of the area may make this BMP infeasible.

BMP 019 - CONTROL ROOF DOWNSPOUT DISCHARGE



Description of Potential Pollutant and Source: Storm water collected on roofs and directed through downspouts to industrial areas can transport pollutants to the storm drain system.

Description of BMP: Control roof runoff in areas where roof downspout discharges flow over areas of high pollutant use or storage, such as areas used for fueling, metal fabricating, lead tool and dye storage, or hazardous waste storage. Roof downspouts will be re-directed to non-industrial areas or connected directly to the storm drain system.

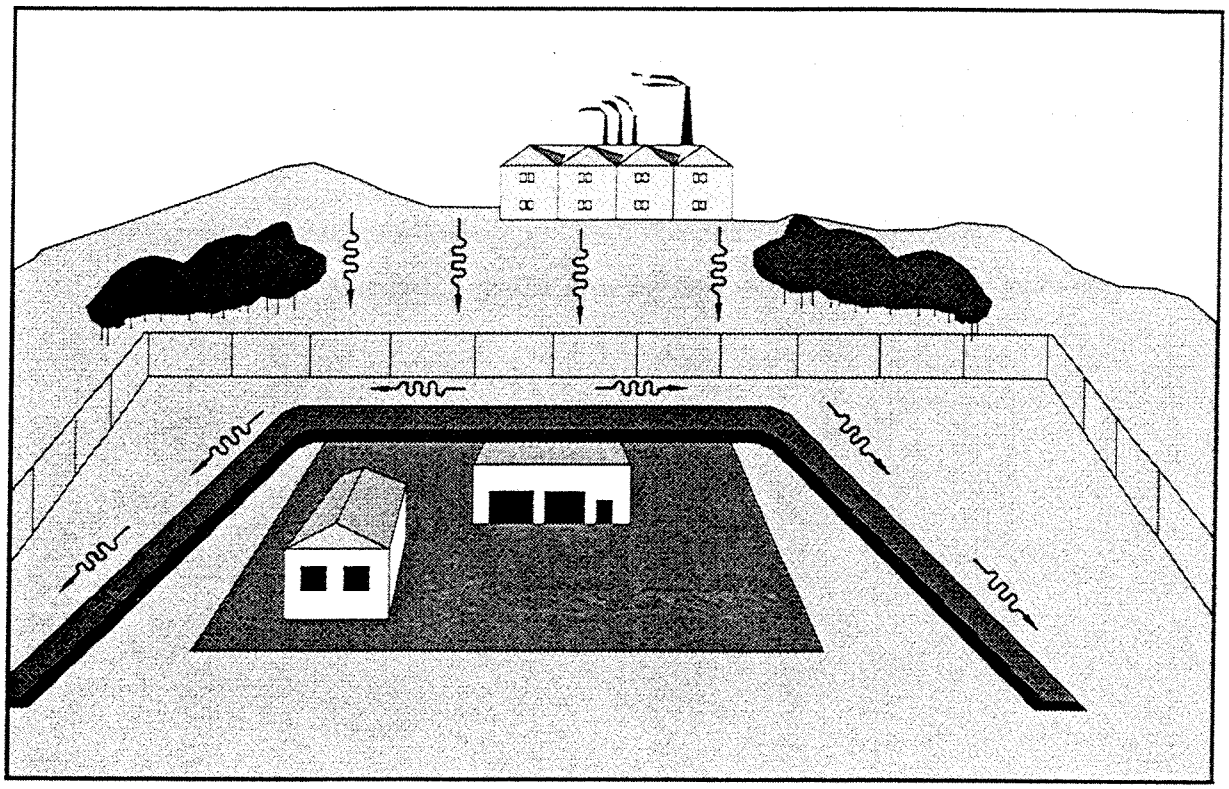
Application Guidance: This BMP will be applied whenever storm water collected on roofs discharges to areas polluted with significant materials.

Training: N/A

Effectiveness and Cost: This BMP can eliminate concentrated roof runoff from flowing through pollutant source areas. Costs vary depending on whether an underground storm drain connection has to be made.

Limitations: None

BMP 020 - MINIMIZE STORM WATER RUN-ON FROM ADJACENT FACILITIES AND PROPERTIES



Description of Potential Pollutant and Source: Significant run-on from other facilities or adjacent properties can result in either increased pollutant exposure to storm water on site (from the increased volume of water movement) or in increased transport of off-site pollutants onto the facility.

Description of BMP: Control run-on by berming or using diversion ditches to direct flow away from or around the site. Alternatively, run-on will be slowed by use of vegetated strips, grassed swales, or infiltration basins or trenches.

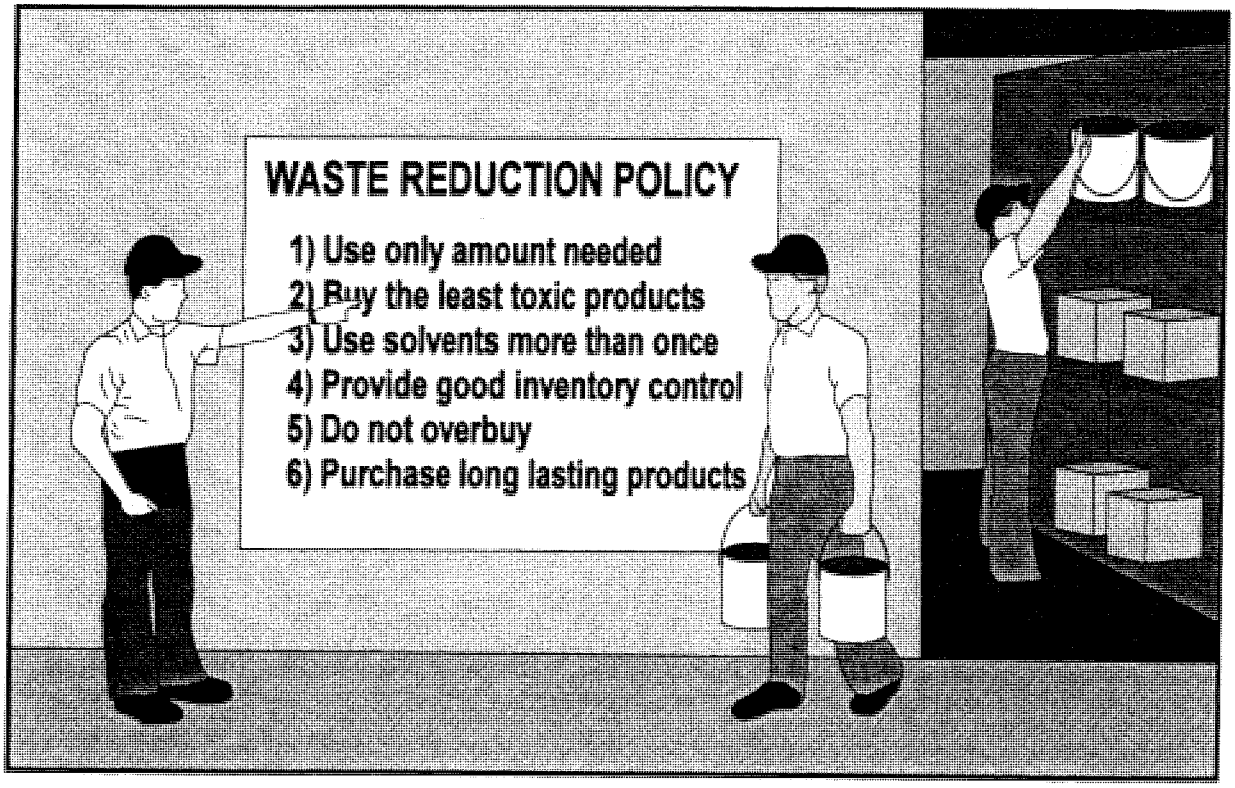
Application Guidance: The BMP will be used whenever a significant volume of off-site drainage flows into an area where possible pollutants are present. This BMP will also be used where run-on may be polluted.

Training: None

Effectiveness and Cost: The BMP can be very effective for flows of low to moderate volume. Cost varies, depending on site area, but could be high.

Limitations: Vehicle and pedestrian safety, and travel can limit the implementation of this BMP, also, diversion channels may not be compatible with existing drainage systems.

BMP 021 - REDUCE WASTE



Description of Potential Pollutant and Source: Reducing the amount of waste produced at a site reduces the amount of significant materials potentially exposed to storm water.

Description of BMP: Reduce waste to minimize or eliminate the discharge of pollutants to storm water. Methods to reduce waste include, but are not limited to, substituting or eliminating raw materials, modifying existing processes or equipment, planning and sequencing production, tracking waste generation, listing amounts of materials disposed, and separating wastes. Personnel will be trained to: use only the amount needed; buy the least toxic products; use solvents more than once; provide good inventory control; do not overbuy; and purchase long-lasting products.

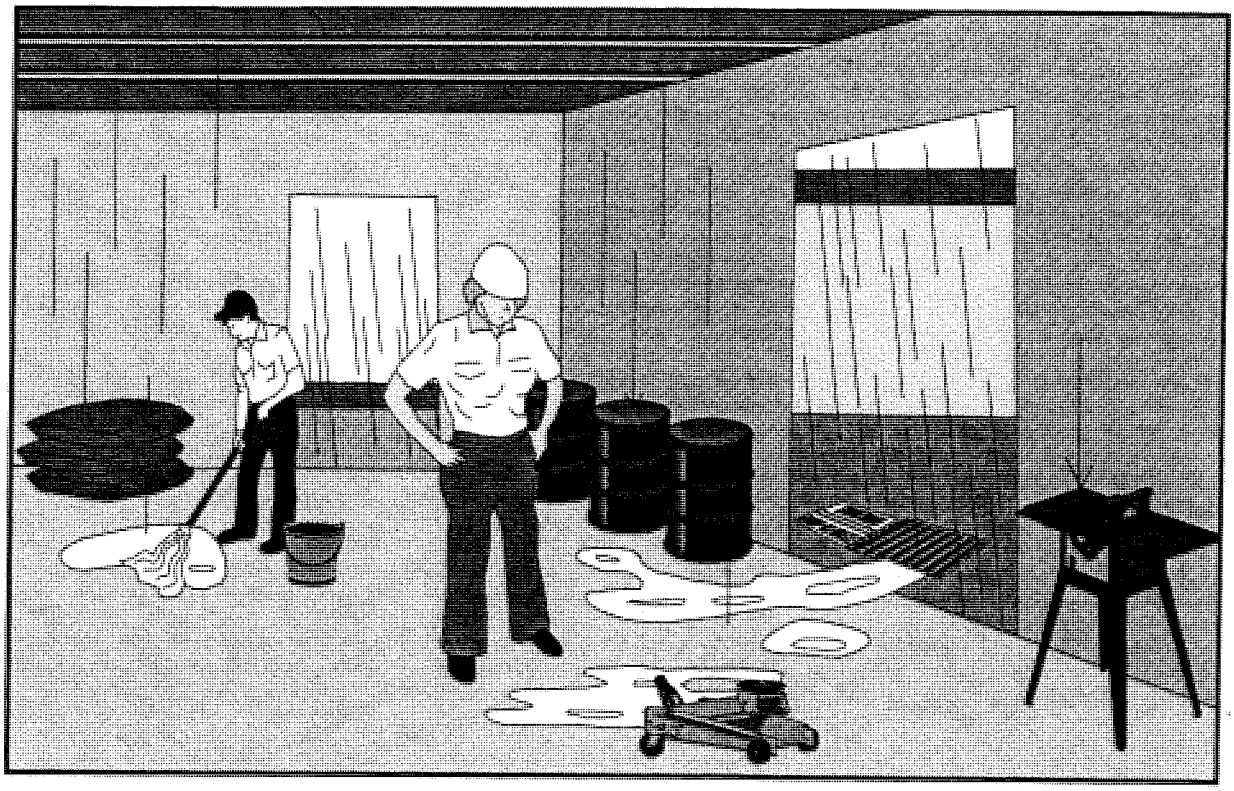
Application Guidance: These methods will be implemented under most working conditions.

Training: None

Effectiveness and Cost: Effectiveness and cost will vary depending on the facility.

Limitations: None

BMP 021A - REPAIR LEAKY ROOFS



Description of Potential Pollutant and Source: Hazardous substances, parts, equipment, vehicles, and materials are often stored indoors or in covered areas. During storage, significant materials such as oil, grease, and solvents may leak or spill onto the floor, ground, or pavement. If storm water enters these areas through leaky roofs, the pollutants may be washed into the storm drain system.

Description of BMP: Repair leaky roofs as required for each building. Alternatively, the stored materials will be moved to another covered area.

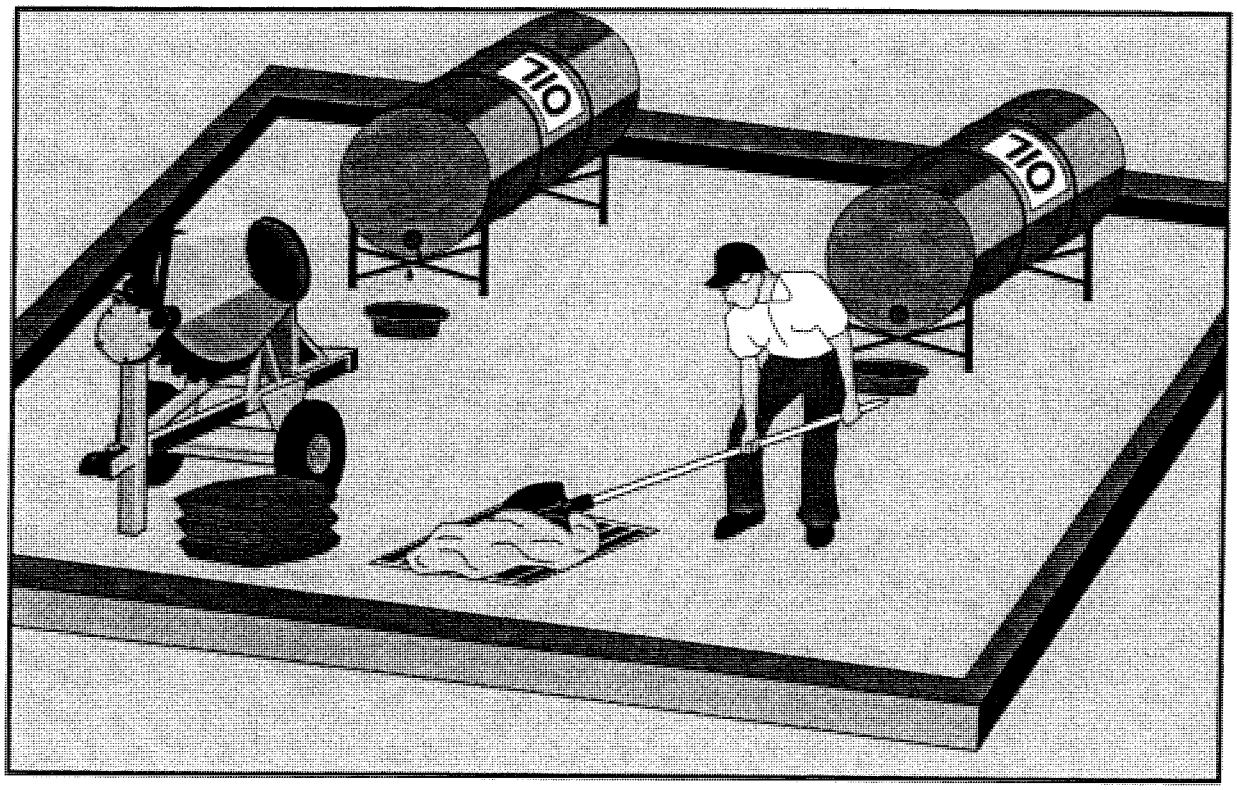
Application Guidance: Leaky roofs will be repaired wherever there is a potential for the exposure of significant materials to storm water.

Training: Personnel will be trained to notify their supervisors when leaks are observed in roofs.

Effectiveness and Cost: The BMP is moderately effective. The cost is dependent on the extent of repairs.

Limitations: None

BMP 022 - PERMANENTLY SEAL DRAINS WITHIN CRITICAL AREAS THAT DISCHARGE TO THE STORM DRAIN



Description of Potential Pollutant and Source: Certain activities may result in spills. The spilled material may flow or be washed into nearby storm drains, receiving waters, or surfaces resulting in exposure to storm water.

Description of BMP: Seal drains within the critical areas that discharge to the storm drain to prevent significant materials from being washed into the storm drain system. Critical areas are those that have a high likelihood to release pollutants, including material handling areas, material storage areas, and equipment repair and maintenance areas.

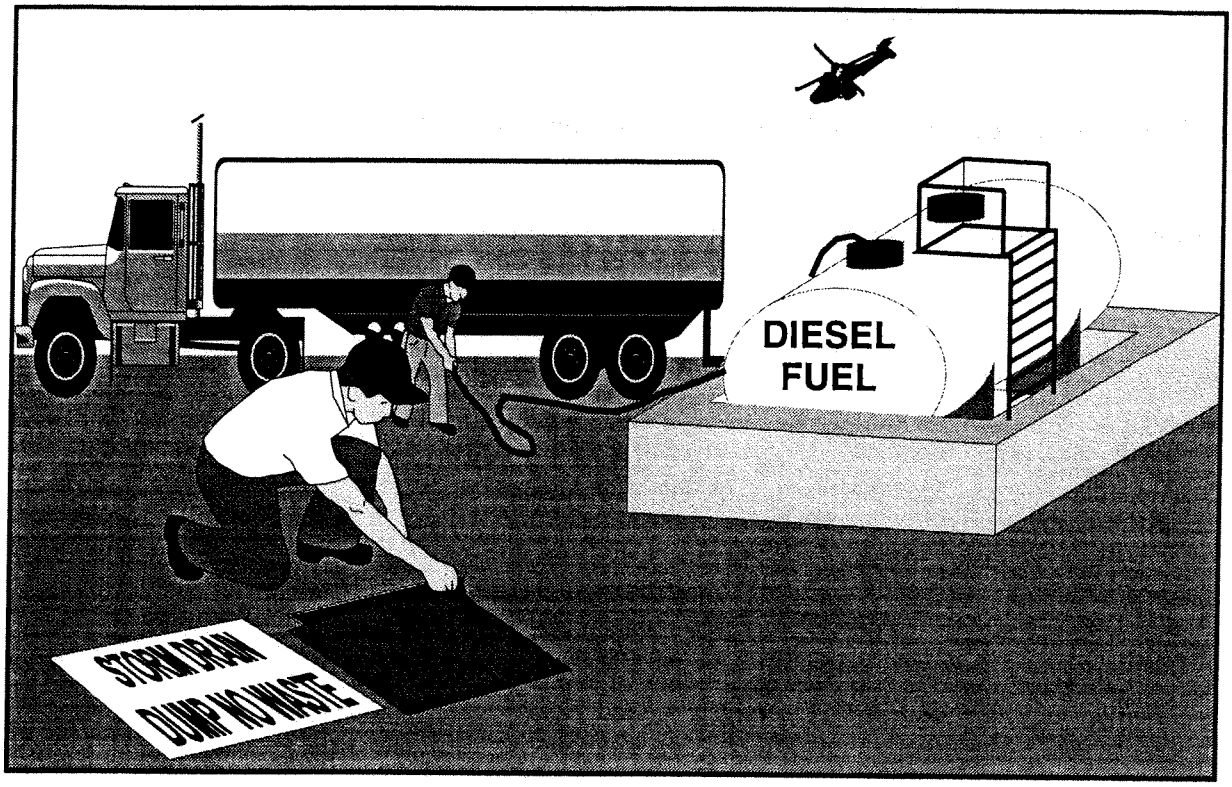
Application Guidance: This BMP will be applied to storm drain inlets in all critical areas as needed.

Training: N/A

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: If the area draining to the storm drain inlet is large and the inlet is at a low point, this is not a practical BMP. Under the circumstances, implementation of this BMP will result in ponding. In this case, use BMP 023, "Place Portable Rubber Mats over Storm Drain Inlets."

BMP 023 - PLACE PORTABLE RUBBER MATS OVER STORM DRAIN INLETS



Description of Potential Pollutant and Source: Spills are more likely to occur during certain operations, such as materials transfer. If these operations occur near a storm drain, the material may be discharged into the storm drain system.

Description of BMP: If operations which are likely to spill significant materials occur near a storm drain, place a rubber portable mat over the storm drain during the operation. If a spill occurs during the operation, the mat will prevent the pollutant from entering the storm drain system. The spilled material can be properly cleaned up and disposed of before removal of the rubber mat.

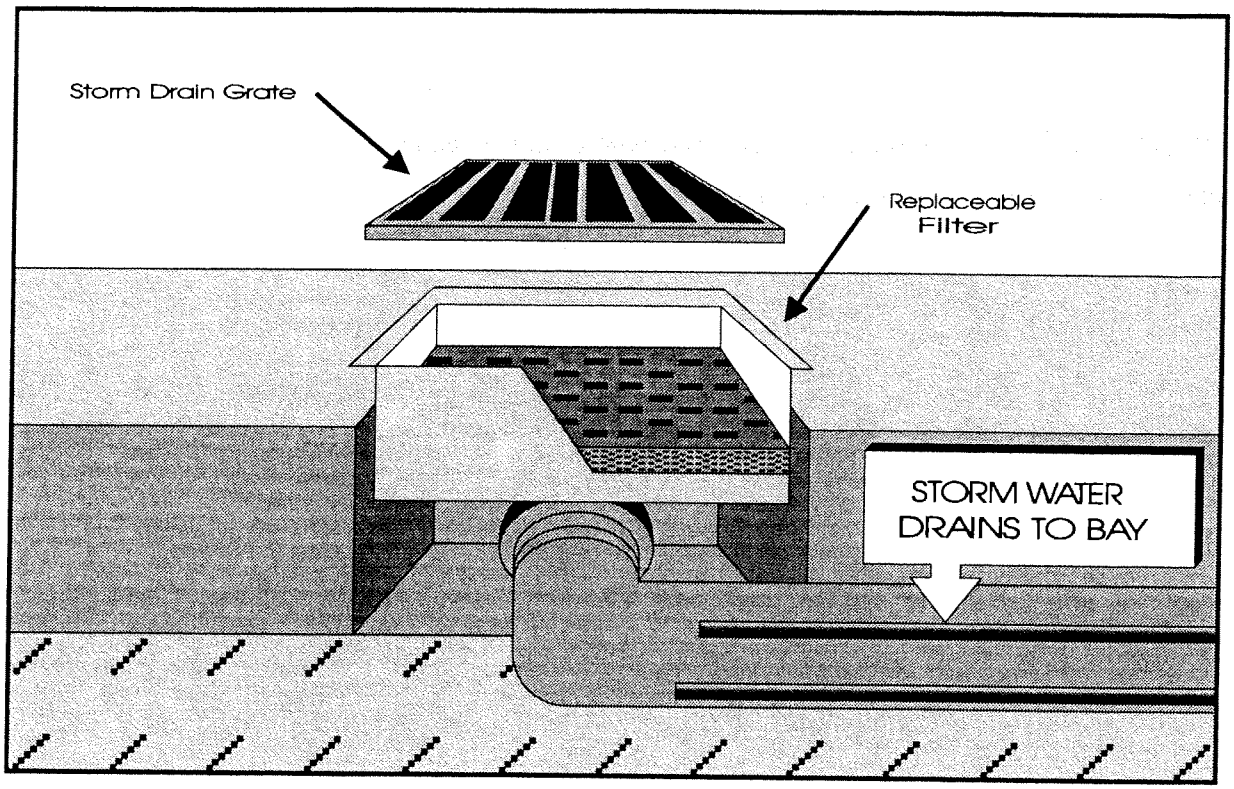
Application Guidance: Portable rubber mats will be placed over the storm drain for the duration of any operation which is likely to discharge pollutants into the storm drain.

Training: Personnel will be trained regarding the use of the portable mat. In addition, personnel will be trained in proper cleanup and disposal of any spilled material.

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: This BMP works best on flat storm drain inlets.

BMP 024 - INSERT FILTER IN CATCH BASIN



Description of Potential Pollutant and Source: Sediments, oil, and other pollutants generated from industrial activities can pollute storm water.

Description of BMP: Use catch basin filters of sand and organic material to trap sediments, oil, and other storm water contaminants. The filters are designed to be easily retrofitted into existing catch basins by suspending the device inside catch basins. Filters will be replaced regularly according to manufacturer's recommendations.

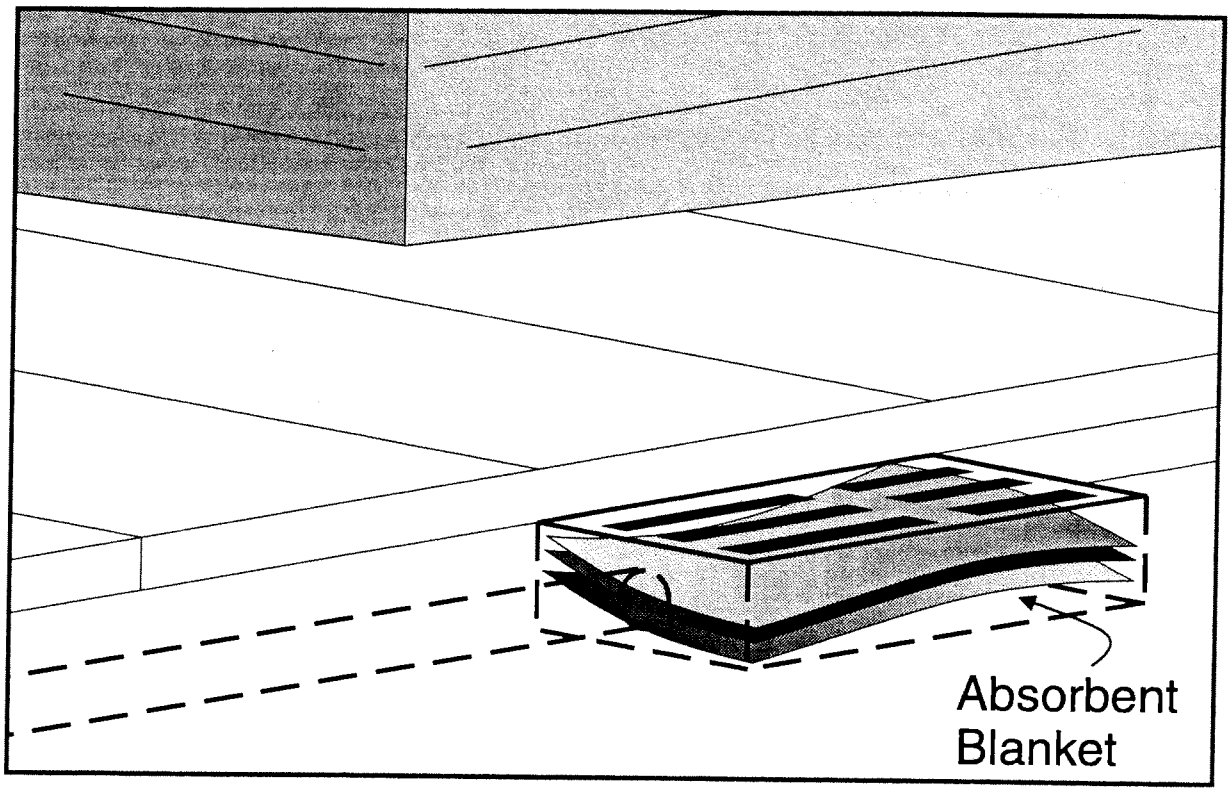
Application Guidance: This BMP will be used in areas where high concentrations of pollutants enter a storm drain catch basin.

Training: None

Effectiveness and Cost: Catch basin filters appear to be a moderately effective, moderate-cost BMP.

Limitations: This BMP should only be used where storm water with high concentrations of pollutants drains into a storm drain inlet.

BMP 025 - PLACE ABSORBENT BLANKETS IN CATCH BASIN



Description of Potential Pollutant and Source: Oil and grease from maintenance activities can be discharged into the storm drain system.

Description of BMP: Place oil and grease absorbing blankets in catch basins and inlets. This BMP will be used in areas where high concentrations of oil and grease are exposed to storm water which can enter a storm drain catch basin or inlet.

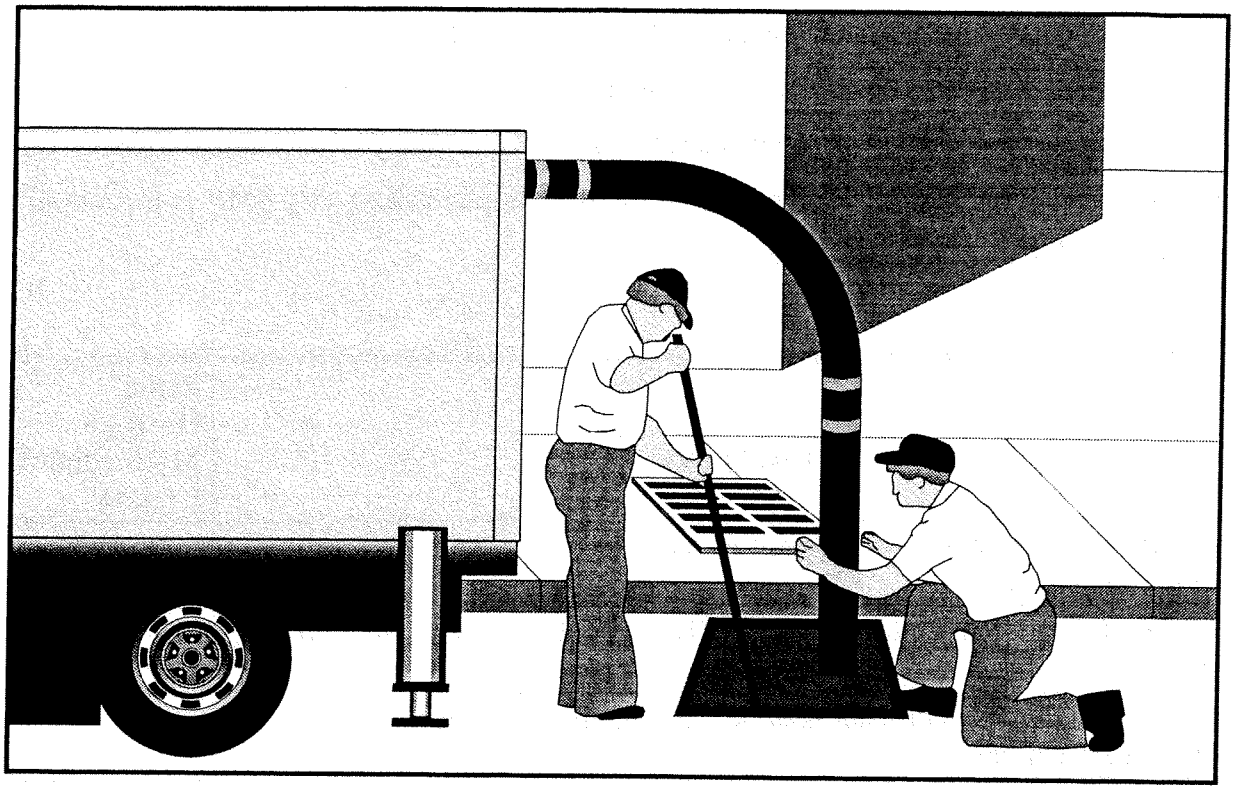
Application Guidance: The blankets will be changed semi-annually (or as needed) to ensure their continued effectiveness.

Training: Personnel will be trained to inspect the blankets monthly and replace them semi-annually or as needed.

Effectiveness and Cost: The blankets are an effective measure to reduce concentrations of hydrocarbons in storm water. The cost is moderate.

Limitations: This BMP can only be used when storm water with high concentrations of oil and grease drains into a storm drain catch basin or inlet.

BMP 026 - ROUTINELY CLEAN CATCH BASINS



Description of Potential Pollutant and Source: Depending on their design, catch basins can accumulate sediment, trash, and debris. If the accumulated pollutants are not removed, they may be resuspended by storm water.

Description of BMP: Clean catch basins routinely to prevent clogging and to remove accumulated pollutants. The accumulated sediment will be tested to determine if it is a hazardous waste and then properly disposed. If the sediment is not a hazardous waste, it may be disposed in a landfill.

Application Guidance: Catch basins will be cleaned at least quarterly. One of these cleanings will be just before the rainy season.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP

implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

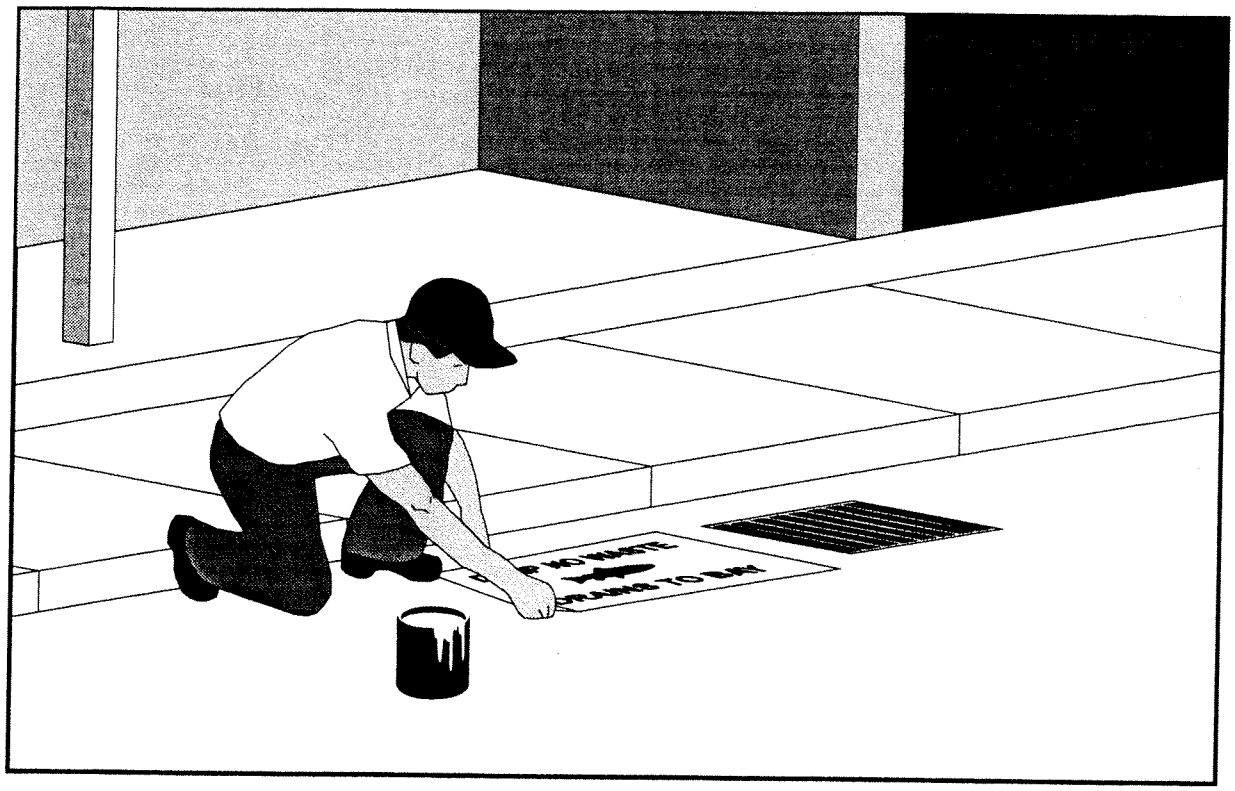
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water in area draining to catch basin	
Quantity of significant materials potentially exposed in area draining to catch basin	
Frequency of use of significant materials potentially exposed in area draining to catch basin	
Evidence of exposure (e.g., stains on pavement, evidence of significant material in drainage system)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained in the proper testing, removal, and disposal of the sediment, or a qualified contractor will be used to perform these services.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: The accumulated sediments may be a hazardous waste.

BMP 027 - STENCIL SIGNS ON STORM DRAIN INLETS



Description of Potential Pollutant and Source: Storm drain inlets generally discharge to storm drains or directly into receiving waters (i.e., rivers, oceans, lakes). Some storm drain inlets lead to water quality facilities, such as oil/water separators. However, such facilities are typically only 40 to 80 percent effective in reducing pollutant concentrations and may not be effective in treating storm flows. Therefore, material, such as used oil, solvents, and solid waste, that enters the storm drains may be exposed to storm water.

Description of BMP: Clearly mark storm drain inlets to warn against illegal dumping.

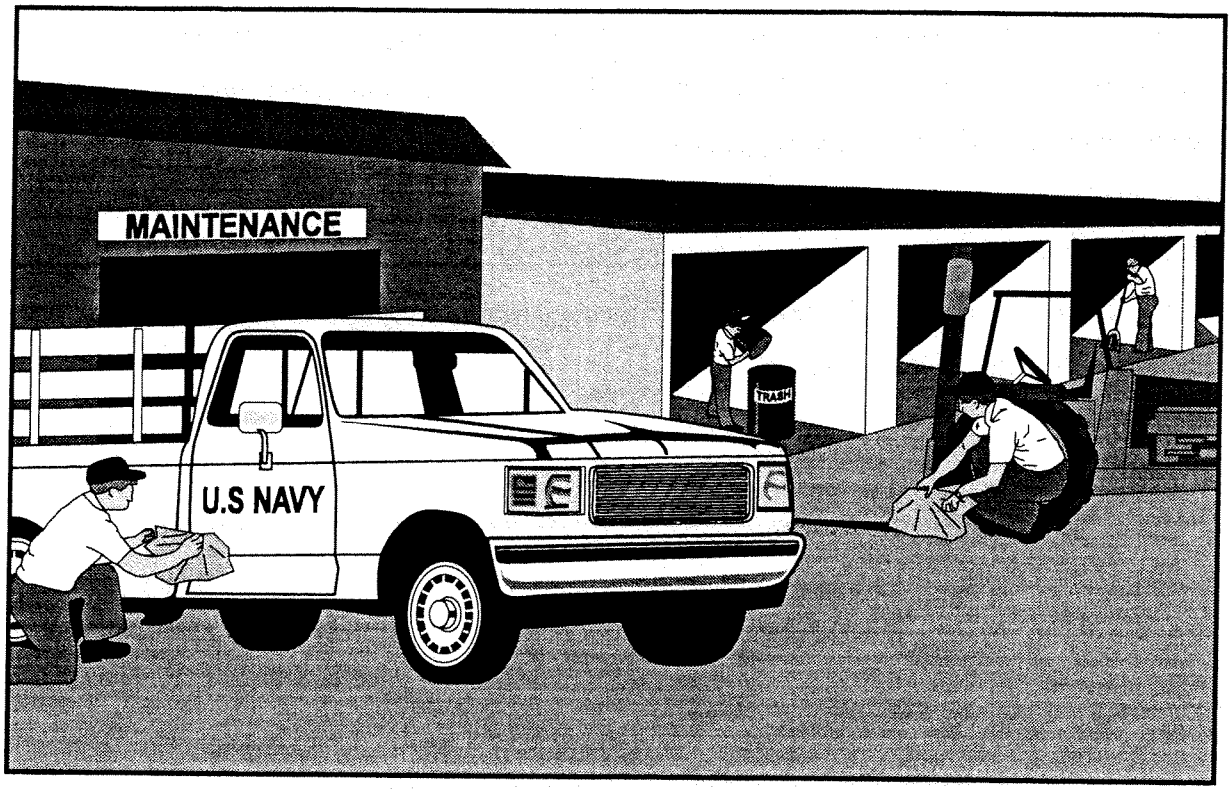
Application Guidance: All storm drain inlets will be properly labeled.

Training: None

Effectiveness and Cost:

Limitations: None

BMP 028 - KEEP EQUIPMENT AND VEHICLES CLEAN



Description of Potential Pollutant and Source: Through usage, equipment and vehicles accumulate oil and grease. During rain events, these pollutants are exposed to storm water and transported into the receiving waters.

Description of BMP: Clean equipment and vehicles regularly using either dry or wet methods to reduce the amount of pollutants exposed to rainfall. Dry methods of cleaning are further explained in BMP 003, "Perform Regular Cleaning." Wet methods are further described in BMP 049, "Centralize Liquid Solvent Cleaning to One Location," and BMP 041, "Wash Equipment and Vehicles in Designated Areas."

Application Guidance: All vehicles and equipment exposed to storm water will be washed monthly and as needed to be kept clean.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

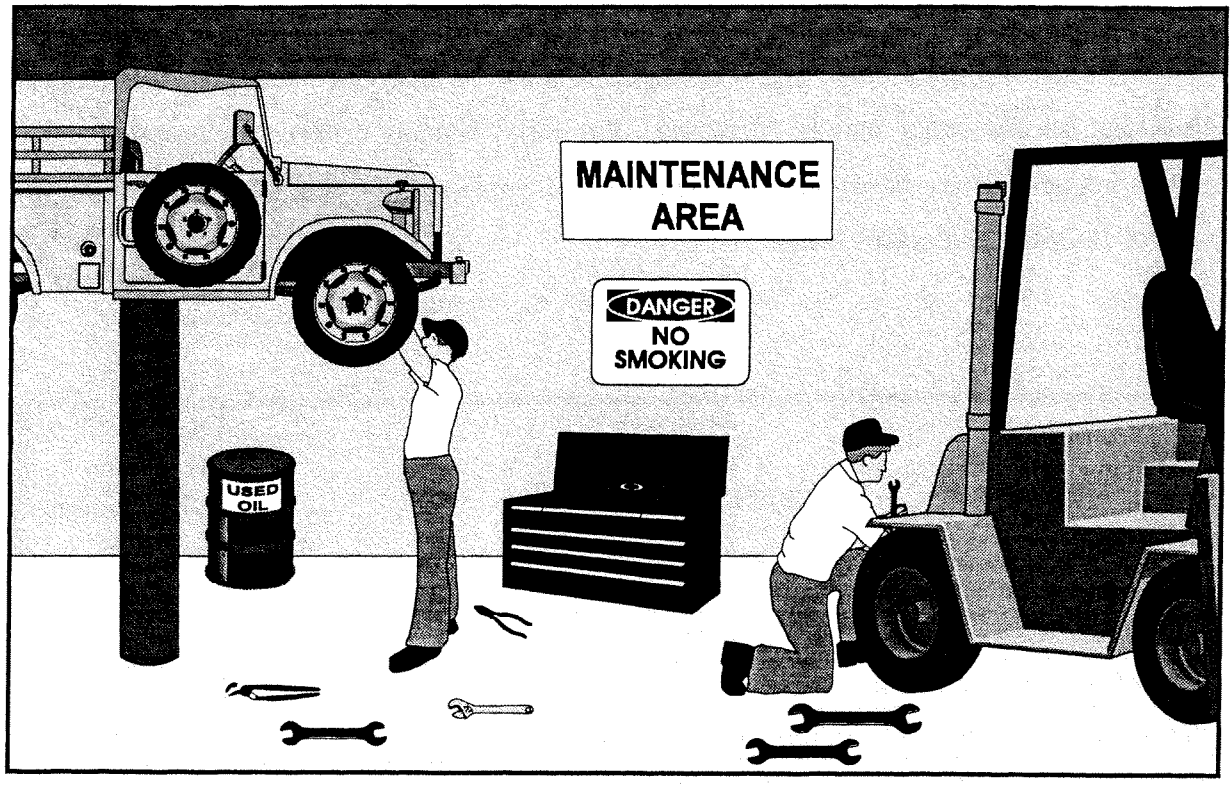
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Frequency of use of equipment and vehicles	
Proximity of vehicle/equipment use to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be instructed on how often to clean and wash vehicles or equipment.

Effectiveness and Cost: Keeping equipment and vehicles clean is a highly effective, low-cost BMP.

Limitations: None

BMP 029 - MAINTAIN EQUIPMENT IN GOOD CONDITION



Description of Potential Pollutant and Source: Equipment may leak fuel, grease, oil, or other potential pollutants due to corrosion, loose fittings, poor welding, and improper or poorly fitted gaskets. Without regular inspection of equipment and facilities, leaking or poorly operating equipment may continue to be used without being repaired.

Description of BMP: Keep equipment in good working condition and inspect regularly for fluid leaks. Equipment which is leaking or in poor working condition will be repaired or replaced.

Application Guidance: Equipment will be inspected daily before use for leaks and maintained in good condition at all times. Equipment which is not frequently used will be inspected monthly.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP

implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

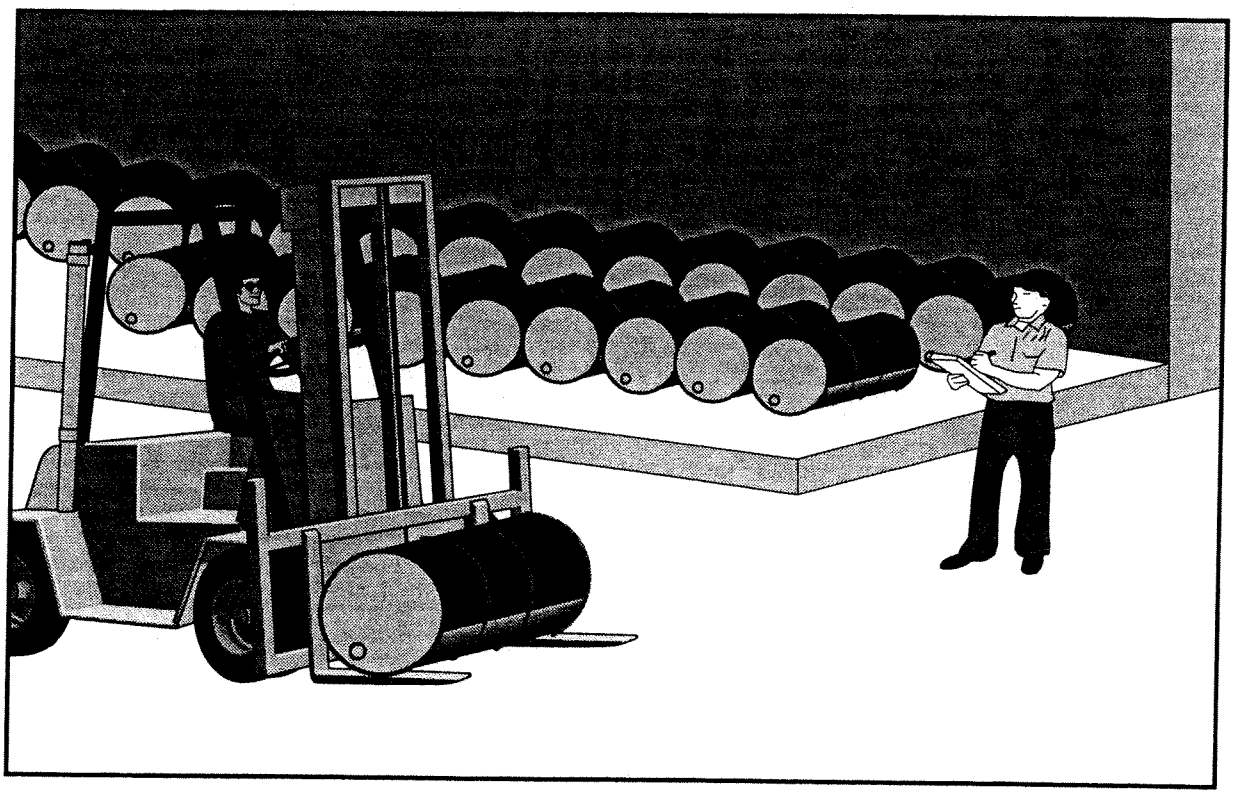
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Frequency of use of equipment and vehicles	
Intensity of use of equipment	
Old age or poor condition of equipment or systems	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of vehicle/equipment use to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained to regularly inspect for leaks or conditions that could lead to the exposure of significant materials to storm water. Personnel will be trained to routinely inspect equipment before each use. Procedures for notifying the appropriate maintenance personnel if a leak is found will be established.

Effectiveness and Cost: Keeping equipment in good condition is a moderately effective BMP. The cost of repairing or replacing equipment will vary.

Limitations: None

BMP 030 - IMPLEMENT QUALIFYING TESTS FOR EQUIPMENT AND VEHICLE OPERATORS



Description of Potential Pollutant and Source: Through misuse or unfamiliarity with operating procedures, accidents may occur that result in leaks or spills that may expose significant materials to storm water.

Description of BMP: Implement qualifying tests for personnel operating equipment or vehicles to reduce the chances of leaks and spills caused by accidents.

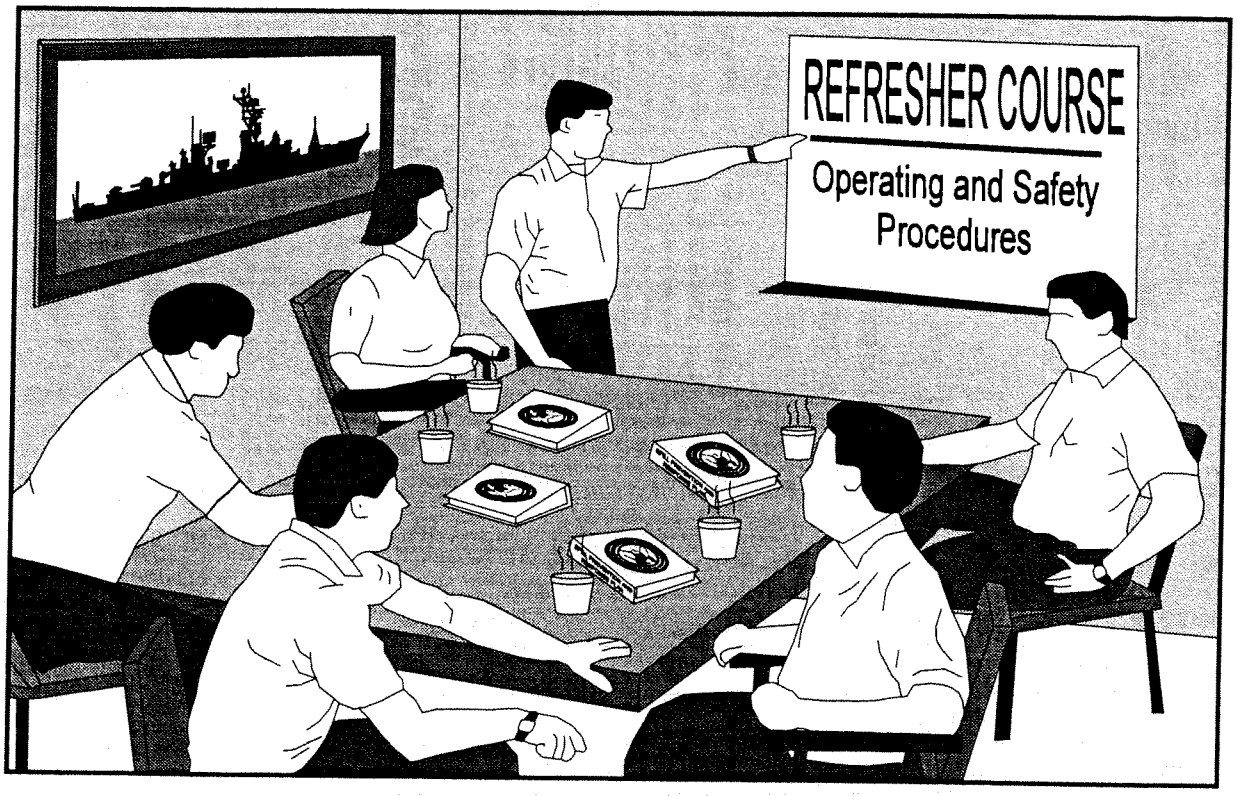
Application Guidance: Qualifying tests will always be used where equipment or vehicles are used.

Training: Personnel will be trained in safe operating procedures, basic maintenance, and spill response procedures associated with the particular equipment or vehicle.

Effectiveness and Cost: Qualifying tests are an effective, variable-cost BMP.

Limitations: None

BMP 031 - CONDUCT REFRESHER COURSES IN OPERATING AND SAFETY PROCEDURES



Description of Potential Pollutant and Source: Through time, personnel may forget certain correct operating and safety procedures, which may result in storm water pollution. Also, personnel need to be informed of new procedures and policies regarding equipment operation.

Description of BMP: Require personnel to have training and refresher courses in operating and safety procedures. This will help to reduce spills and accidents caused by negligence.

Application Guidance: Training and refresher courses will be conducted semi-annually.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria

will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

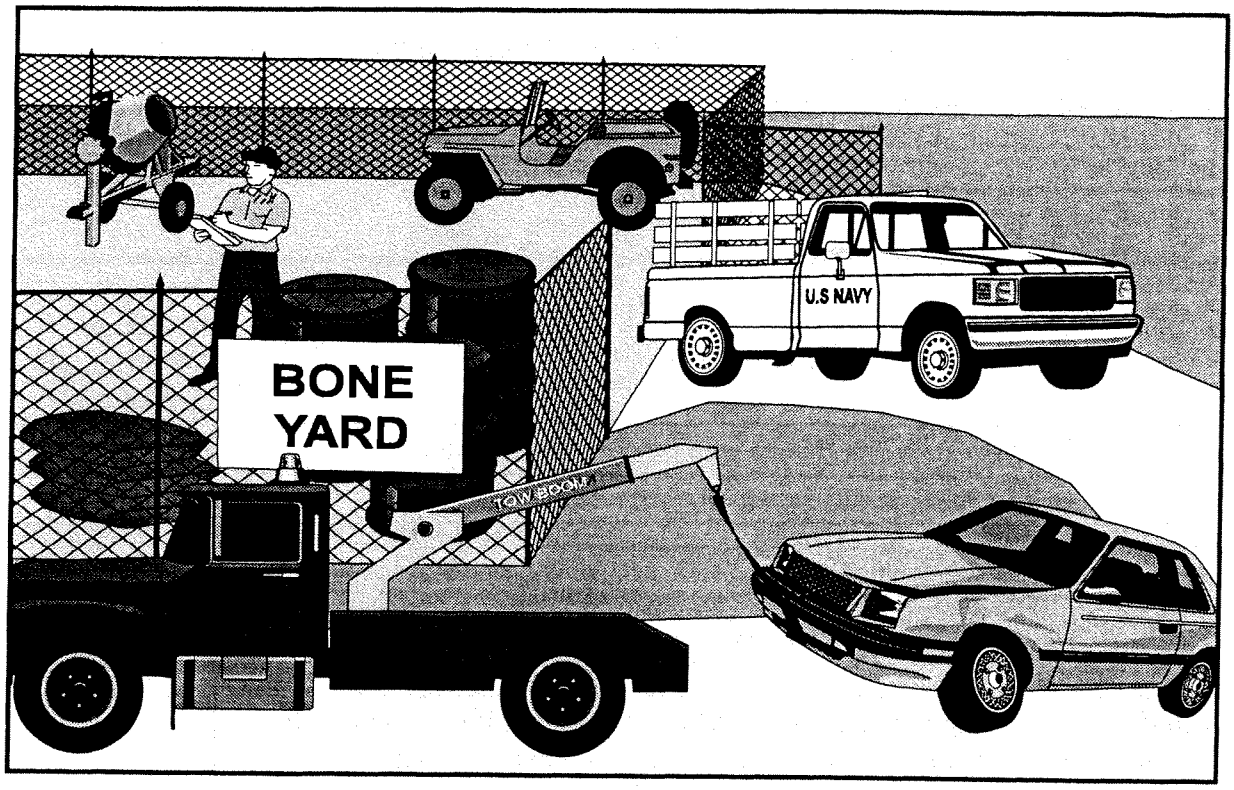
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Frequency of use of equipment	
Intensity of use of equipment	
Old age or poor condition of equipment and systems	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	
Frequency of personnel turnover	

Training: Instructors will be trained. A course will be prepared that covers both equipment manufacturers' recommendations for safety and operations as well as facility procedures and policies regarding equipment operation.

Effectiveness and Cost: Training is a highly effective, moderate-cost BMP.

Limitations: Cost and logistics could be a problem in implementing this practice.

BMP 032 - DISPOSE OF OBSOLETE EQUIPMENT, INOPERABLE VEHICLES, AND SURPLUS MATERIALS



Description of Potential Pollutant and Source: Obsolete equipment, inoperable vehicles, and surplus materials are often stored in areas not subject to routine inspection. These materials often leak a variety of fluids which can be exposed to storm water.

Description of BMP: Dispose of obsolete equipment, inoperable vehicles, and surplus materials at proper sites to reduce the chances of pollutants reaching storm water.

Application Guidance: This practice will be implemented quarterly.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria

will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

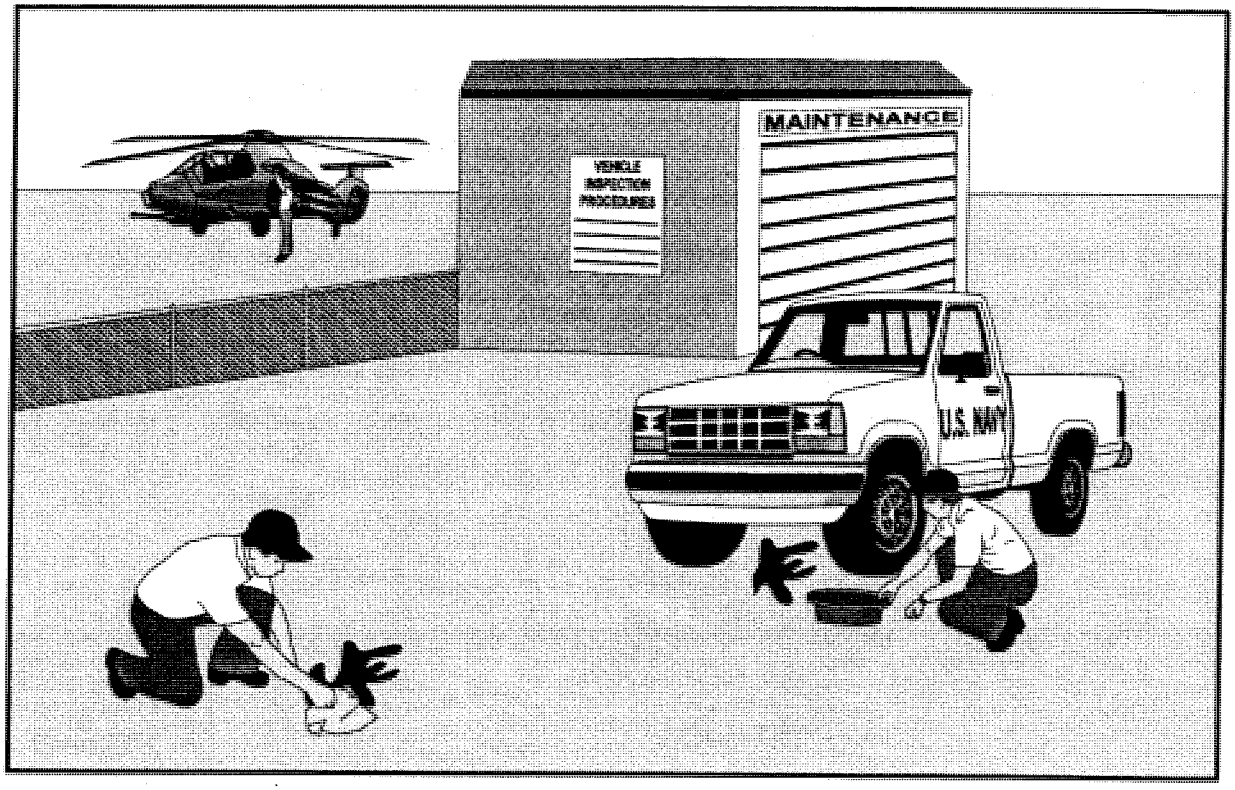
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Evidence of exposure (e.g., stains on pavement, evidence of significant materials in drainage system)Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: N/A

Effectiveness and Cost: Disposing of unused equipment and supplies is a highly effective, moderate-cost BMP.

Limitations: None

BMP 033 - CHECK VEHICLES AND EQUIPMENT FOR LEAKS



Description of Potential Pollutant and Source: Vehicles, aircraft, or equipment entering or stored at a maintenance facility may be leaking a variety of fluids (fuel, oil, antifreeze, freon, etc.). These materials can be exposed to storm water.

Description of BMP: Inspect all vehicles and equipment at the site, whether incoming, parked, stored, or salvaged, for oil and fluid leaks. Drivers of fleet vehicles, such as delivery trucks, will also check under their vehicles each morning for fluid leaks. If leaks are present, drip pans will be placed under the vehicle or equipment. Once the vehicle is removed from the site, the former parking area will be inspected for stains, and these stains will be cleaned using rags or dry solvents.

Application Guidance: Any vehicle or equipment coming in for repairs, painting, or storage will be inspected for leaks. Fleet vehicles will be inspected each morning. Vehicles that are parked, stored, or salvaged will be provided with drip pans, as will tanker rail cars waiting to be

unloaded.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Old age or poor condition of equipment and vehicles	
Evidence of exposure (e.g., stains on pavement)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Signs will be posted to remind personnel of proper procedures.

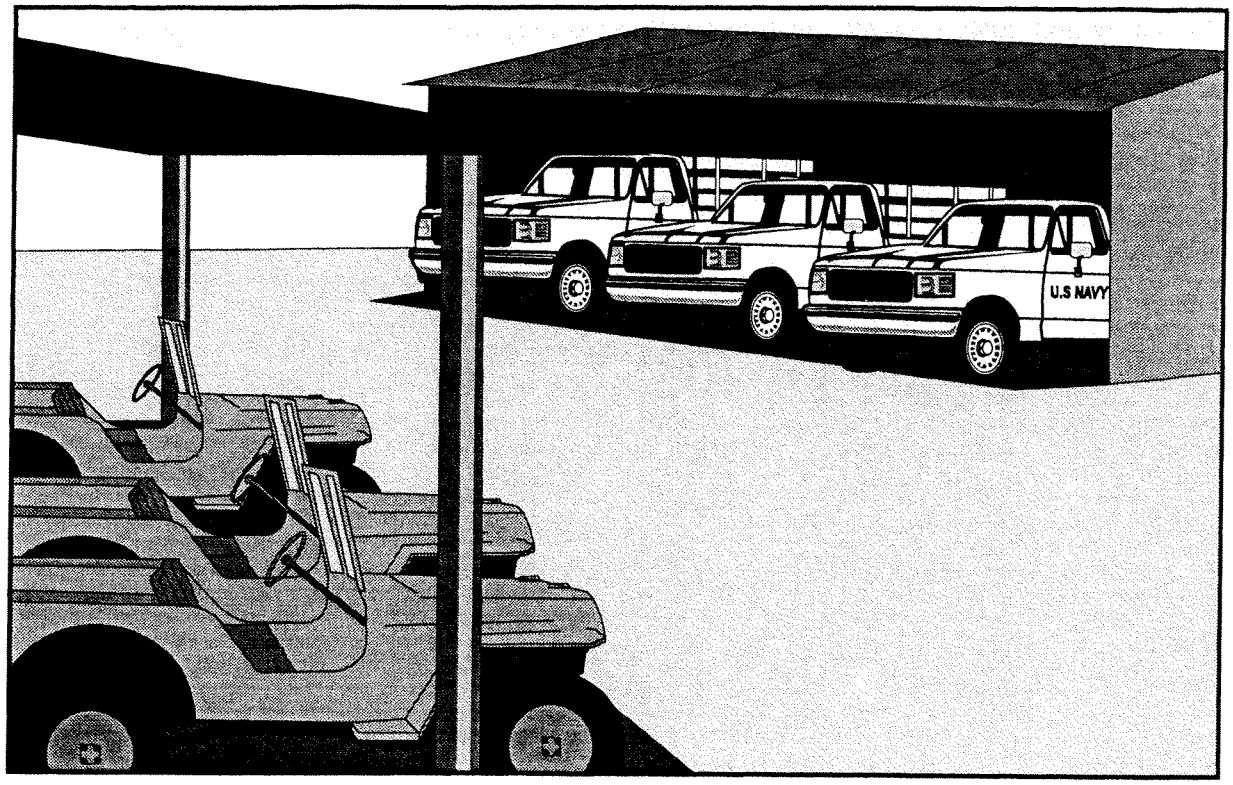
Effectiveness and Cost: Checking for leaks is a moderately effective, low-cost BMP.

Limitations: None

BMP 034 - DELETED

BMP 035 - DELETED

BMP 036 - PARK VEHICLES OR EQUIPMENT INDOORS OR UNDER A ROOF



Description of Potential Pollutant and Source: Vehicles and equipment often leak or may be covered with oil and grease. If exposed to storm water, these pollutants can enter the storm drain system receiving waters.

Description of BMP: Park vehicles and equipment indoors or under a roof to eliminate or reduce the exposure of significant materials to storm water.

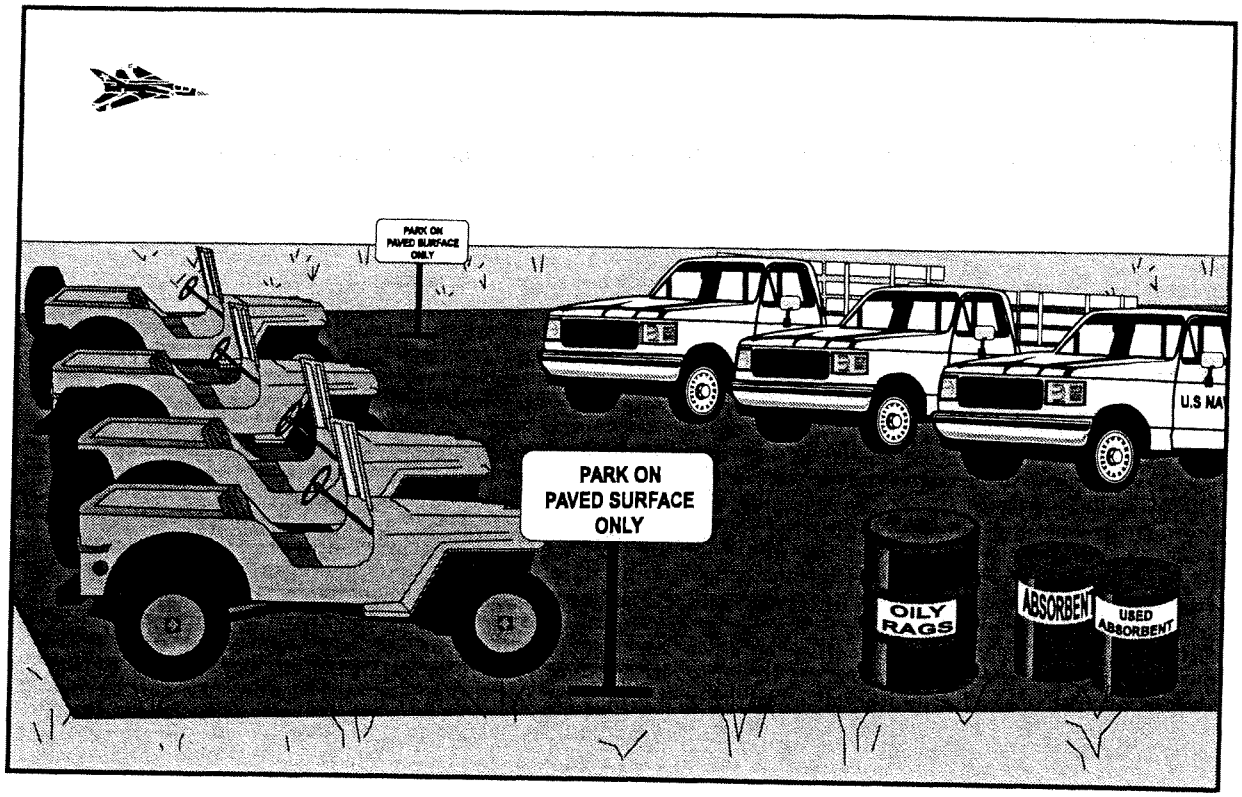
Application Guidance: When available, all vehicles and equipment will be parked indoors or under a roof.

Training: Personnel will be notified of any altered parking locations.

Effectiveness and Cost: Parking vehicles indoors or under cover is a highly effective, low-cost BMP if existing cover is available.

Limitations: The amount of indoor or covered parking available, size of vehicles or equipment and construction costs if cover must be constructed may restrict the use of this practice.

BMP 037 - PARK VEHICLES ON AN IMPERVIOUS SURFACE



Description of Potential Pollutant and Source: Pollutants leaking or spilled onto the ground surface from vehicles can infiltrate into the soil. These pollutants (i.e., oil, fuel, etc.) may then be exposed to storm water and transported to surface water.

Description of BMP: Park vehicles on an impervious surface. For this BMP, an impervious surface is defined as a surface that cannot be readily penetrated by rainfall, such as concrete and asphalt pavement. Leaks and spills will be cleaned from these surfaces.

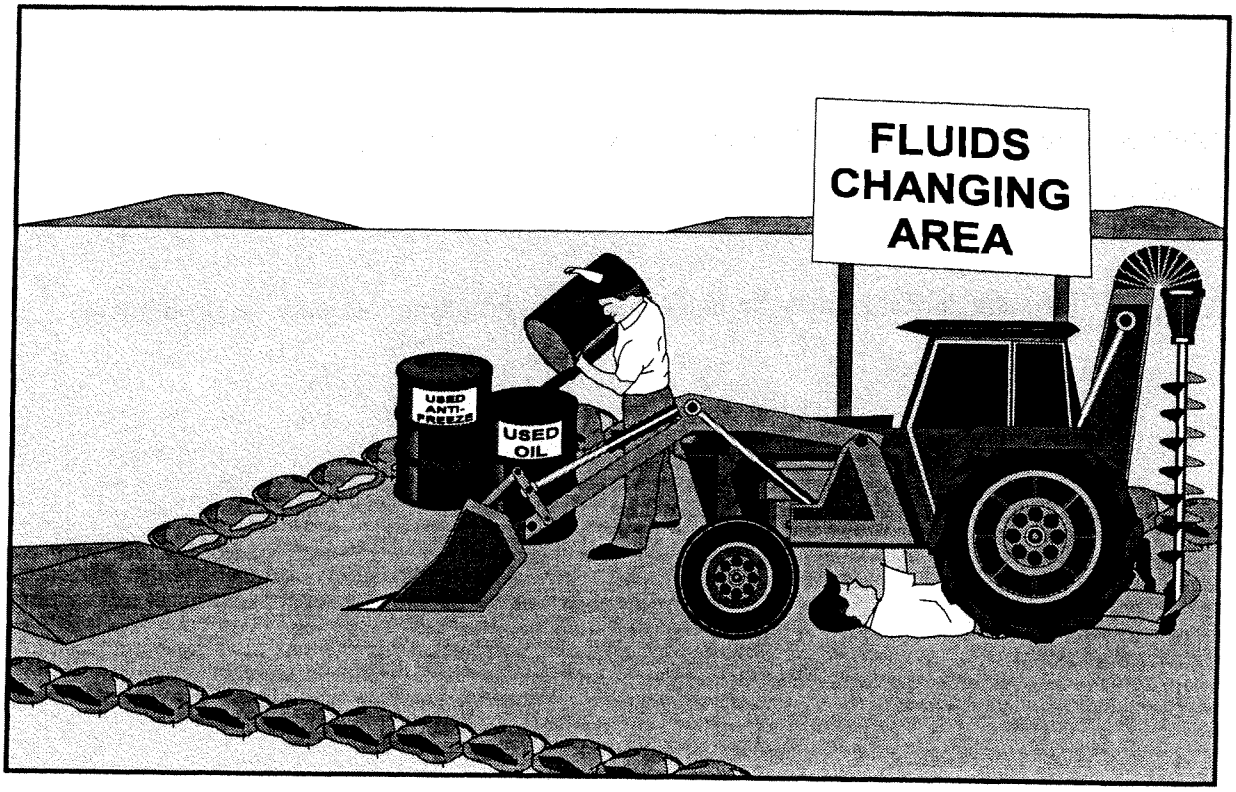
Application Guidance: Vehicles will always be parked on impervious surfaces, especially during the rainy season.

Training: Signs will be posted to remind personnel that all vehicles are to be parked on paved surfaces.

Effectiveness and Cost: Parking vehicles on impervious surfaces is a moderately effective, low-cost BMP.

Limitations: Very large traffic volumes may make implementation of this BMP difficult.

BMP 038 - DESIGNATE SPECIAL AREAS FOR DRAINING OR REPLACING FLUIDS



Description of Potential Pollutant and Source: Draining and replacing motor oil, coolants, and other fluids in uncontrolled areas of the facility can potentially result in improper handling and disposal of waste and accidental spillage in an unprotected area. These materials can then be exposed to storm water.

Description of BMP: Drain and replace motor oil, coolants, and other fluids at designed maintenance facilities to reduce the potential for improper handling activities. If this is not possible, special areas will be designated for these activities. Consideration will be given to placing these areas indoors or using bermed concrete pads if outdoors.

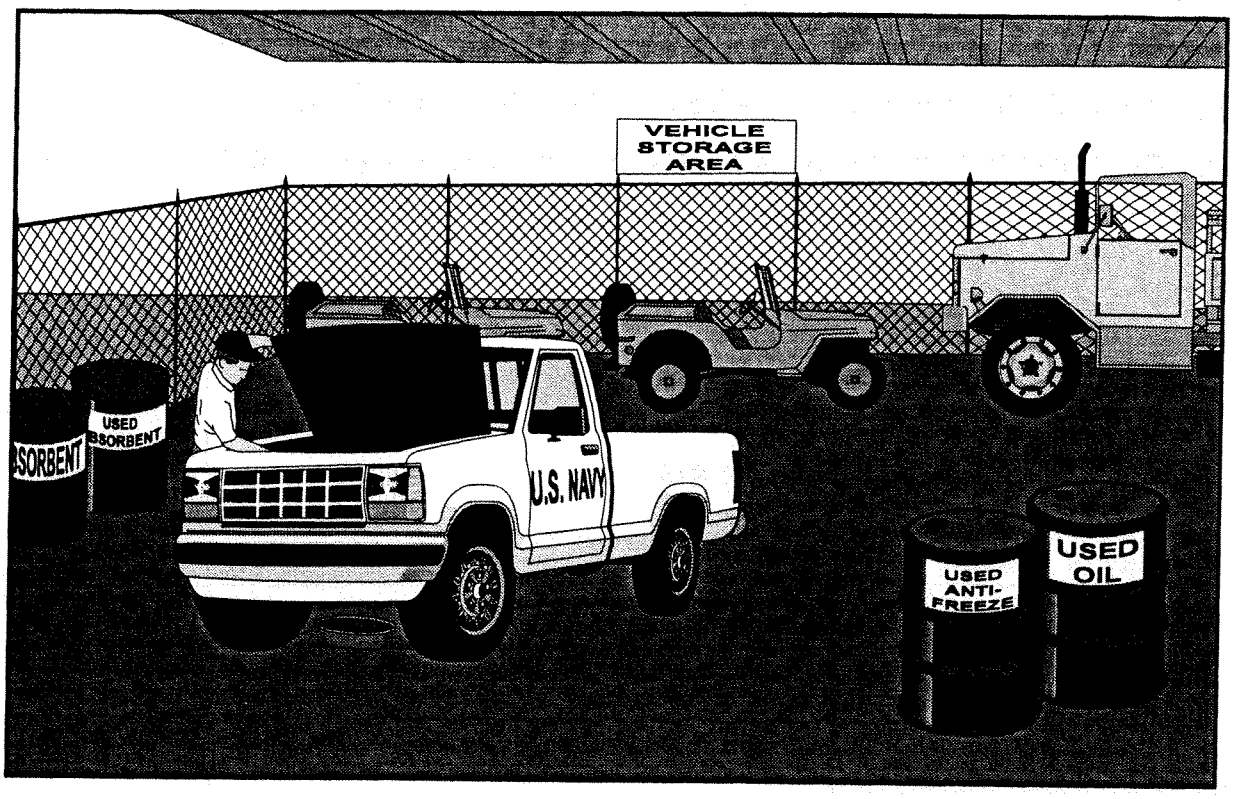
Application Guidance: This procedure will be followed whenever vehicle or equipment maintenance is being performed.

Training: Personnel will be instructed that vehicle maintenance will only be performed at designated areas.

Effectiveness and Cost: Using designated special areas for draining fluids is an effective, low-cost BMP.

Limitations: Existing facilities may be inadequate; construction cost may be prohibitive.

BMP 039 - DRAIN ALL FLUIDS FROM STORED OR SALVAGED VEHICLES AND EQUIPMENT



Description of Potential Pollutant and Source: Vehicles and equipment undergoing long-term storage or salvage often contain a variety of liquids (oil, antifreeze, hydraulic fluid, etc.) that can leak or spill, thereby exposing these materials to storm water.

Description of BMP: Drain, collect, and recycle oil and other fluids from vehicles being stored long term or salvaged (i.e., parts vehicles).

Application Guidance: Vehicles or equipment that are to be stored without use for more than three months will be drained of all fluids. Signs will be posted on these vehicles from which fluids have been drained.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP

implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

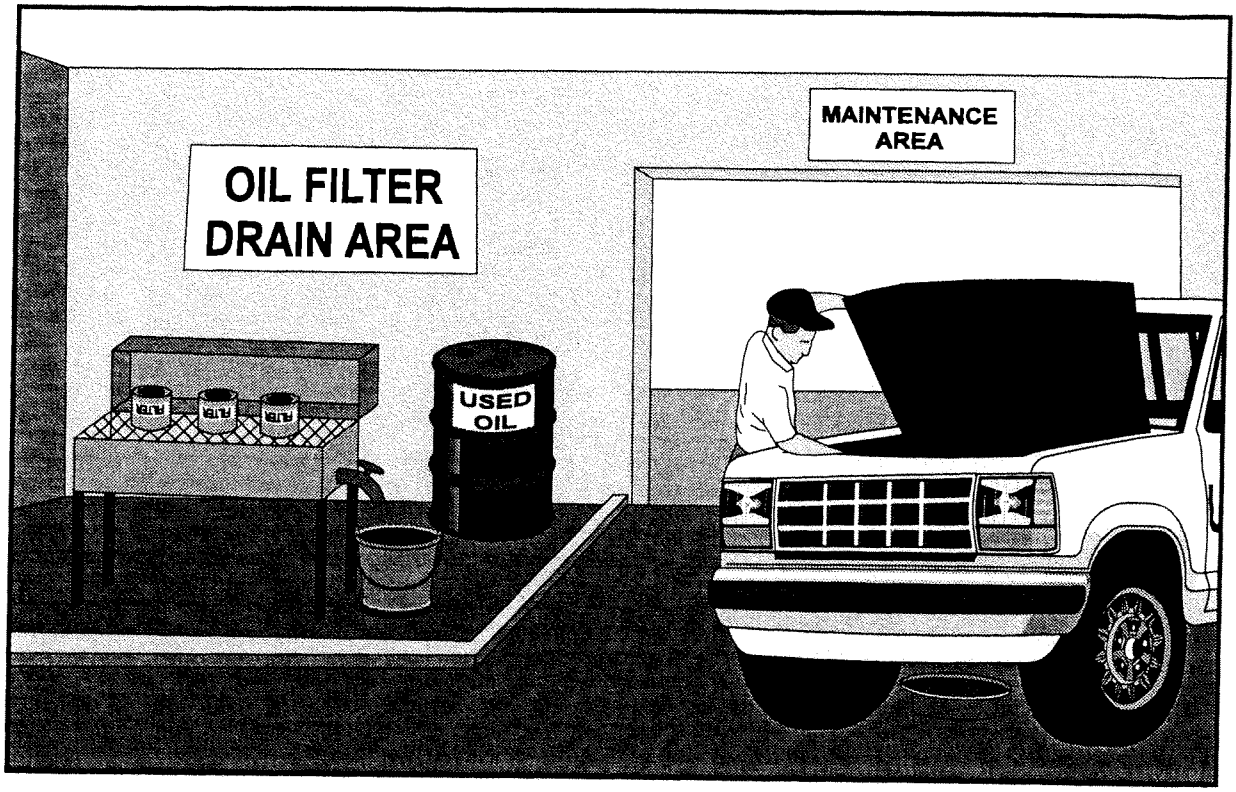
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Evidence of exposure (e.g., stains on pavement)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Signs will be posted as reminders to personnel.

Effectiveness and Cost: Draining oil and fluids is a moderately effective, low-cost BMP.

Limitations: None

BMP 040 - COMPLETELY DRAIN OIL FILTERS BEFORE DISPOSAL



Description of Potential Pollutant and Source: Oil filters are disposed in trash containers can leak significant materials which can be exposed to storm water.

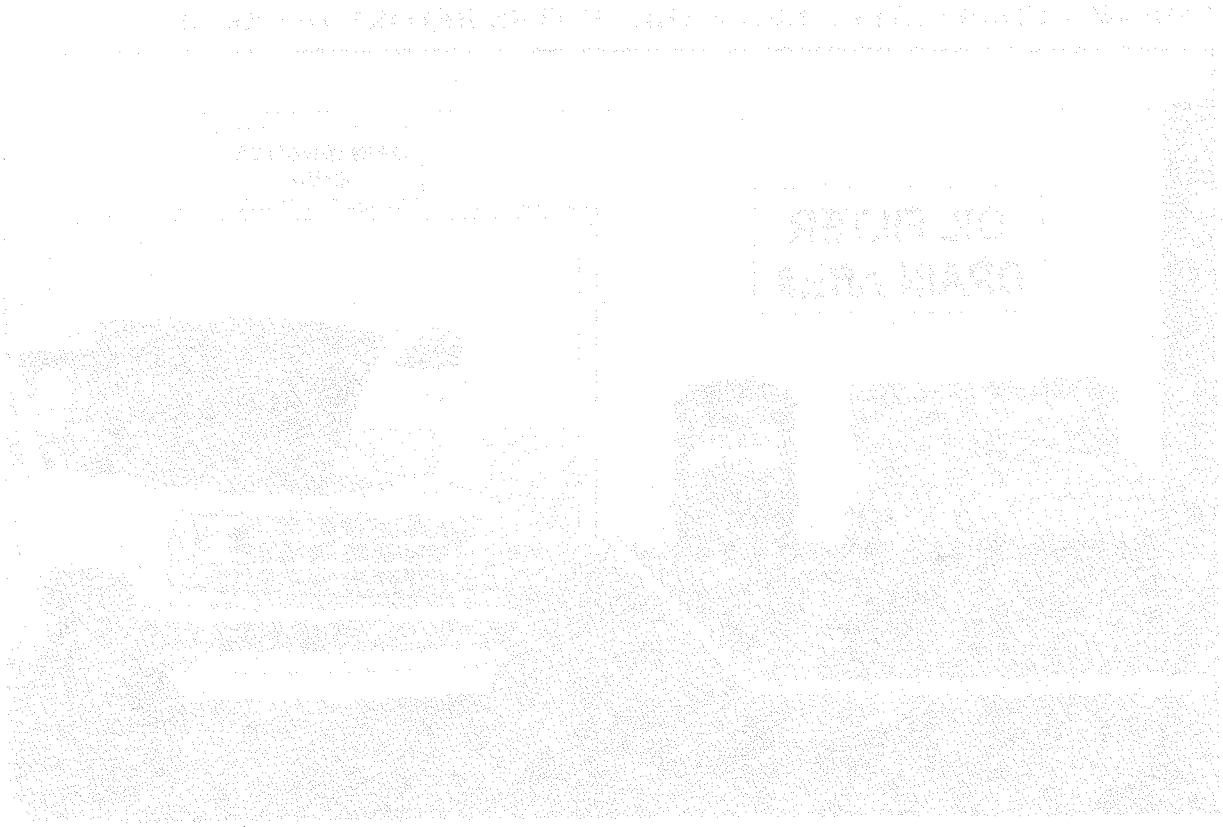
Description of BMP: Completely drain filters into collection drums before recycling or disposal.

Application Guidance: All filters will be completely drained after being changed.

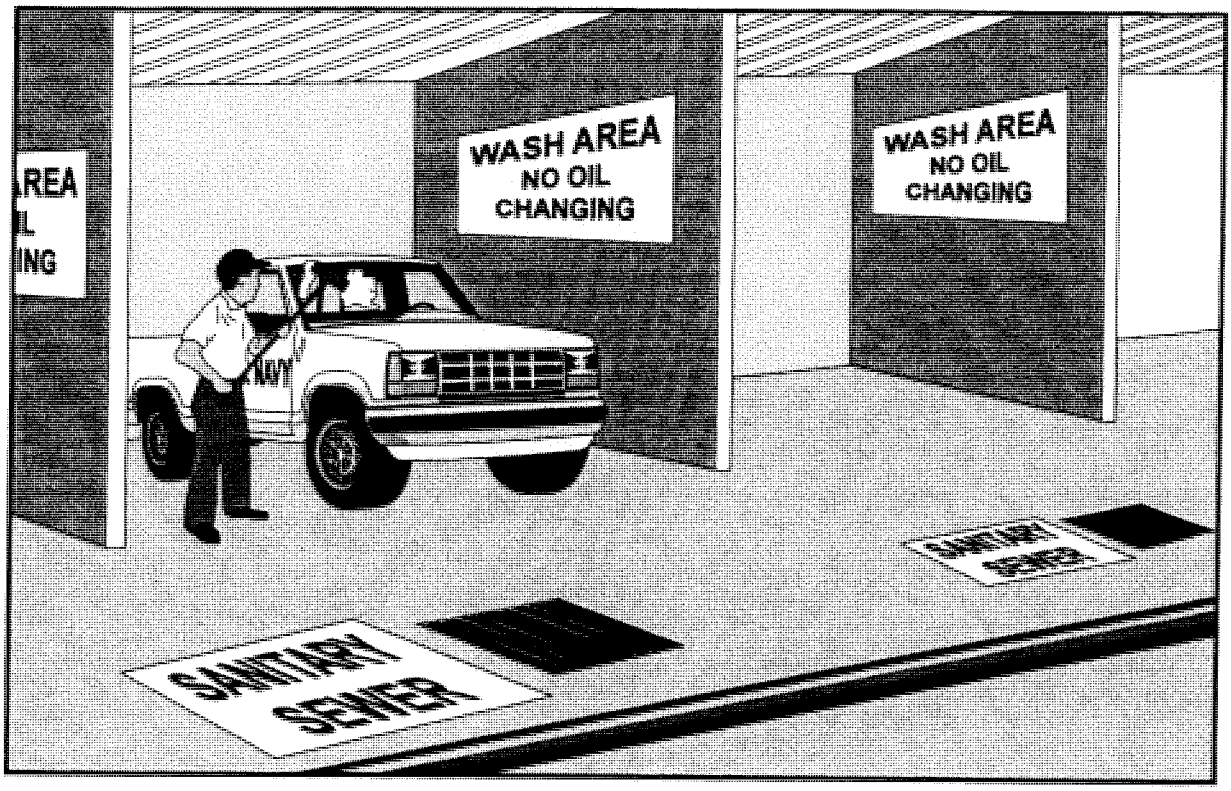
Training: Signs will be posted to remind personnel of requirement to completely drain oil filters before disposal.

Effectiveness and Cost: Completely draining filters is a moderately effective, low-cost BMP.

Limitations: None



BMP 041 - WASH EQUIPMENT AND VEHICLES IN DESIGNATED AREA



Description of Potential Pollutant and Source: Washing equipment and vehicles outdoors or in areas where wash water flows onto the ground can pollute storm water. It is difficult to control the wastewater from washing operations if it is not done in a designated area.

Description of BMP: Facilities will designate bermed wash areas that contain wash water and prevent contact with storm water. These areas will drain to the sanitary sewer (BMP 042) or to a sump. If a sump is used, wash water will be recycled.

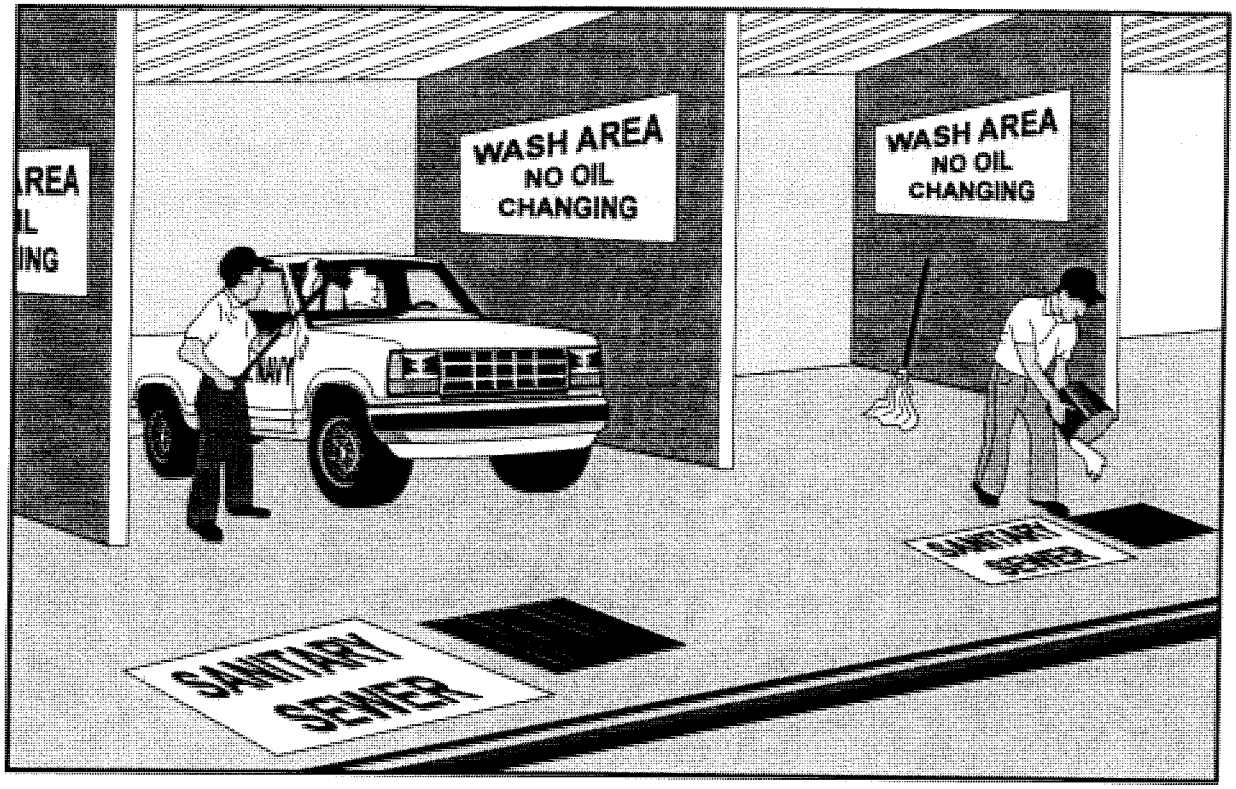
Application Guidance: This practice will be followed wherever vehicles, equipment and aircraft are washed.

Training: N/A

Effectiveness and Cost: This is a highly effective, variable-cost BMP.

Limitations: Pretreatment and monitoring of wash waster discharges to the sanitary sewer may be required. This would greatly increase the cost of this practice. The treatment plant operator will be notified and approval obtained before discharge.

BMP 042 - DISCHARGE WASH WATER TO A SANITARY SEWER



Description of Potential Pollutant and Source: Wash water from vehicle, equipment, and floor cleaning activities often contains such as grease, oil, and gasoline which can be exposed to storm water. Wash water must not be discharged to the storm drain.

Description of BMP: Discharge wash water to a sanitary sewer to ensure that is does not enter a storm drain. (See BMP 041, "Wash Equipment and Vehicles in Designated Areas.") Wash water from mopping floors will also be discharged to the sanitary sewer.

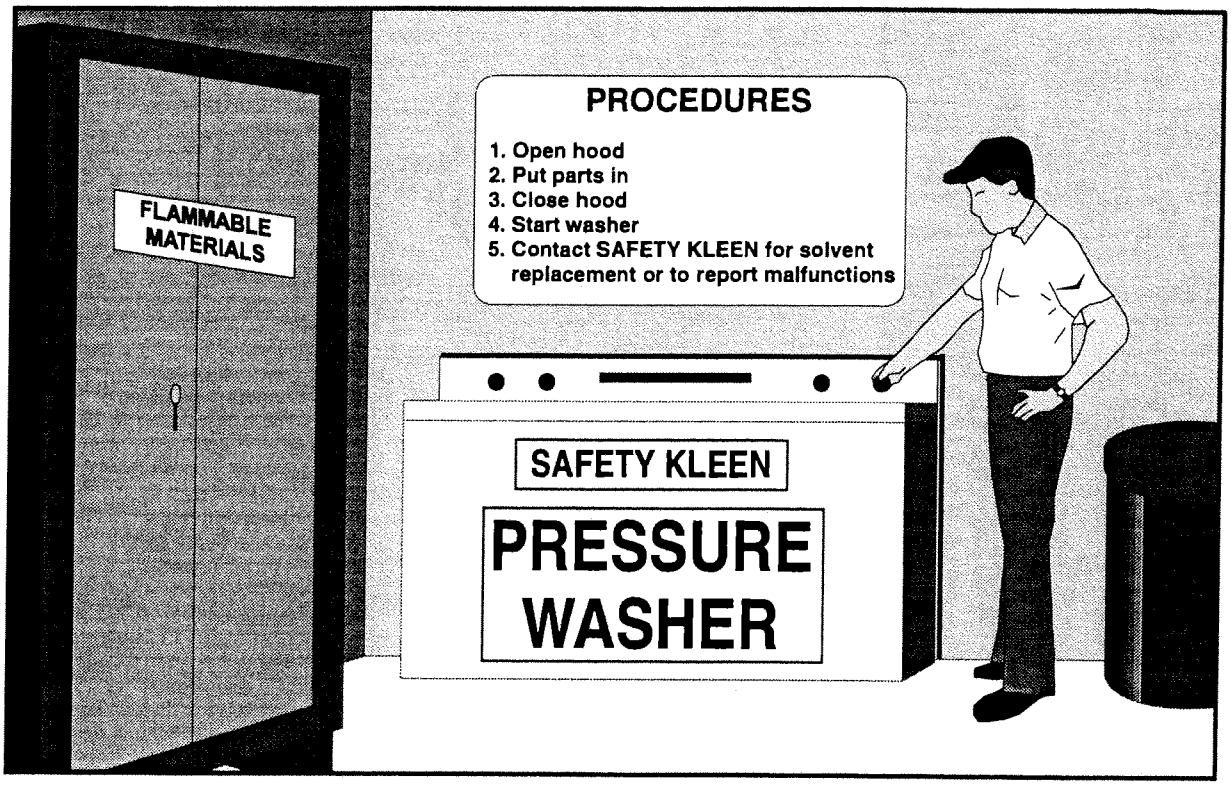
Application Guidance: All wash water from vehicle and equipment cleaning activities will be discharged to a sanitary sewer. In areas where wash water cannot be discharged to a sanitary sewer, wash water will be collected in a dead-end sump, tank, or other device and transported or pumped to the nearest treatment facility for proper disposal.

Training: Personnel will be trained to know where cleaning activities will be performed.

Effectiveness and Cost: Discharging wash water to a sanitary sewer is a highly effective, variable-cost BMP.

Limitations: Pretreatment and monitoring of wash water discharges to the sanitary sewer may be required. This would greatly increase the cost of this practice. The treatment plant operator will be notified and approval obtained before discharge.

BMP 043 - RECYCLE PRESSURE WASH SOLVENTS



Description of Potential Pollutant and Source: Pressure wash wastes from cleaning ships, vehicles, and equipment can contain dirt, oils, grease, and paint particles.

Description of BMP: Recycle pressure wash wastes by using a closed loop system or a "zero discharge system."

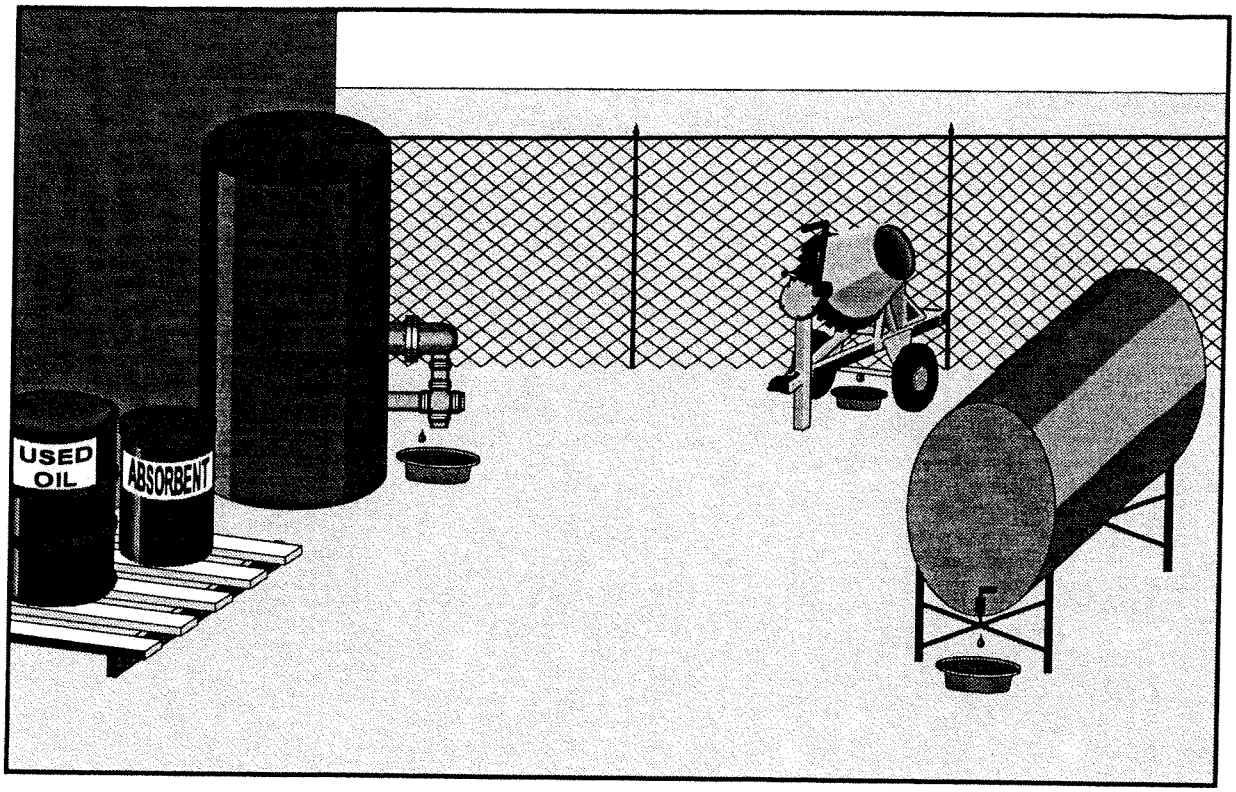
Application Guidance: Pressure wash wastes will be recycled whenever practical.

Training: Personnel will be trained in the proper use of pressure wash systems.

Effectiveness and Cost: This is a highly effective, variable-cost BMP. The cost can vary based on the availability of a local wastewater treatment facility and hauling and disposal costs. Also, the size of the pressure wash facility will affect the cost.

Limitations: None

BMP 044 - USE DRIP PANS UNDER LEAKING EQUIPMENT



Description of Potential Pollutant and Source: Equipment such as pumps, air conditioners, and boilers may leak fluids. These fluids typically contain pollutants that may be exposed to storm water and transported into the storm sewer system if they are not collected.

Description of BMP: Place drip pans under leaking equipment to collect any leaking fluid., This temporary BMP will be used until the equipment is properly repaired or replaced.

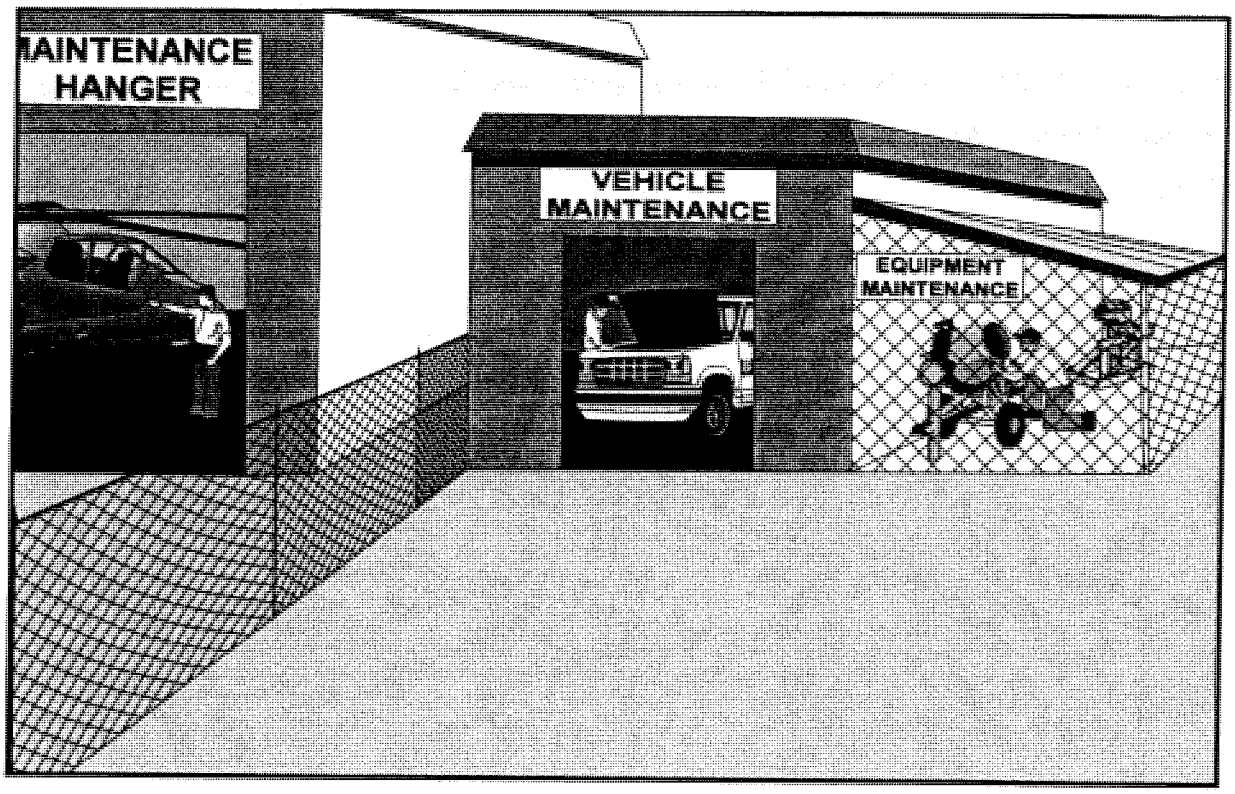
Application Guidance: Any equipment which is leaking fluid will be repaired or replaced. However, until the leak is stopped, a drip pan will be used to collect the fluid.

Training: Personnel will be trained to immediately place a drip pan under leaking equipment and notify the appropriate maintenance personnel. The drip pan will be routinely checked and the collected material disposed properly.

Effectiveness and Cost: This is a highly effective, low-cost BMP

Limitations: None

BMP 045 - PERFORM EQUIPMENT MAINTENANCE AT DESIGNATED AREAS



Description of Potential Pollutant and Source: Equipment maintenance can produce oil, grease, and other materials. These materials contain pollutants that can be exposed to storm water when the maintenance is not performed in designated areas.

Description of BMP: Perform maintenance of equipment only in designated areas. This includes the maintenance of small equipment, such as sandblasters and paint sprayers, as well as large equipment such as construction equipment, tanks, aircraft, and boats. Vehicle repair will only occur at vehicle repair and maintenance facilities.

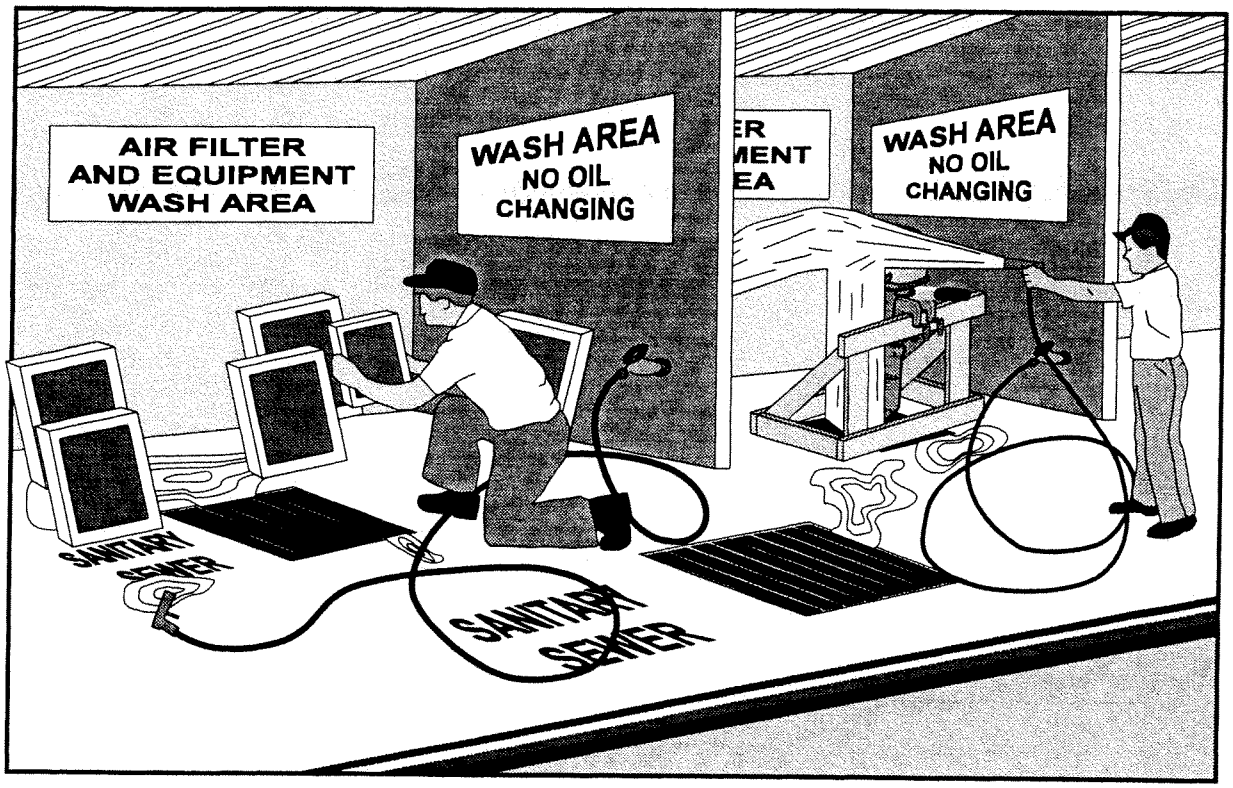
Application Guidance: Whenever possible, all maintenance, including cleaning of equipment will be performed at designated areas.

Training: Personnel will be trained to perform maintenance only in designated areas. Personnel will be informed as to where these areas are located.

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: It may not be possible to transport some large equipment to the designated maintenance area. Also, there may not be a designated maintenance area near the broken equipment.

BMP 046 - DESIGNATE AREAS FOR WASHING NON-VEHICULAR AIR FILTERS AND OTHER GREASY EQUIPMENT



Description of Potential Pollutant and Source: Non-vehicular air filters, such as those used in large kitchens, and other equipment accumulate a large amount of grease. Current maintenance may involve cleaning the filters in an area where the oil can be exposed to storm water and enter the storm drain system.

Description of BMP: Clean air filters (from mess hall cooking grills or other facilities where air filters can contain significant amounts of grease and soot) in an area where wash water and grease are contained in a sump or discharged through an oil/water separator to sanitary sewer lines.

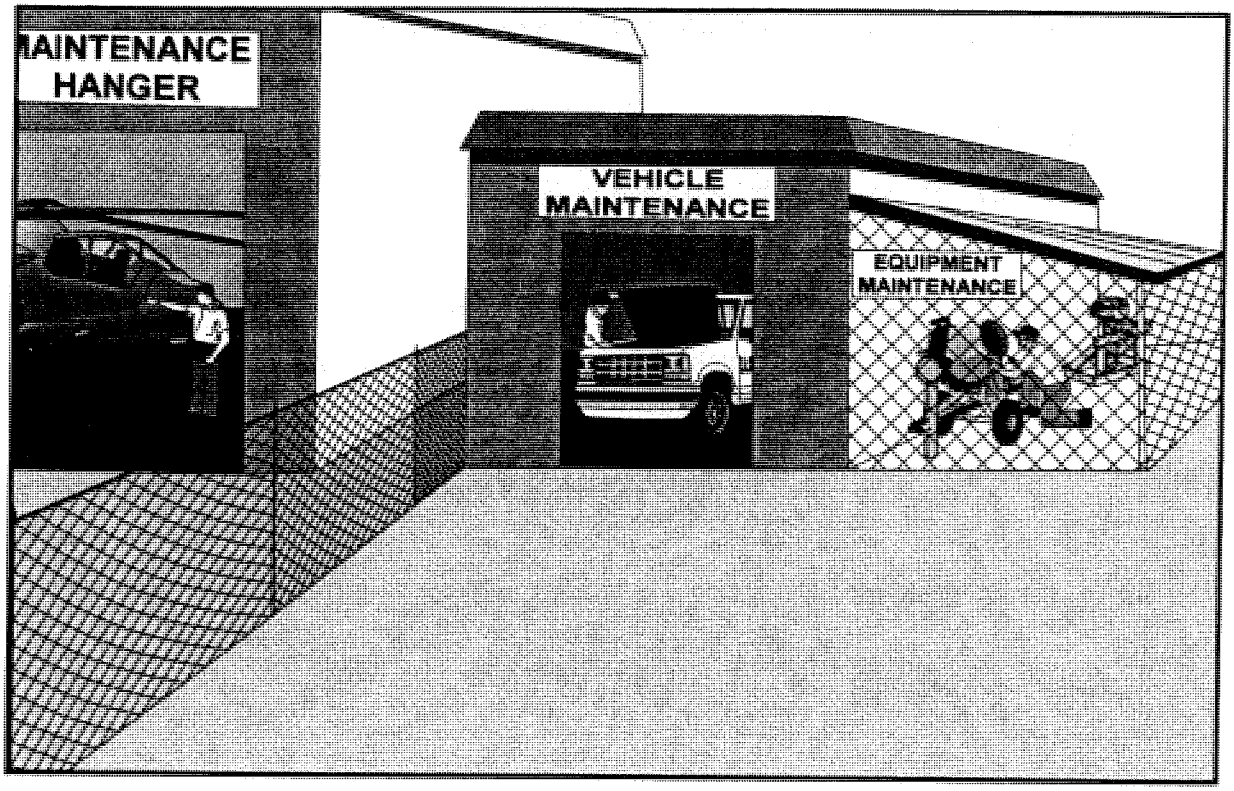
Application Guidance: This practice will be followed whenever greasy filters and other greasy equipment are cleaned.

Training: Personnel will be instructed to clean the air filters and other greasy equipment in areas where the wash water will be discharged through an oil/water separator to a sanitary sewer. A sign will be posted notifying the user where to clean the filter.

Effectiveness and Cost: Cleaning filters in a controlled area is a highly effective, low-cost BMP

Limitations: None

BMP 047 - CONDUCT MAINTENANCE WITHIN A BUILDING OR COVERED AREA



Description of Potential Pollutant and Source: Many pollutants such as oil, grease, or solvents may be leaked or spilled during maintenance activities. If maintenance is performed outside, in an uncovered area, storm water may transport the leaked and spilled material into the storm drain system.

Description of BMP: To the extent practical, conduct maintenance within a building or covered area. This includes performing aircraft/helicopter maintenance in hangars and vehicle maintenance in garages. If maintenance, including fluid top-offs, is performed outdoors, it will be conducted on an impervious surface, such as a concrete pad (see BMP 037). Rainfall runoff from the pad will be directed to a storm water treatment facility. Leaks and spills will be cleaned up as soon as possible using rags or dry absorbents (see BMP 006). Used rags and absorbent will be disposed properly. The garage floor will be cleaned regularly and all wash water from cleaning the floor will be disposed in the sanitary sewer (see BMP 042).

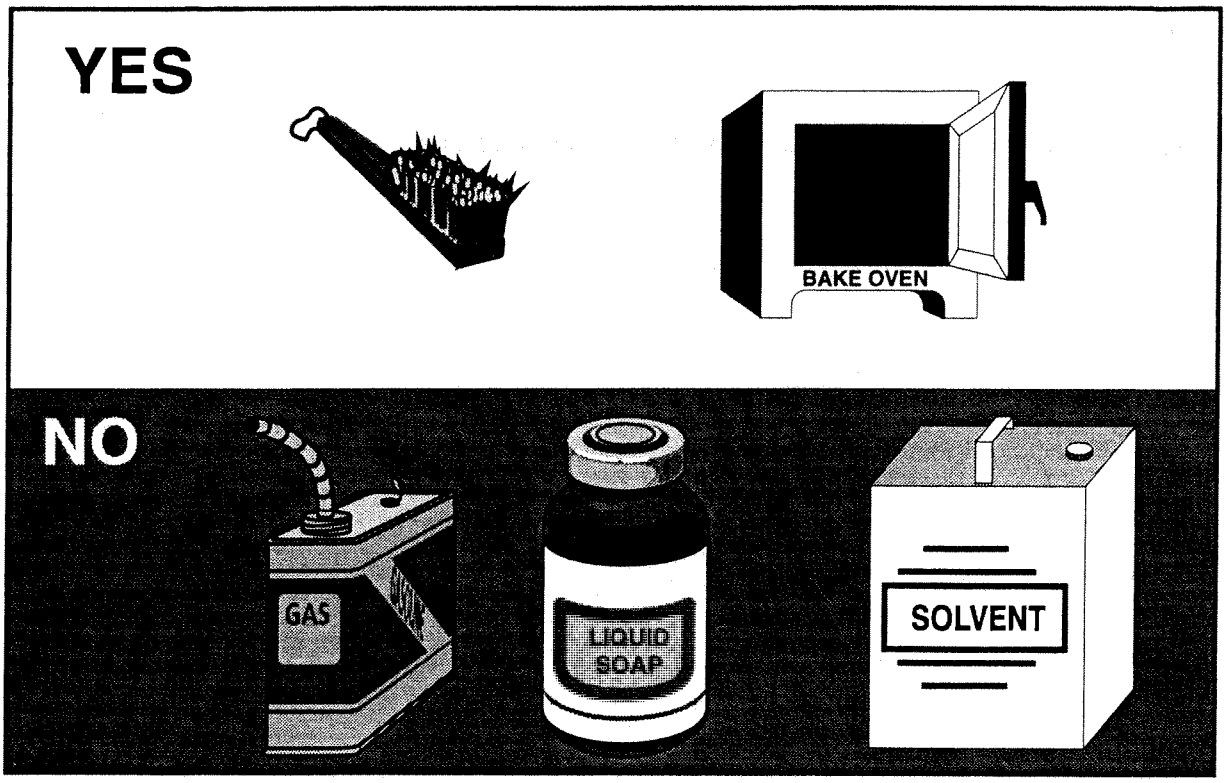
Application Guidance: All maintenance will be conducted within a building or covered area, if possible. If not possible, the maintenance will be done on an impervious surface.

Training: Personnel will be trained to perform all maintenance, including fluid top-offs, only in the designated area. Personnel will be trained in keeping the maintenance area clean.

Effectiveness and Cost: This is a moderately effective BMP. The cost will vary depending upon the availability of a building in which to perform all maintenance.

Limitations: This BMP may not be possible for the maintenance of large equipment and vehicles.

BMP 048 - REDUCE THE AMOUNT OF LIQUID CLEANING AGENTS USED



Description of Potential Pollutant and Source: Liquid cleaners (i.e., soaps, detergents, solvents, gasoline, etc.) are significant materials which must not be exposed to storm water

Description of BMP: Use methods other than liquid cleaning agents to reduce the amount of waste produced and the potential for spills of cleaning liquids. Alternative cleaning methods include scraping parts with a wire brush or using a bake oven.

Application Guidance: Substitute cleaning methods will be used in all maintenance operations. These include: vehicle, equipment, aircraft and ship maintenance; metal work; and painting.

Training: Personnel will be trained in selected alternative methods of cleaning. Signs will be posted as reminders.

Effectiveness and Cost: Effectiveness and cost of non-liquid cleaning procedures will be site specific.

Limitations: Substitute cleaning methods may not be adequate for some operations.

BMP 049 - CENTRALIZE LIQUID SOLVENT CLEANING TO ONE LOCATION

Description of Potential Pollutant and Source: Widespread use of liquid solvents to clean parts results in a potential for spills, illegal dumping, and improper use of the solvent.

Description of BMP: If cleaning parts with liquid solvents is unavoidable, conduct cleaning operations in central locations. This practice will reduce the number of personnel using the solvents, promote proper use and disposal, and minimize the potential for spills (assuming that the central locations are properly operated and maintained). Drip pans, drain boards and drying racks will be located adjacent to and oriented such that excess solvent is directed back into a sink or holding tank for recycling. All storage containers will be clearly labeled.

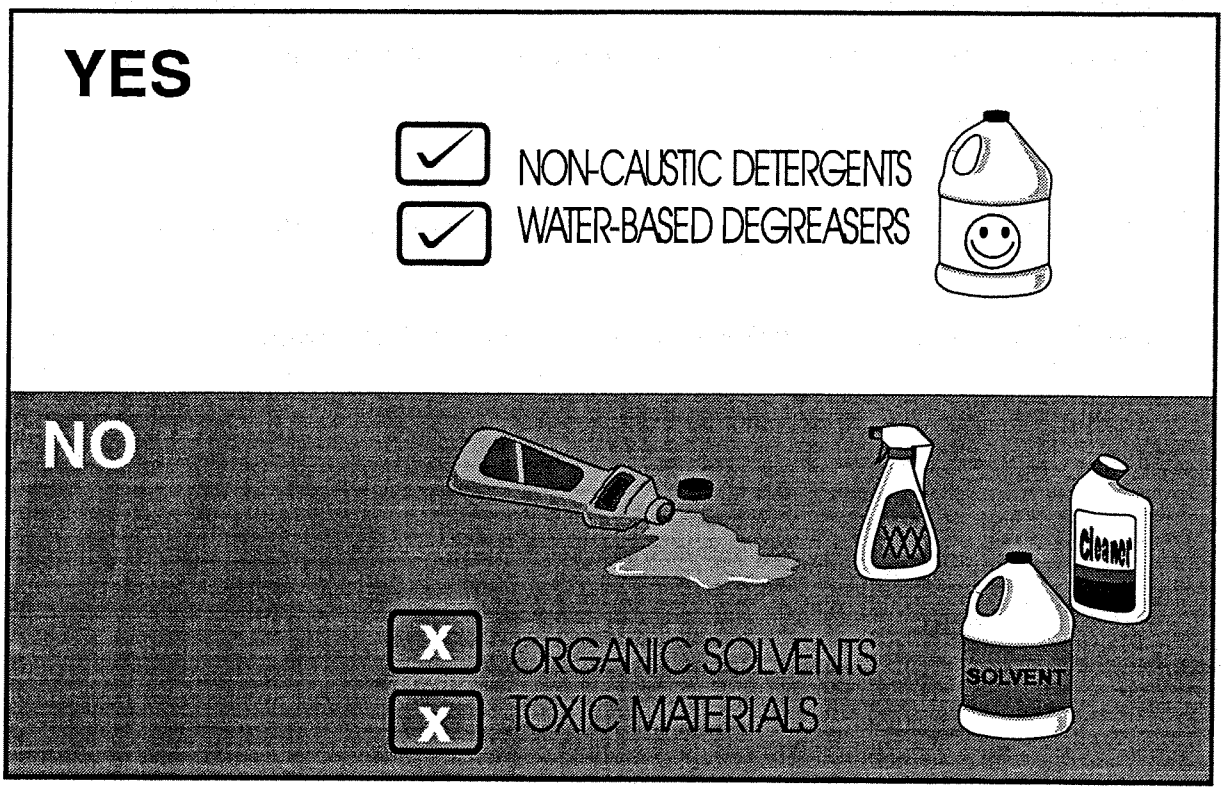
Application Guidance: Central cleaning locations will be used whenever parts are cleaned with liquid solvents in maintenance and salvage operations.

Training: Personnel will be notified of the locations of the cleaning stations. Personnel will be trained in proper procedures, such as removing dipped parts slowly as to avoid spill, and how to recycle used solvent.

Effectiveness and Cost: Central cleaning stations are a moderately effective, moderate-cost BMP.

Limitations: The size of the parts being cleaned may preclude having operations centralized.

BMP 050 - SUBSTITUTE NON-TOXIC OR LESS-TOXIC CLEANING SOLVENTS



Description of Potential Pollutant and Source: Organic solvents, typically used for cleaning equipment and parts, are considered a major pollutant in storm water. Exposure of these materials to storm water can be minimized by using less-toxic substitutes.

Description of BMP: Substitute non-toxic or less-toxic materials to reduce the impact of storm water pollutants. This includes using non-caustic detergents for parts cleaning, detergent or water-based degreasers in place of organic degreasers, replacing chlorinated solvents with non-chlorinated solvents, and using phosphate-free detergents. However, even non-toxic materials are considered storm water pollutants and must be managed properly.

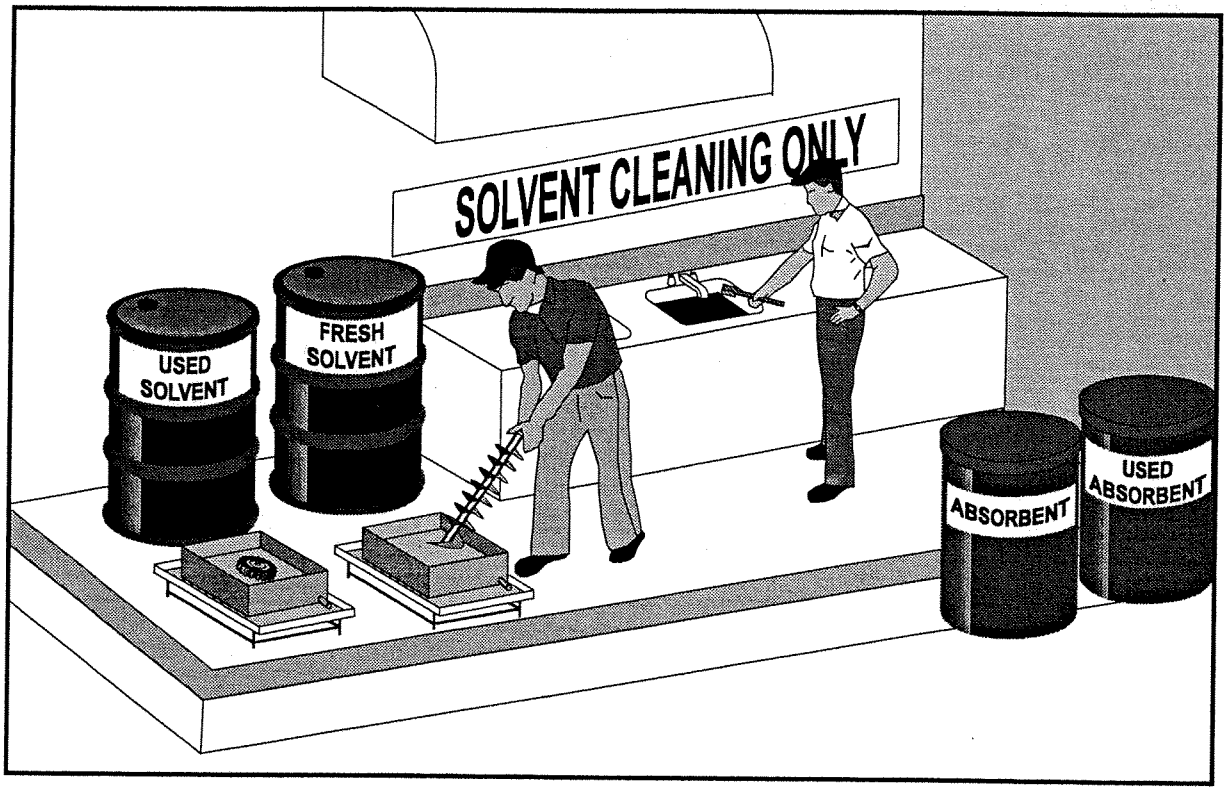
Application Guidance: Less-toxic materials will be substituted whenever possible.

Training: The procurement office will be trained regarding the constituents of cleaning materials and alternative materials. Personnel will be trained to know the differences between new and previously used materials.

Effectiveness and Cost: Effectiveness and cost will vary depending on site conditions.

Limitations: There may be no adequate alternative cleaning solvent available at a reasonable cost.

BMP 051 - USE SOLVENTS EFFICIENTLY



Description of Potential Pollutant and Source: Many repair and maintenance operations use a wide variety of solvents. Spills and leaks of solvents can occur, exposing these materials to storm water. By using these materials efficiently, the potential for exposure can be reduced.

Description of BMP: Reuse solvents or use solvents sparingly to reduce the risk of spills and leaks. Pre-soaking parts in "dirty" solvent before placing in fresh solvent reduces the volume of solvent used.

Application Guidance: This practice will be followed as often as is practical.

Training: Personnel will be trained in efficient use of solvents.

Effectiveness and Cost: Efficient use of solvents is a moderately effective, low-cost BMP.

Limitations: None

BMP 052 - USE OUTSIDE CONTRACTOR FOR HANDLING USED SOLVENTS AND OTHER SIGNIFICANT MATERIALS

Description of Potential Pollutant and Source: Improper storage, handling, and disposal of solvents, oils, paint thinners, and other toxic chemicals can occur with untrained personnel. This can result in exposure of these materials to storm water. Use of contractors specializing in handling these materials can minimize this exposure.

Description of BMP: Use private contractors to handle the disposal and replenishing of solvents, used oil, and other significant materials used in industrial or maintenance operations.

Application Guidance: Private contractors will be used for disposing and replenishing significant materials continually.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP

implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

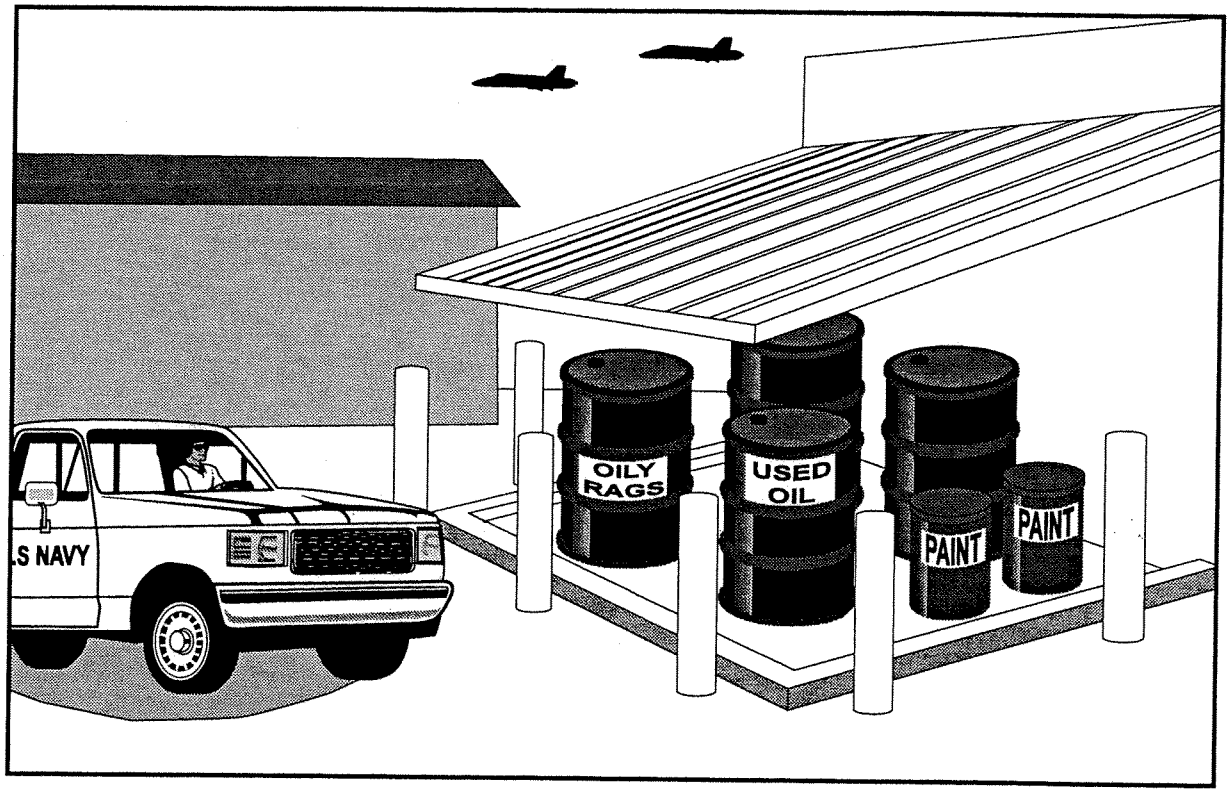
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained to contact the private contractors when services are needed and prepare the proper manifests (records of transportation).

Effectiveness and Cost: This is a moderately effective, moderate-cost BMP.

Limitations: Availability of private contractors may be a limitation. Quantities of materials/waste will also limit the application of this BMP.

BMP 053 - PROTECT STORAGE CONTAINERS FROM BEING DAMAGED BY VEHICLES



Description of Potential Pollutant and Source: If a container is damaged by a vehicle, the contents may leak, exposing the material to storm water.

Description of BMP: Protect storage containers against damage by vehicles. Bollards or traffic barriers may be used if the container location is accessible to vehicles. Fences and curbs may also be used to protect the containers.

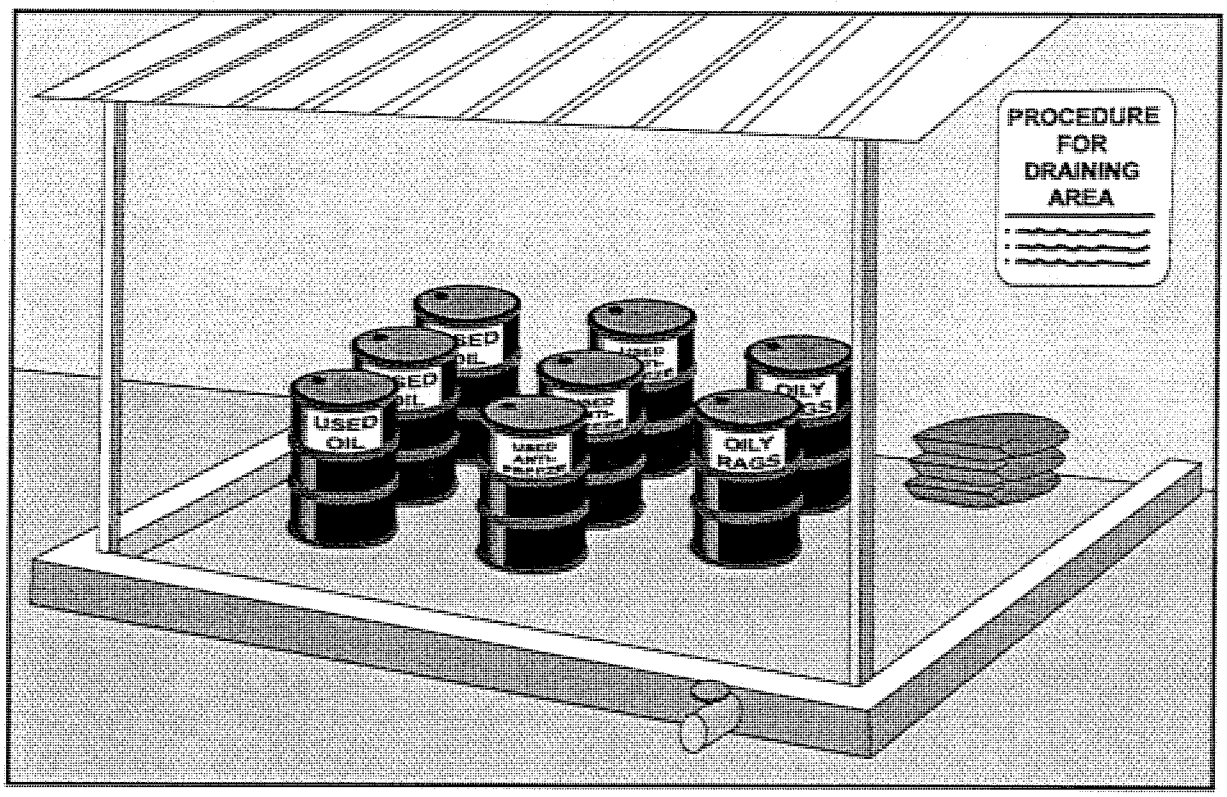
Application Guidance: Containers will be guarded against damage by vehicles.

Training: N/A

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: None

BMP 054 - PROPERLY STORE CONTAINERS



Description of Potential Pollutant and Source: Improper storage of containers can result in the exposure of significant materials to storm water.

Description of BMP: Store containers will be properly. This includes the following:

- Providing adequate aisle space (typically 3 feet) to facilitate material transfer and easy access for inspections.

- Storing containers, drums, and bags away from vehicle traffic routes to reduce the potential for mechanical impact and accidental spills. Do not store bags that are easily punctured near high-traffic areas where they may be hit by moving equipment or personnel.

- Stacking containers according to manufacturer's instructions to avoid damaging the containers from improper weight distribution.

- Storing liquid containers in a bermed area.

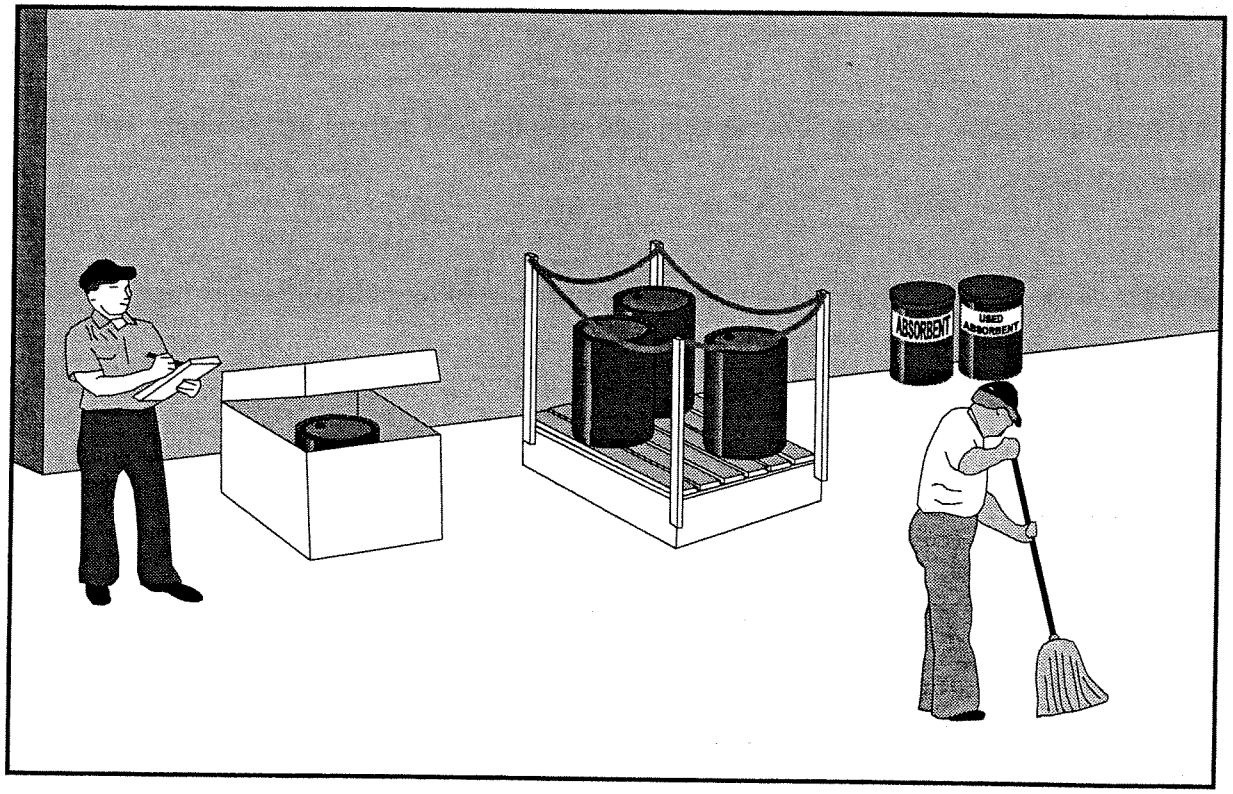
Application Guidance: Containers will be properly stored.

Training: Training on the proper storage of materials will be provided periodically to the appropriate personnel.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: None

BMP 055 - USE OVERPACK CONTAINERS OR CONTAINMENT PALLETS TO STORE 55-GALLON DRUMS OUTSIDE OF STORAGE AREAS



Description of Potential Pollutant and Source: Chemicals, oils, solvents or liquid materials stored outside in 55-gallon drums may leak. The leaking material can then be exposed to storm water and transported to the storm drain system receiving waters.

Description of BMP: Use overpack containers and containment pallets for 55-gallon drums stored outside. Overpack containers and containment pallets are secondary containers usually constructed of plastic. They are large enough to hold the contents of the containers stored in them if they should break or leak. Using overpack containers or containment pallets minimizes the amount of pollutants reaching surface waters due to leaks. Overpack containers will be protected against damage from vehicles.

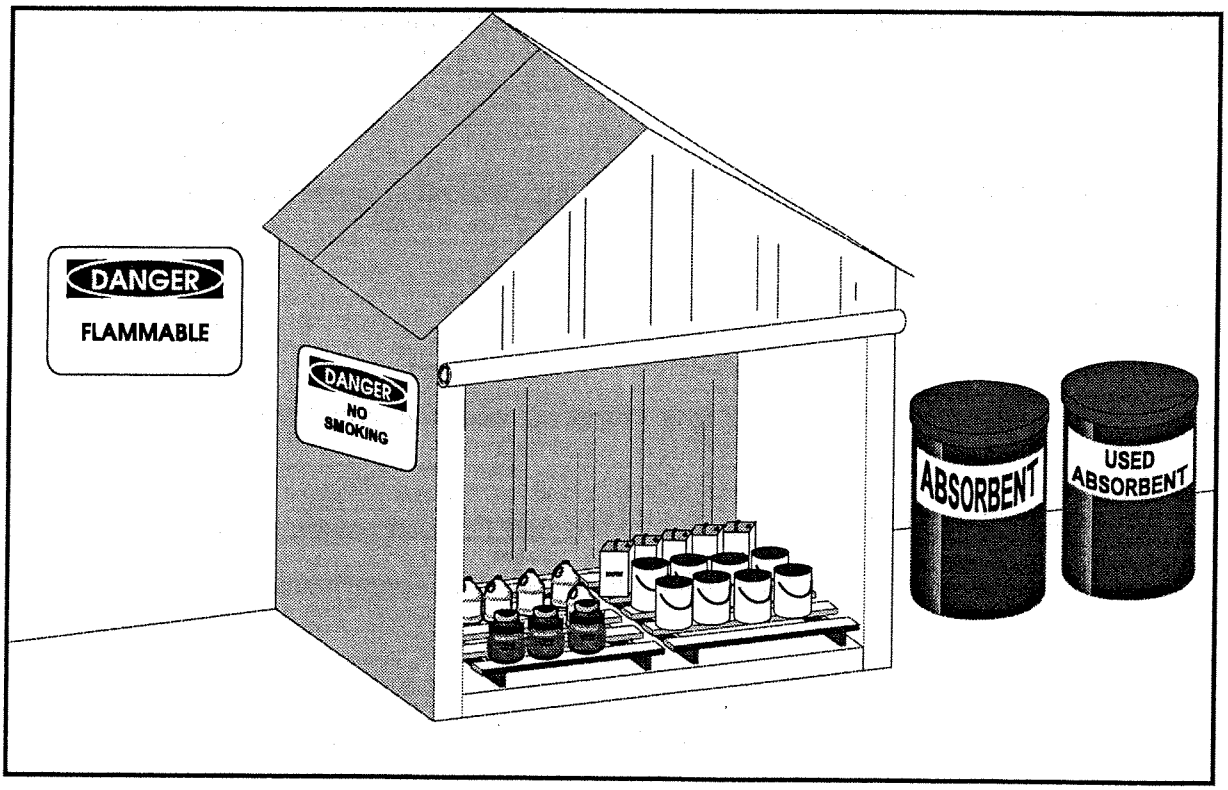
Application Guidance: Overpack containers or containment pallets will be used whenever 55-gallon drums of hazardous materials must be stored outside.

Training: Personnel will be trained to ensure that overpack containers or containment pallets are used.

Effectiveness and Cost: Overpack containers and containment pallets are a highly effective, moderate-cost BMP.

Limitations: Cost could be high if the number of drums needing containment is high.

BMP 056 - USE "DOGHOUSE" DESIGN FOR OUTDOOR STORAGE OF SMALL LIQUID CONTAINERS



Description of Potential Pollutant and Source: Small containers of liquid materials (i.e., paints, solvents, antifreeze, etc.) are often stacked or stored outside. Leaks and spills from these containers can be exposed to storm water and be transported to the storm drain or receiving waters.

Description of BMP: Store small containers of liquid properly. Containers can either be stored inside buildings or in "doghouses." The roof and flooring of a doghouse design prevents direct contact of significant materials with storm water. A doghouse design is a term used to describe a storage shed that has two solid structural walls, a roof, and two canvas walls. The structural walls support the structure, while the canvas walls provide easy access to the liquid containers in the shed. Secondary containment, such as berms and curbs, will also be used for this type of structure to contain any leaks or spills that may occur. A doghouse design has two benefits:

1. Protection of liquid containers from direct contact with rainfall
2. Storage of numerous containers in a centralized location without occupying too much space

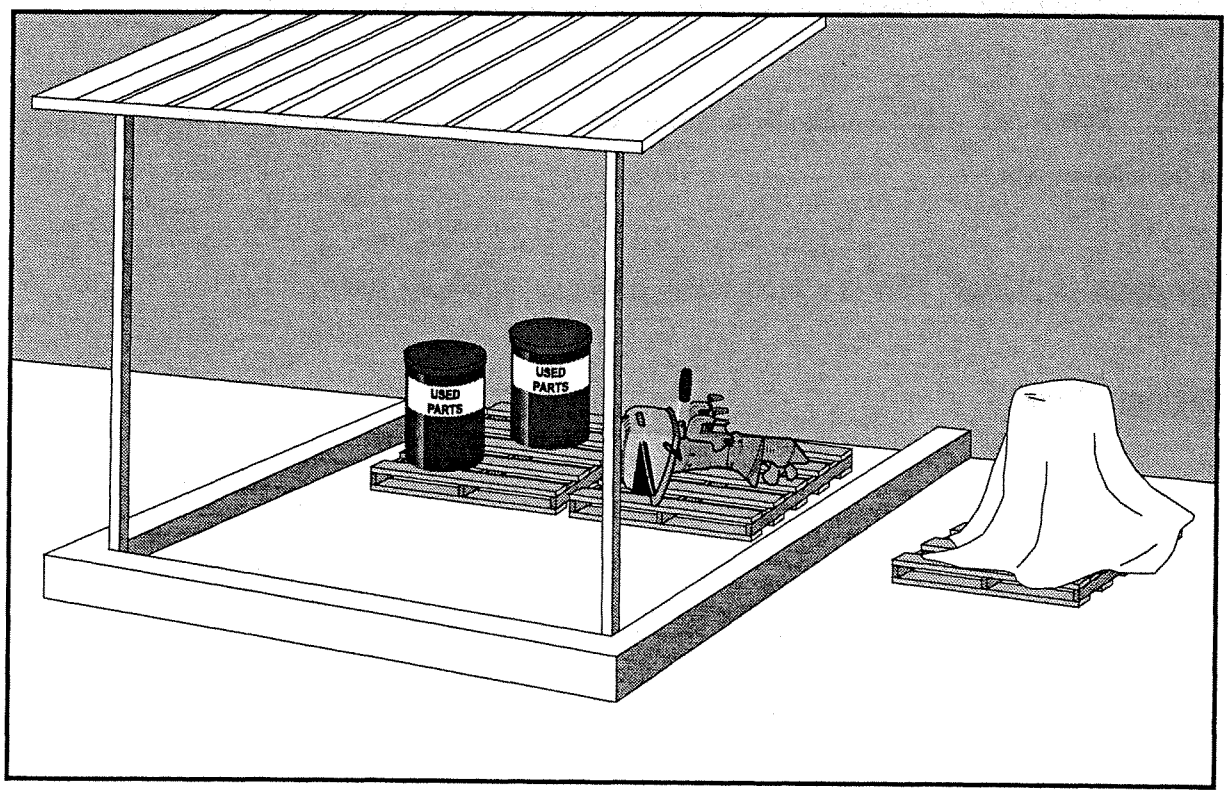
Application Guidance: Liquid containers kept outdoors will be covered at all times.

Training: N/A

Effectiveness and Cost: This is a moderately effective, moderate-cost BMP.

Limitations: Storage sheds often must meet building and fire code requirements. Construction plans should be prepared in consultation with the Federal Fire Department.

BMP 057 - DO NOT STORE USED PARTS OR CONTAINERS DIRECTLY ON GROUND



Description of Potential Pollutant and Source: Used parts are often covered with oil, grease, and other potential pollutants. Containers, such as 55-gallon drums and flammable materials storage lockers, may develop leaks and spill potential pollutants onto the ground or pavement. If the used parts or containers are stored directly on the pavement or ground, significant materials can be exposed to storm water which can transport the pollutants into the storm drain system or receiving waters.

Description of BMP: Do not store used parts and containers directly on the pavement or the ground. If possible, used parts and containers will be stored indoors. If outdoor storage is necessary, smaller parts will be placed inside a leak-proof, covered container, such as a labeled 55-gallon drum, and placed on a wooden pallet. Larger parts will be placed on wooden pallets or waterproof tarpaulins and covered with secure tarpaulins. Containers will be placed on wooden pallets to prevent the bottoms from rusting and to facilitate spill and leak detection. Placing used parts and containers in roofed, bermed storage areas is also acceptable.

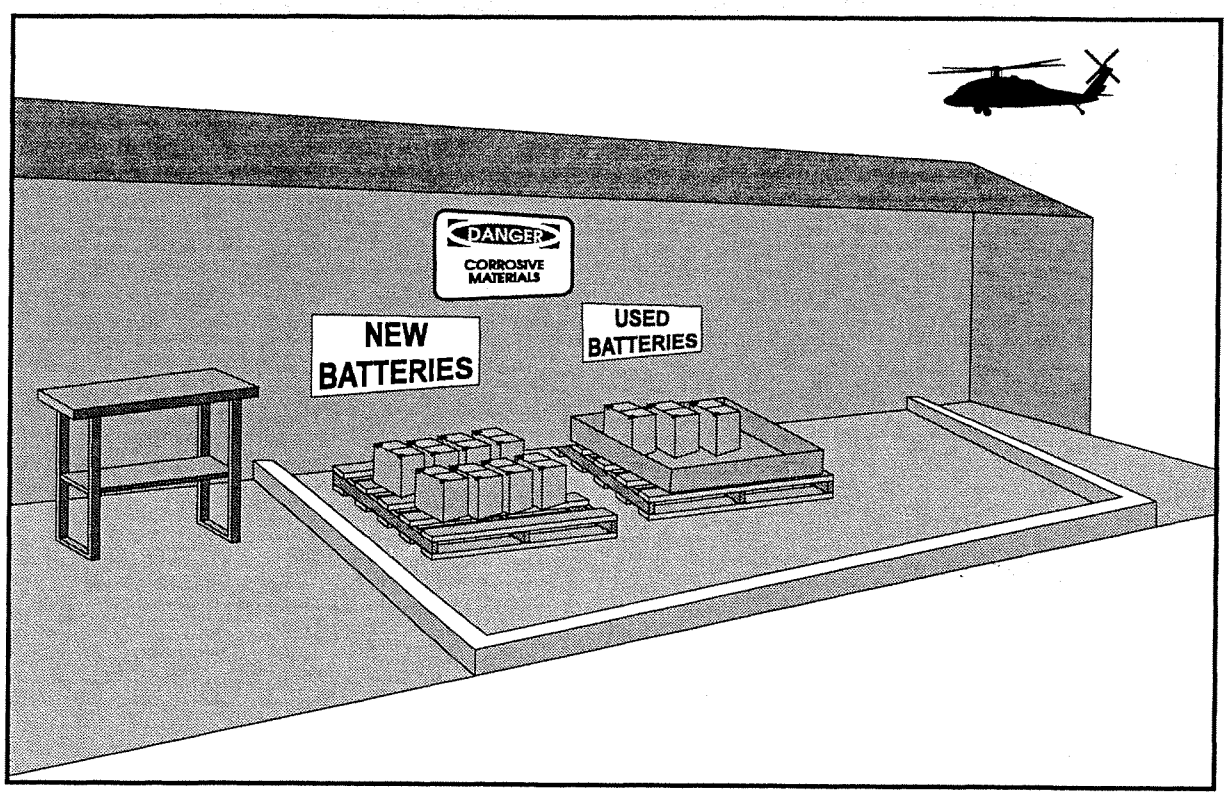
Application Guidance: Proper storage will be provided for used parts and containers.

Training: Personnel will be trained to never store used parts or containers directly on the ground or pavement.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: None

BMP 058 - STORE BATTERIES IN A SECONDARY CONTAINER



Description of Potential Pollutant and Source: Lead-acid batteries can leak battery acid that can become exposed to storm water. These materials can be transported to the storm drain or receiving waters.

Description of BMP: Store all batteries on pallets in a bermed area. Used and cracked batteries will be stored in secondary containers. Storing the batteries on pallets allows the operator to visually detect leaks.

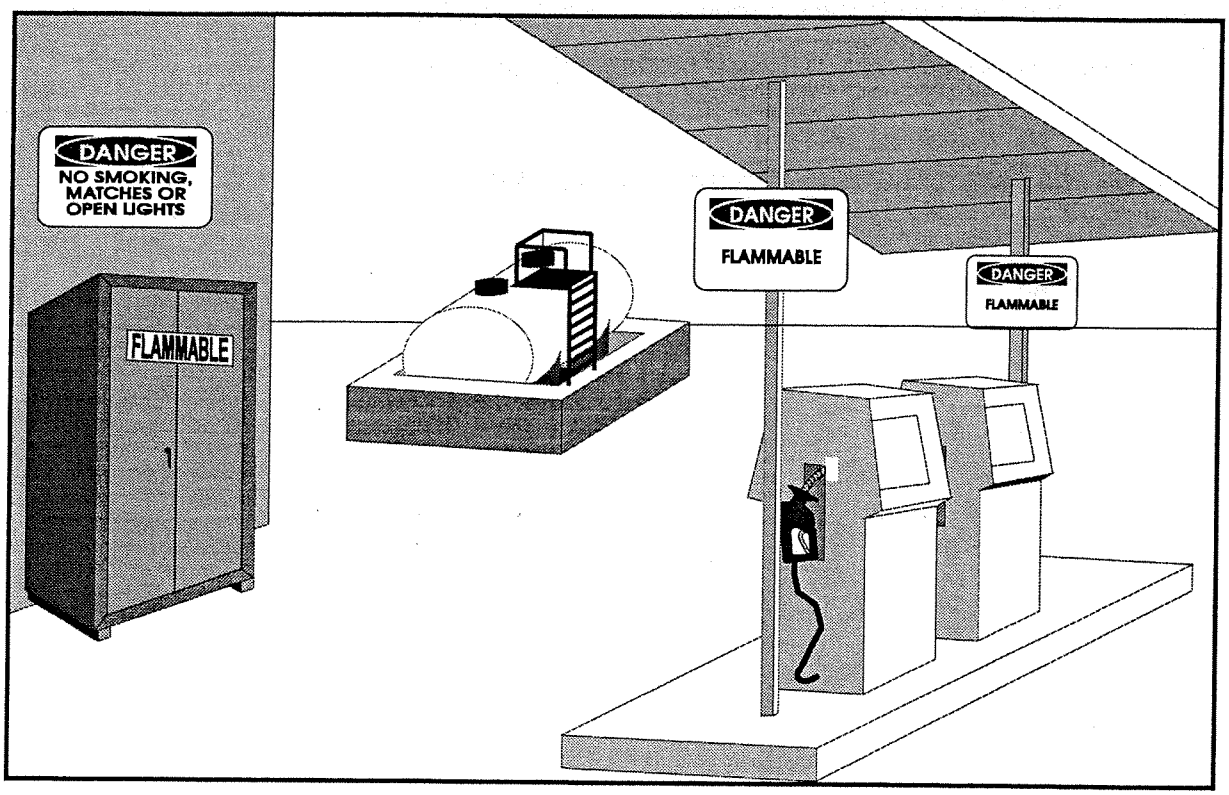
Application Guidance: This practice will be adopted in all vehicle maintenance areas or areas where batteries are stored. Dropped batteries will be treated as cracked.

Training: Signs will be posted as reminders.

Effectiveness and Cost: Secondary containers for cracked batteries is a highly effective, low-cost BMP.

Limitations: Adequacy of storage space in bermed areas; cost of constructing concrete, bermed storage area.

BMP 059 - DO NOT ALLOW OPEN FLAMES NEAR FLAMMABLE MATERIAL



Description of Potential Pollutant and Source: Water or other material used to extinguish a fire often is washed into the storm drain system. This material could contain pollutants from the item on fire. In addition, an area that has been destroyed by a fire is likely to discharge contaminants into the storm drain system. These materials can be exposed to storm water and transported to receiving waters.

Description of BMP: Do not permit open flames of any kind within 50 feet of flammable material. Many paints are flammable. Smoking will be forbidden within flammable material areas, and only spark-proof tools will be used. Signs will be posted indicating flammables and no smoking. (Note: 29 CFR 1910.106 requires this BMP for areas where flammables are stored).

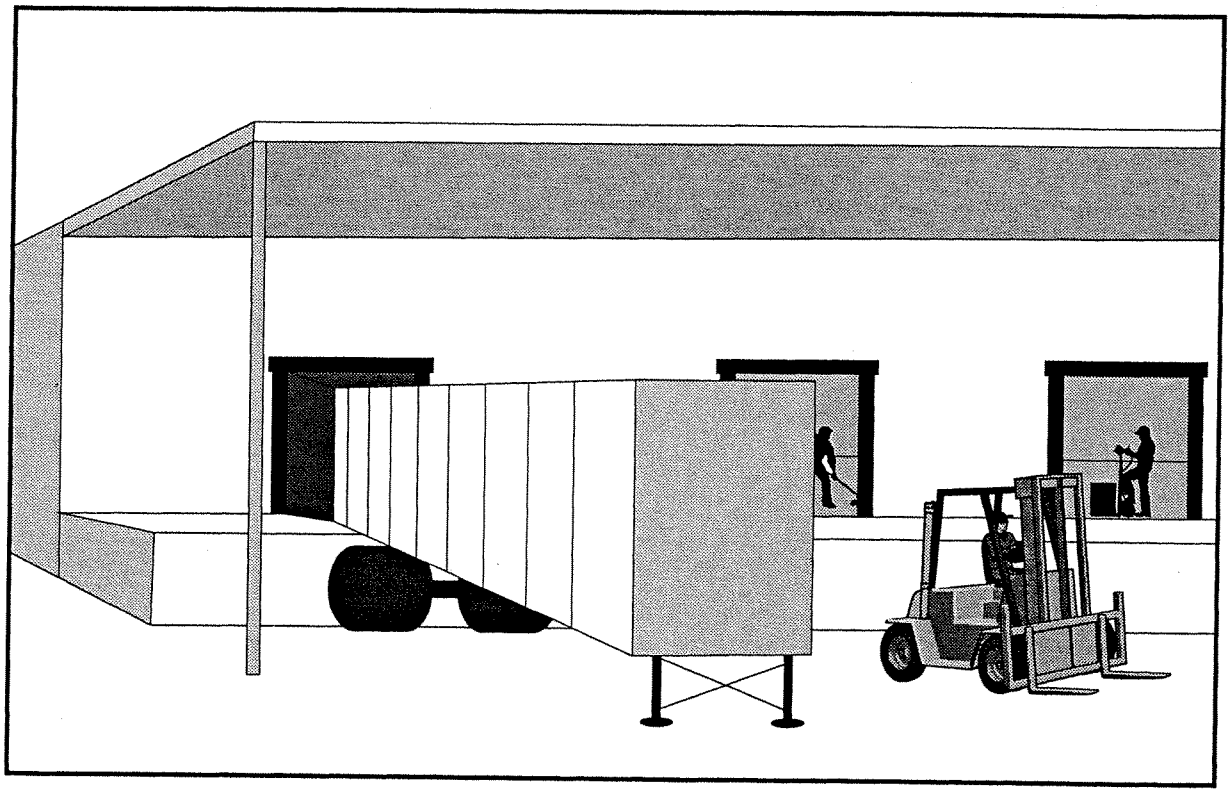
Application Guidance: No open flames or smoking will be allowed near flammable materials that are stored or that are being used. Only spark-proof tools will be used.

Training: Personnel will be trained to routinely check the label on materials to determine if they are flammable. Flammable materials will be properly stored and used.

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: None

BMP 060 - USE DOOR SKIRT OR SEAL



Description of Potential Pollutant and Source: Spills often occur during loading and unloading of liquid wastes and other significant materials from trucks and trailers. These materials can be exposed to storm water and transported to the storm drain system and/or receiving waters.

Description of BMP: Use door skirts or seals during loading and unloading. A door skirt is a rubber or plastic strip that encloses a trailer end during loading operations. Existing docking facilities will be retrofitted with door skirts or seals where appropriate.

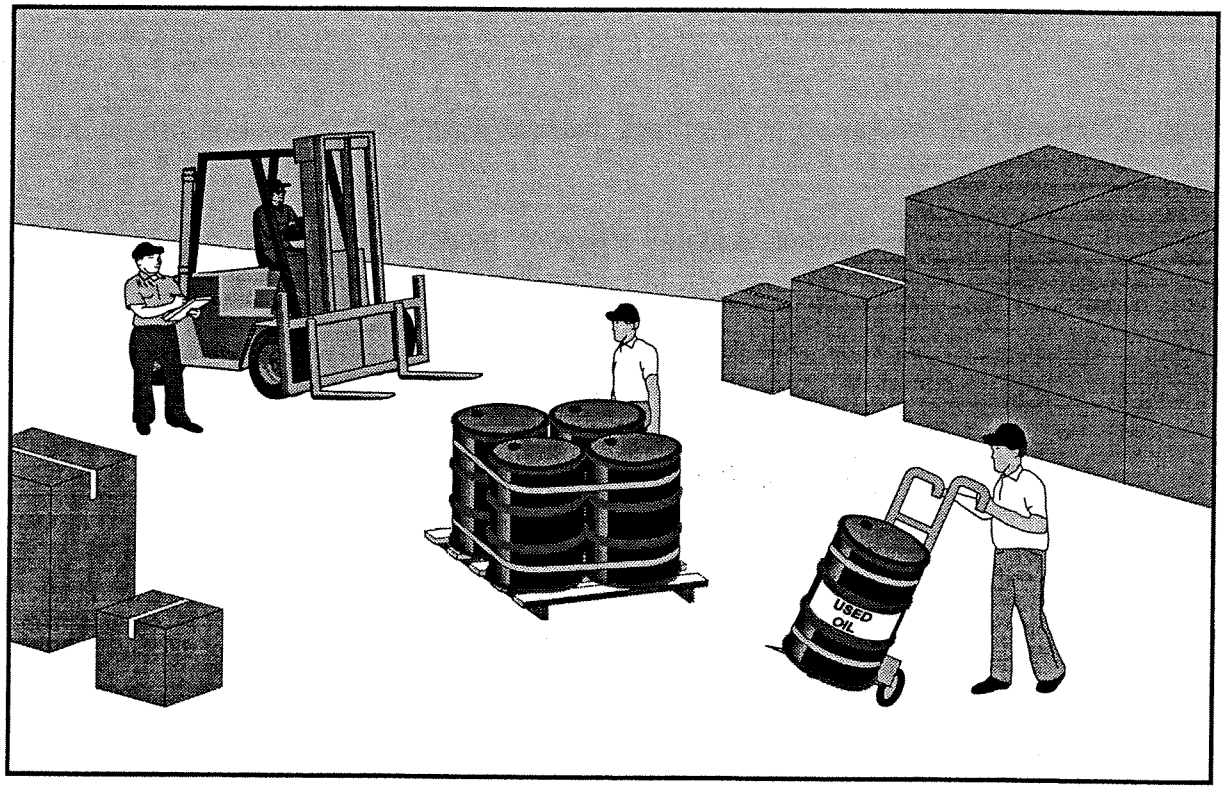
Application Guidance: A door skirt or seal will be installed at docking facilities as appropriate.

Training: N/A

Effectiveness and Cost: The door skirt is a moderately effective, low-cost BMP.

Limitations: None

BMP 061 - EMPLOY PROPER HANDLING PROCEDURES TO TRANSPORT MATERIALS AND WASTE



Description of Potential Pollutant and Source: Materials and waste are usually transported using forklifts, trailers, trucks, etc. If these loads are not properly secured or are handled incorrectly, drums can be ruptured and spills can occur. This can expose the materials to storm water, which can transport them to the storm drain system and/or receiving waters.

Description of BMP: Move drums by using a barrel cart or by placing the drum on a pallet and moving it with a forklift. As a minimum, two persons will assist the forklift operator when transferring a drum to or from a pallet. When multiple drums are stacked on a single pallet, the drums will be secured together with metallic strapping to reduce the potential for spillage due to weight shift. Mechanical puncture of a drum with the tines (i.e., the prongs) of the forklift will be avoided.

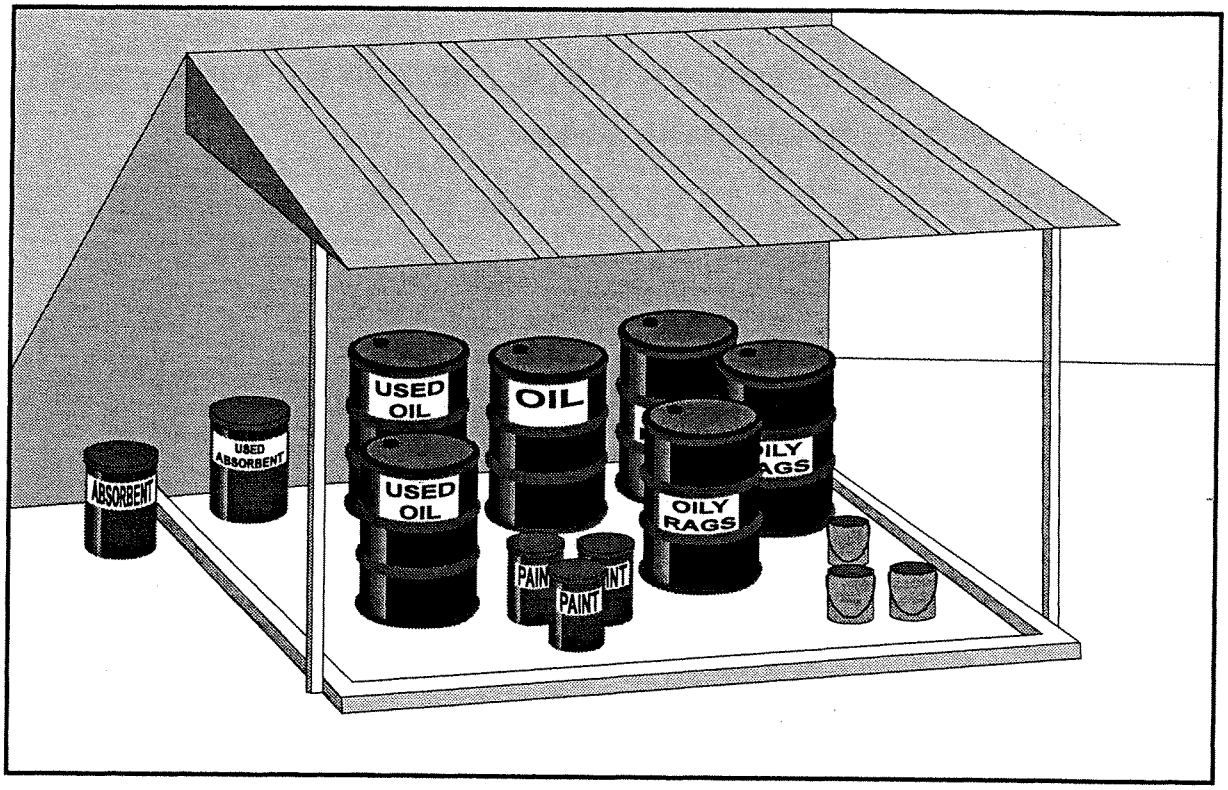
Application Guidance: Significant materials and wastes will be transported according to federal, state, and local regulations at all times.

Training: Personnel will be trained in hazardous material/waste spill prevention procedures.

Effectiveness and Cost: This practice is highly effective, moderate-cost BMP.

Limitations: None

BMP 061B - STORE LIQUIDS AND SIGNIFICANT MATERIALS WITHIN A BUILDING OR COVERED AREA



Description of Potential Pollutant and Source: Many significant materials may be leaked or spilled during storage, handling, or transport. If significant materials are stored outside, in covered areas, these materials can be exposed to storm water, which can transport the leaked or spilled material into the storm drain system.

Description of BMP: To the extent practical, store significant materials within a building or covered area. The materials will be stored on an impervious surface, such as a concrete pad. Rainfall runoff from the pad will be directed to a storm water treatment facility or contained. Leaks and spills will be cleaned up as soon as possible using rags or dry absorbents (see BMP 006). Used rags and absorbents will be disposed of properly. Any wash water from cleaning the floor will be disposed of in the sanitary sewer (see BMP 042).

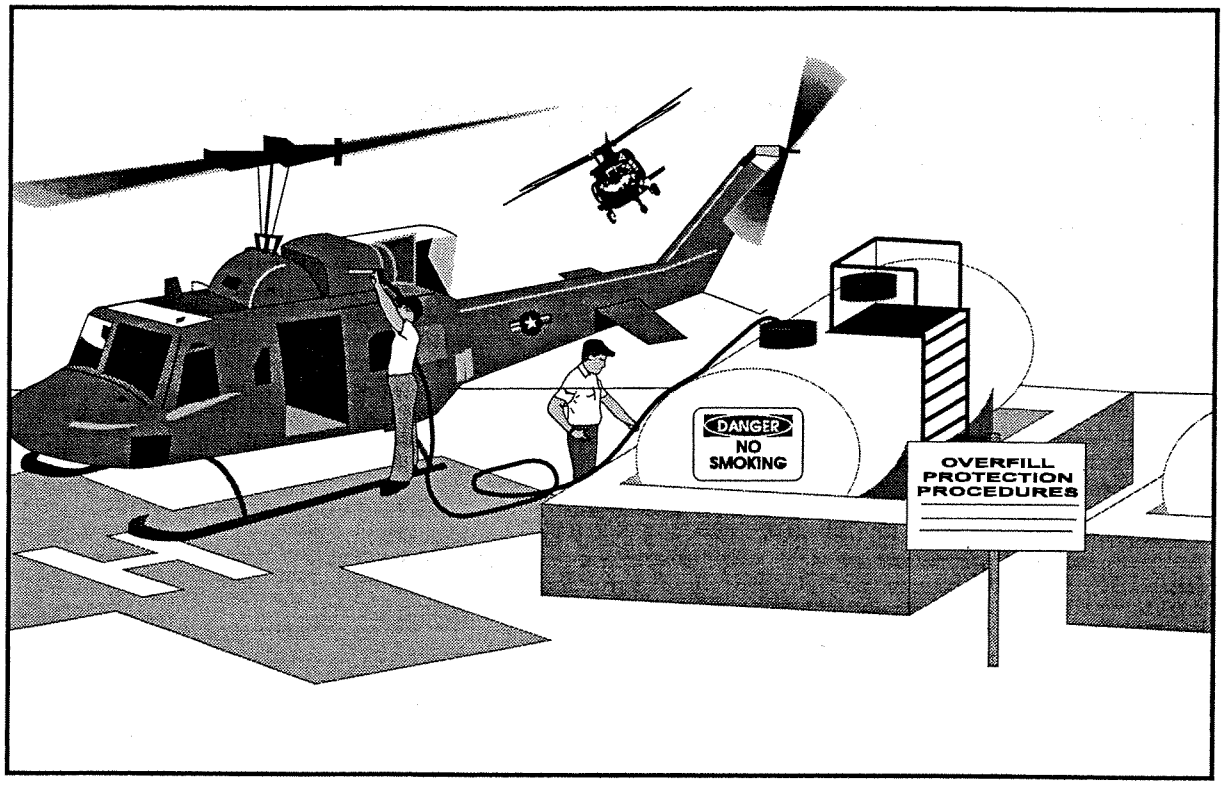
Application Guidance: All significant materials will be stored within a building or covered area.

Training: Personnel will be trained to store significant materials in designated areas.

Effectiveness and Cost: This is a moderately effective BMP. The cost will vary based on whether a building for storing the substances is available.

Limitations: None

BMP 062 - PROVIDE OVERFILL PROTECTION



Description of Potential Pollutant and Source: Overflows during fueling or transfer of fuels or liquids to the storage tanks can expose significant materials to storm water, which can transport them to the storm drain system and/or receiving waters.

Description of BMP: Control overflows by installing overfill prevention equipment that automatically shuts off flow, restricts flow, or sounds an alarm when the tank is almost full. Existing tanks will be retrofitted with this equipment.

Application Guidance: Overfill protection will be used during any fuel or liquid handling operation. This includes vehicles, equipment, aircraft and ships. Overfill protection will be included in initial construction and retrofitting of existing installations.

Training: Personnel will be trained in the use of the overfill protection devices at their facilities. Overfill protection procedures will be posted in fueling areas and other liquid material transfer

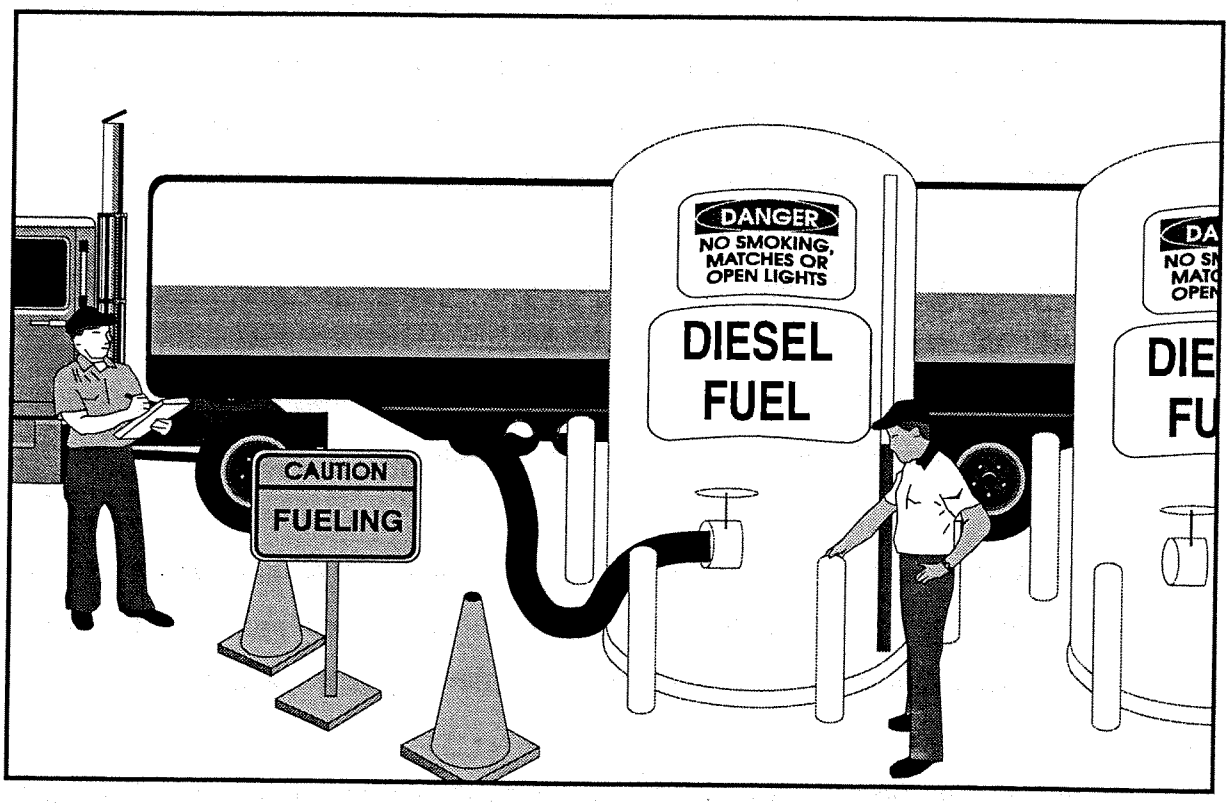
areas.

Effectiveness and Cost: Overfill protection is a highly effective, low-cost BMP.

Limitations: None

BMP 063 - DELETED

BMP 064 - MONITOR MAJOR FUELING OPERATIONS



Description of Potential Pollutant and Source: Overflows during fueling or transfer of fuels or liquids to the storage tanks can expose significant materials to storm water. These materials can then be transported to the storm drain or receiving waters.

Description of BMP: Monitor fuel transfer operations carefully to reduce overfilling. A policy mandating second party monitoring of fuel transfers will be adopted.

Application Guidance: Fuel transfer operations will be observed during all high-volume transfers. High-volume transfers typically involve a fuel tanker truck.

Training: Personnel will be trained in appropriate emergency spill response actions and proper fueling procedures. Fueling procedures will include the following items:

- Determine that sufficient space is available in the storage tank or drum to receive the entire trailer compartment's capacity by gauging the tank or drum immediately before discharging additional product into the storage tank. Gauging can be accomplished by using stick readings, sight gauges, or sensor readouts.

- Ensure that the tank trailer is accurately spotted at the proper unloading spot.

- Ensure that the tank trailer brakes are set; the driver remains with the vehicle and observes the transfer lines during the entire unloading procedure.

- Place caution signs in the proximity of the tank trailer to give necessary warning to approaching vehicles and personnel. These signs must remain posted until after the tank trailer is unloaded and disconnected from the discharge connection.

- Ensure that no open flames of any kind are permitted within 100 feet of the tank trailer. Smoking is strictly forbidden within this area. Only spark-proof tools are to be used (see BMP 059).

- Limit performance of unloading operations only to reliable persons properly instructed and made responsible for careful compliance with applicable regulations (see BMP 031).

- Attach ground strap at the facility to bumper of tank trailer unless the transfer hose provides the proper ground, once the products in the tank and trailer and compartments have been verified as being the same.

- Ensure that the facility storage tank is vented before connecting the unloading line unless unloading uses a vapor recovery system. Connect vapor recovery system(s) if applicable.

- Attach unloading line to the proper connection on the outlet leg of the tank truck.

- Open bottom outlet valve and proper valves in the unloading lines.

- Start product unloading, checking to ensure that there is no leakage at any of the connections. Should leakage appear, immediately stop the unloading process by closing the necessary outlet valves. The driver must continuously observe the connections to ensure that they are secure throughout the fluid transfer process.

- After liquid has been removed, close all valves, disconnect facility unloading from tank trailer, replace cap to outlet, and tighten all other closures.

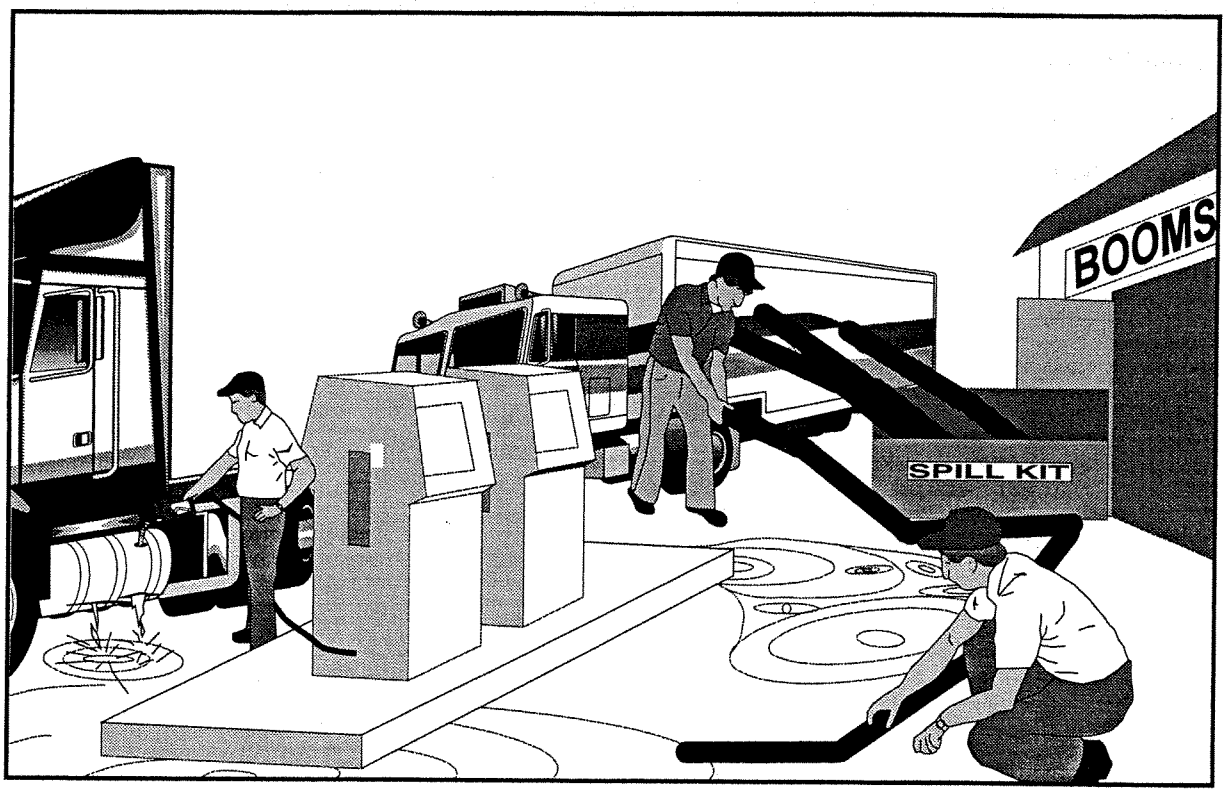
- Gauge the tank after delivery to ensure that the product amount delivered agrees with the manifest or bill of lading. Be certain that any discrepancies noted at the time of delivery are noted on the manifest or bill of lading and are initialed by the driver.

- Remove all portable signs and release the tank trailer.

Effectiveness and Cost: Observing major fueling operations is a moderately effective, low-cost BMP.

Limitations: None

BMP 065 - PROVIDE ABSORBENT BOOMS IN UNBERMED FUELING AREAS



Description of Potential Pollutant and Source: Spills during major fueling operations may expose potential pollutants to storm water. These materials can be transported to the storm drain system and/or receiving waters.

Description of BMP: Provide absorbent booms at fueling areas which are not bermed. The absorbent booms are portable and are used if a spill occurs during the fueling operations.

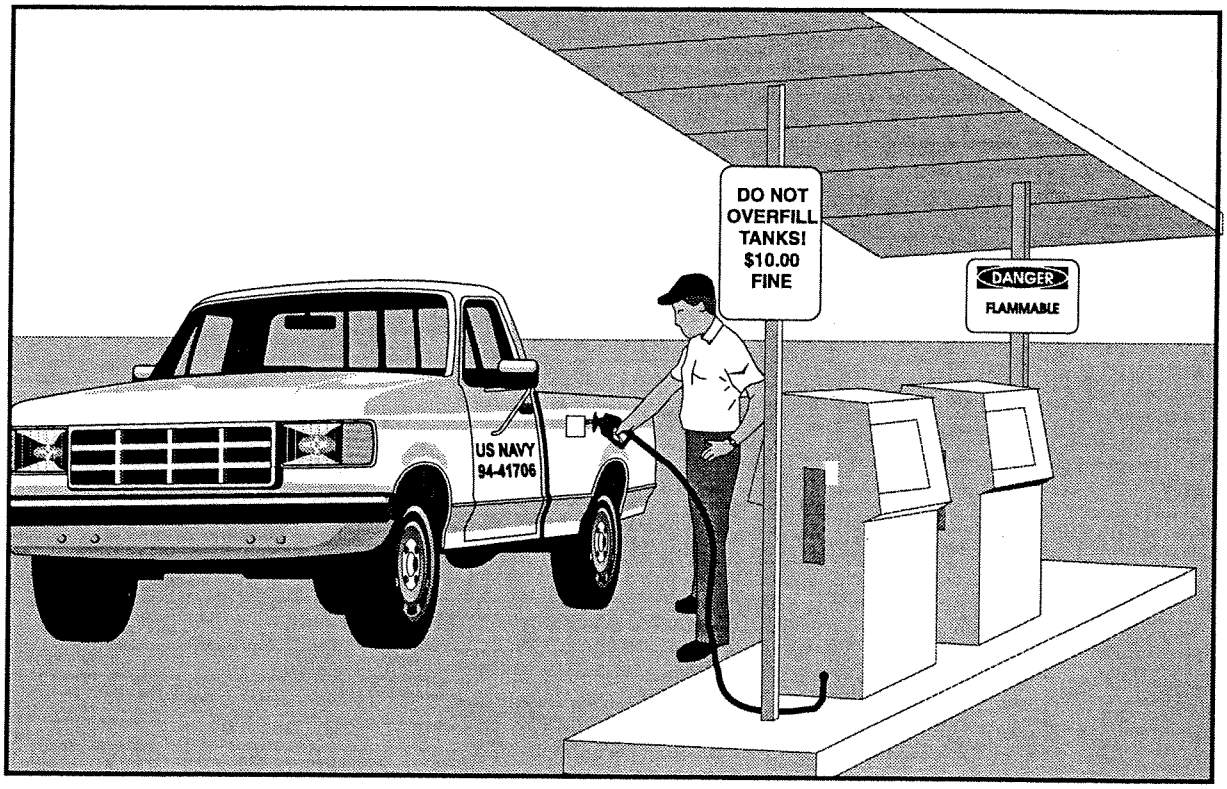
Application Guidance: Absorbent booms will be kept at all fueling areas.

Training: Personnel will be trained regarding the proper use and placement of the absorbent booms to contain spills. This information will be obtained from the manufacturer of the absorbent booms.

Effectiveness and Cost: This is a moderately effective BMP. The cost will vary based on the size of the fueling area.

Limitations: None

BMP 066 - ELIMINATE TOPPING OFF TANKS



Description of Potential Pollutant and Source: Trying to completely fill tanks after the pumps automatically shut off, or "topping off," often results in fuel spills and exposure of significant materials to storm water.

Description of BMP: Eliminate “topping off” fuel tanks. A policy will be developed to discourage "topping off" tanks. The policy will include incentives, posting signs stating the policy, or penalties.

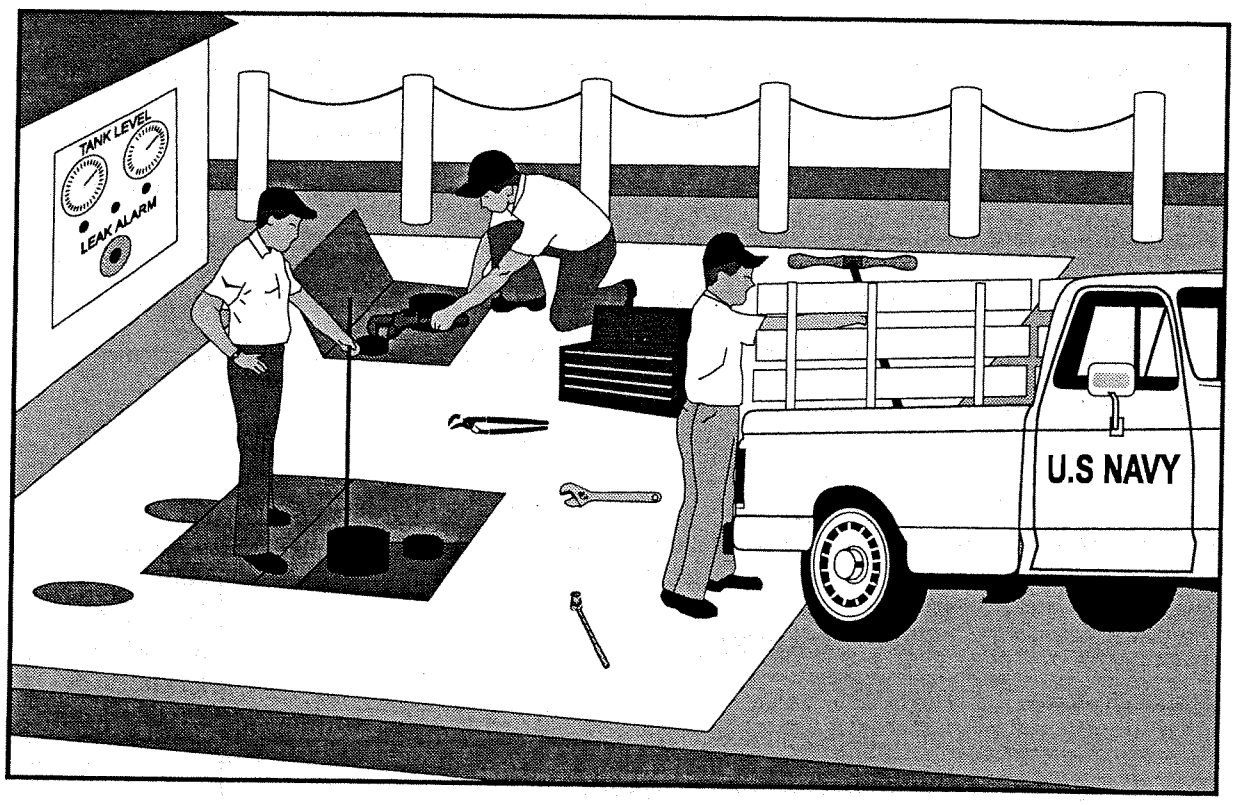
Application Guidance: This BMP will be applied to all fuel or liquid handling operations.

Training: New personnel will be informed of policy and signs should be posted as a reminder.

Effectiveness and Cost: Eliminating "topping off" is a highly effective, low-cost BMP.

Limitations: None

BMP 067 - INSTALL LEAK DETECTION SYSTEM



Description of Potential Pollutant and Source: An underground storage tank may leak fuel which may subsequently become exposed to storm water. These materials can be transported to storm drains and/or receiving waters.

Description of BMP: A leak detection system will be installed on USTs. There are numerous methods of leak detection systems. The more effective and costly methods include tank automatic gaging, vapor monitoring, groundwater monitoring, and interstitial monitoring. A low-cost, but less effective leak detection method involves using inventory control to keep track of the amount of fuel dispensed into the tank versus the amount pumped out.

Application Guidance: Tanks will be monitored for leaks every 30 days.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

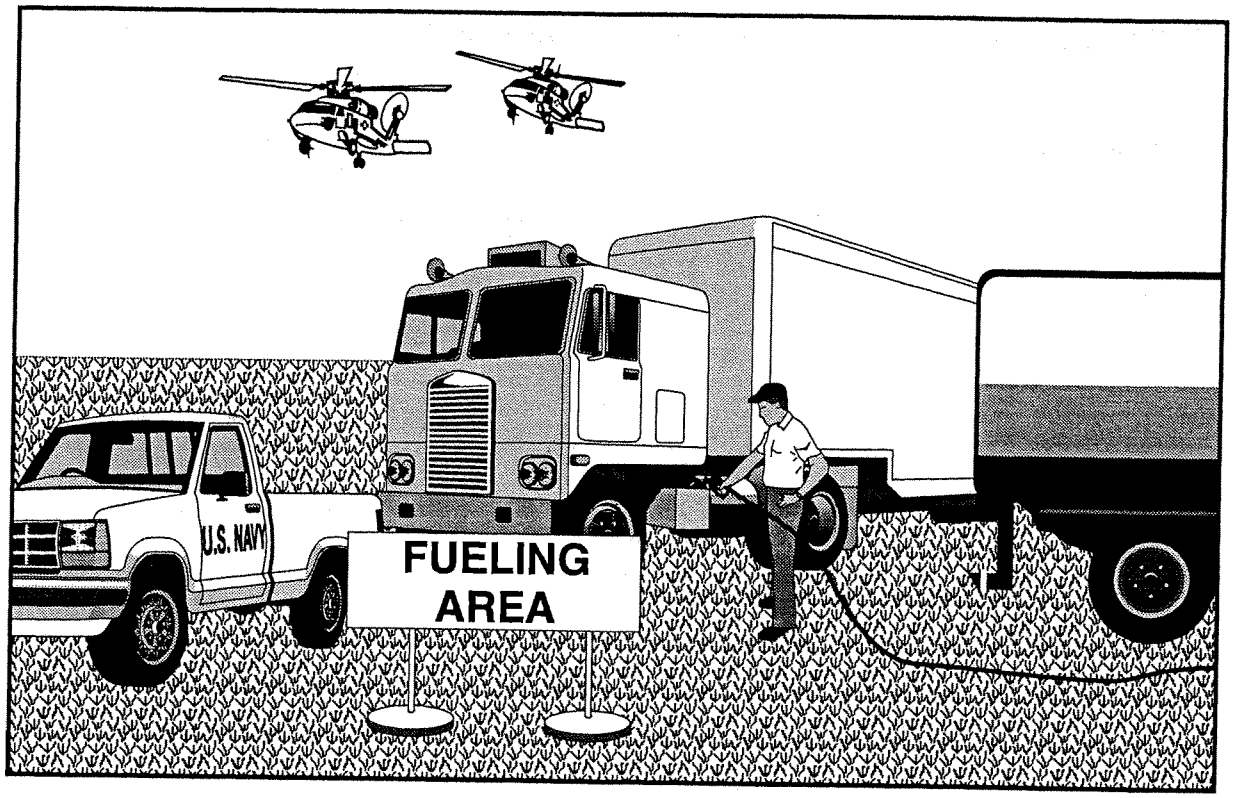
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of tank	
Old age or poor condition of tank	
Evidence of exposure (e.g., stains on ground surface)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Designated personnel will be trained on the operation and maintenance of the leak detection system in use at their facilities.

Effectiveness and Cost: The effectiveness and cost of the leak detection system depends on the method used. Inventory control is a less effective, low-cost BMP. The other methods are highly effective and have higher costs.

Limitations: For previously installed tanks, inventory control may be the most economically feasible option.

BMP 068 - DESIGNATE AREAS FOR FUELING FROM MOBILE FUEL TANKERS



Description of Potential Pollutant and Source: Overflows during fueling can expose significant materials to storm water. These materials can be transported to the storm drain and/or receiving waters.

Description of BMP: Designate areas for fueling to reduce the chances of fuel spills reaching storm water. Minimize the use of mobile fuel tankers. Most vehicles, with the exception of tracked vehicles such as tanks and bulldozers, should be able to travel to designated areas with minimal lost time.

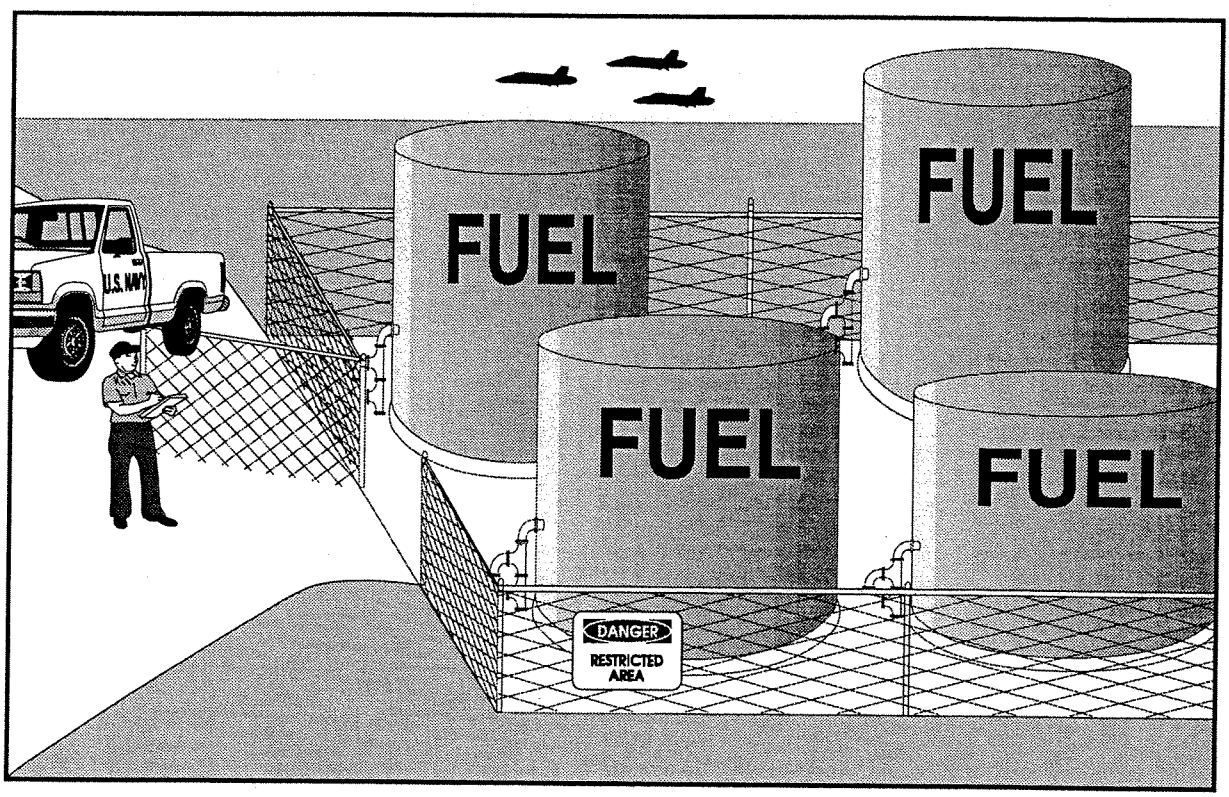
Application Guidance: Fueling areas will be designated whenever a large number of mobile equipment are being used.

Training: Personnel will be notified of the locations of designated fueling areas.

Effectiveness and Cost: Designated fueling areas are a highly effective, low-cost BMP.

Limitations: None

BMP 069 - RESTRICT ACCESS TO TANKS



Description of Potential Pollutant and Source: Improper use or vandalism of fuel tanks may result in discharge of fuel to the ground. This fuel may then be exposed to storm water and transported to the storm drain and/or receiving waters.

Description of BMP: Restrict access to fuel tanks and valves to properly trained personnel. The area can be restricted by a locked gate. This BMP is recommended for fuel tank farms.

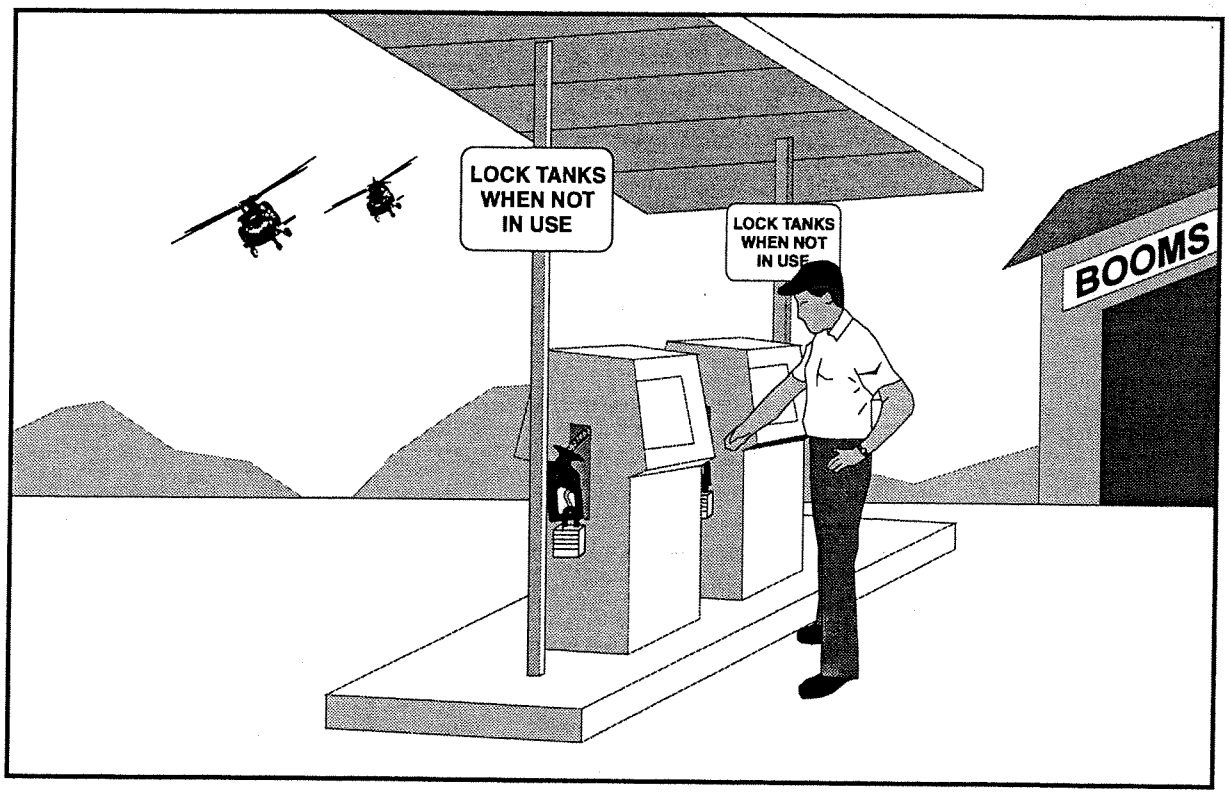
Application Guidance: Access to valves will be restricted at all times to properly trained personnel.

Training: Personnel who use fuel tanks will be trained in the proper operation of the system. Non-trained personnel who need fuel will be informed how to contact trained personnel for fuel dispensing.

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: The placement of some tanks may make it difficult to restrict access them.

BMP 070 - LOCK FUEL TANKS WHEN NOT IN USE OR ON STANDBY



Description of Potential Pollutant and Source: Unauthorized use of fuel tanks increases the possibility of accidental fuel spills and exposure to storm water. Unauthorized use after normal hours of operation could potentially result in a large spill of fuel.

Description of BMP: Lock fuel tank valves and fill pipes when idle to ensure that accidental user error does not occur.

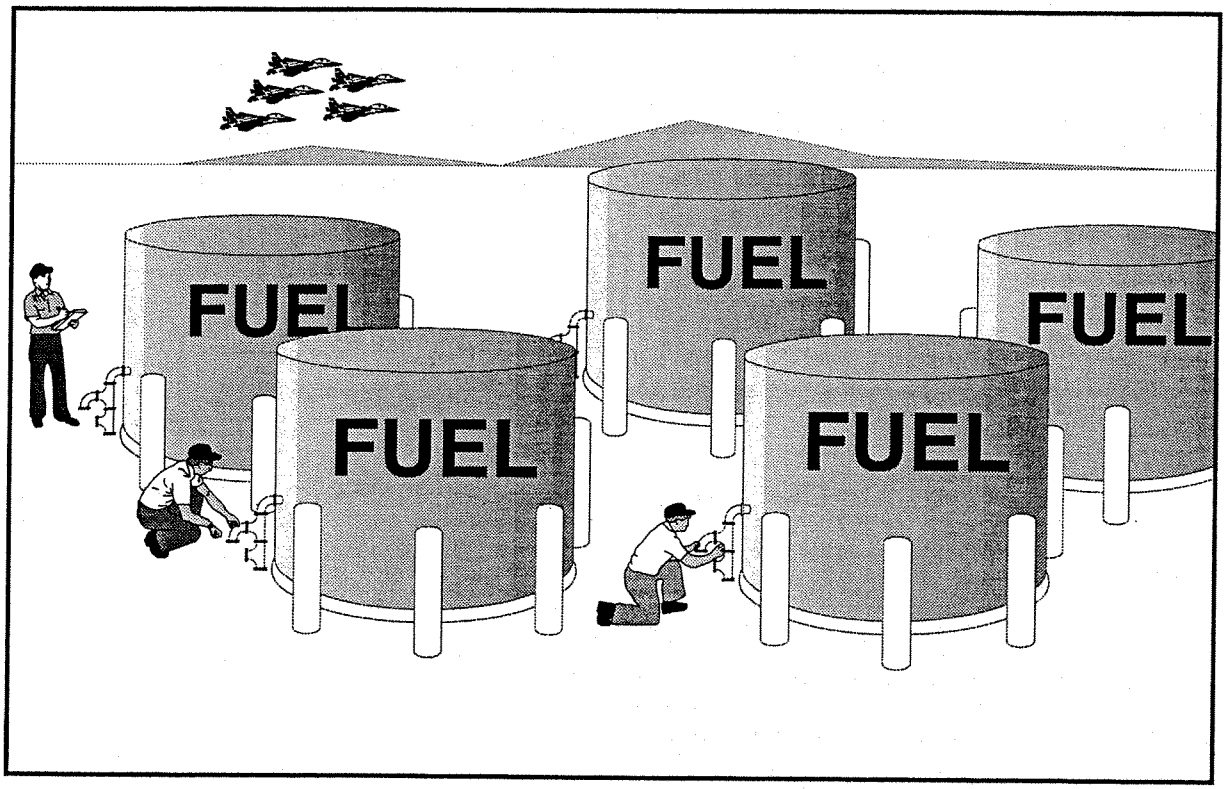
Application Guidance: Idle fuel tanks will be locked at all times.

Training: Personnel operating fuel tanks will be trained to know when tanks should be locked. Tanks which are frequently used will be locked at the end of the normal operating day.

Effectiveness and Cost: Locking tank valves is a highly effective, low-cost BMP.

Limitations: None

BMP 071 - KEEP TANKS, PIPING, AND VALVES IN GOOD CONDITION



Description of Potential Pollutant and Source: Tanks, piping, and valves may leak fuel or other significant materials due to corrosion, loose fittings, poor welding, or improperly or poorly fitted gaskets. This can expose these materials to storm water, which can transport them to storm drains and/or receiving waters.

Description of BMP: Keep tanks, piping, and valves in good working condition. Tanks, piping, or valves which are leaking will be repaired or replaced.

Application Guidance: Tanks, piping, and valves will be inspected monthly and kept in good condition at all times. If applicable, preventive maintenance will be performed.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a

frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium, or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

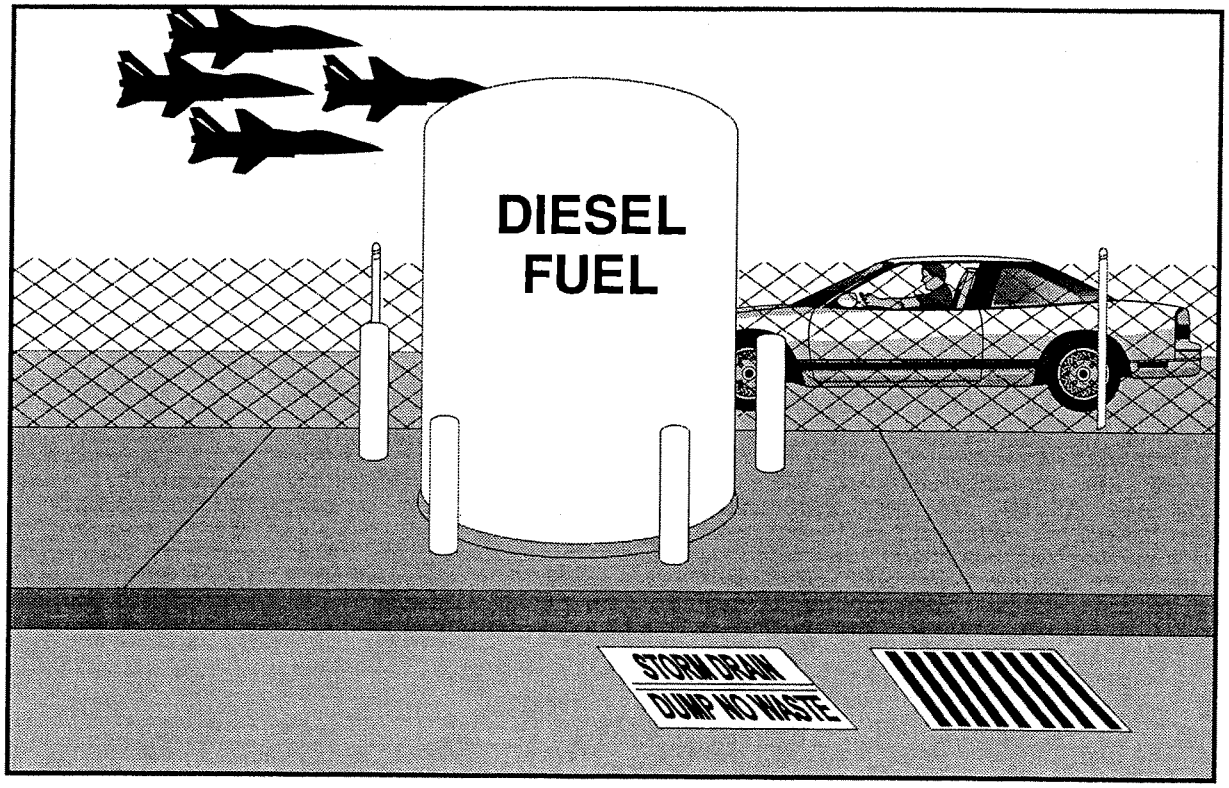
CRITERIA	Rating H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Quantity of significant materials potentially exposed	
Toxicity of significant materials potentially exposed	
Frequency of use of tanks, piping, and valves	
Intensity of use of tanks, piping, and valves	
Old age or poor condition of tanks, piping, and valves	
Evidence of exposure (e.g., stains on ground surface)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: Personnel will be trained to regularly inspect for leaks or conditions that could lead to the discharge of chemicals, or storm water contact with waste materials. Personnel will be trained to routinely inspect equipment before each use. Tanks, piping, and valves which are not frequently used, will be inspected weekly. Procedures for notifying the appropriate maintenance personnel if a leak is found, will be established.

Effectiveness and Cost: Keeping tanks, piping, and valves in good condition is a highly effective BMP. The cost of repairing or replacing piping and valves is typically low. The cost of repairing or replacing tanks will vary based on the size of the tank and its present condition.

Limitations: None

BMP 072 - PROTECT TANKS FROM BEING DAMAGED BY VEHICLES



Description of Potential Pollutant and Source: If a tank is damaged by a vehicle, fuel, or other significant materials may be leaked from the tank and become exposed to storm water. The materials can then be transported to the storm drain and/or receiving waters.

Description of BMP: Protect tanks from being damaged by vehicles. Bollards or traffic barriers may be used if the tank location is accessible to vehicles. Fences and curbs may also protect the tanks.

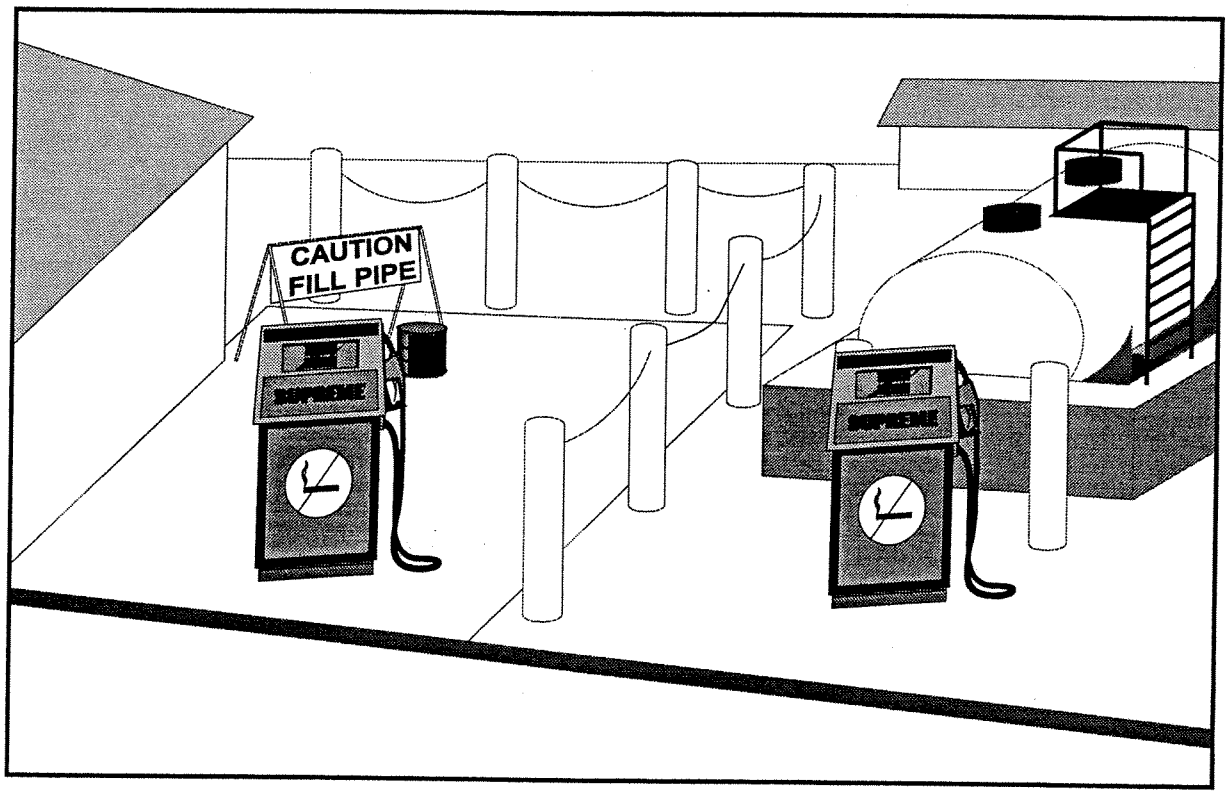
Application Guidance: Tanks will be guarded from being damaged by vehicles.

Training: N/A

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: None

BMP 073 - PROTECT FILL PIPE FROM BEING DAMAGED BY VEHICLES



Description of Potential Pollutant and Source: If a fill pipe is damaged by a vehicle, fuel may leak from the tank and become exposed to storm water. These materials or other significant materials can then be transported to the storm drain and/or receiving waters.

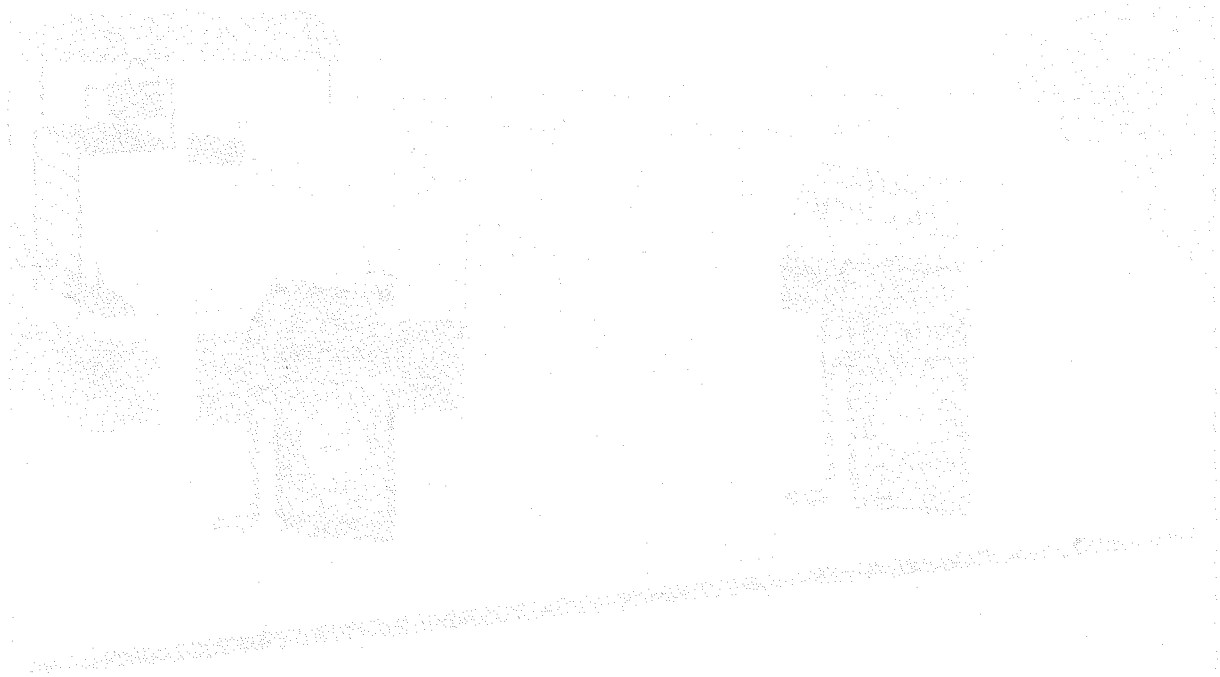
Description of BMP: Protect fill pipes from being damaged by vehicles. Bollards or traffic barriers will be used if the tank location is accessible to vehicles.

Application Guidance: Fill pipes will be guarded from damage by vehicles.

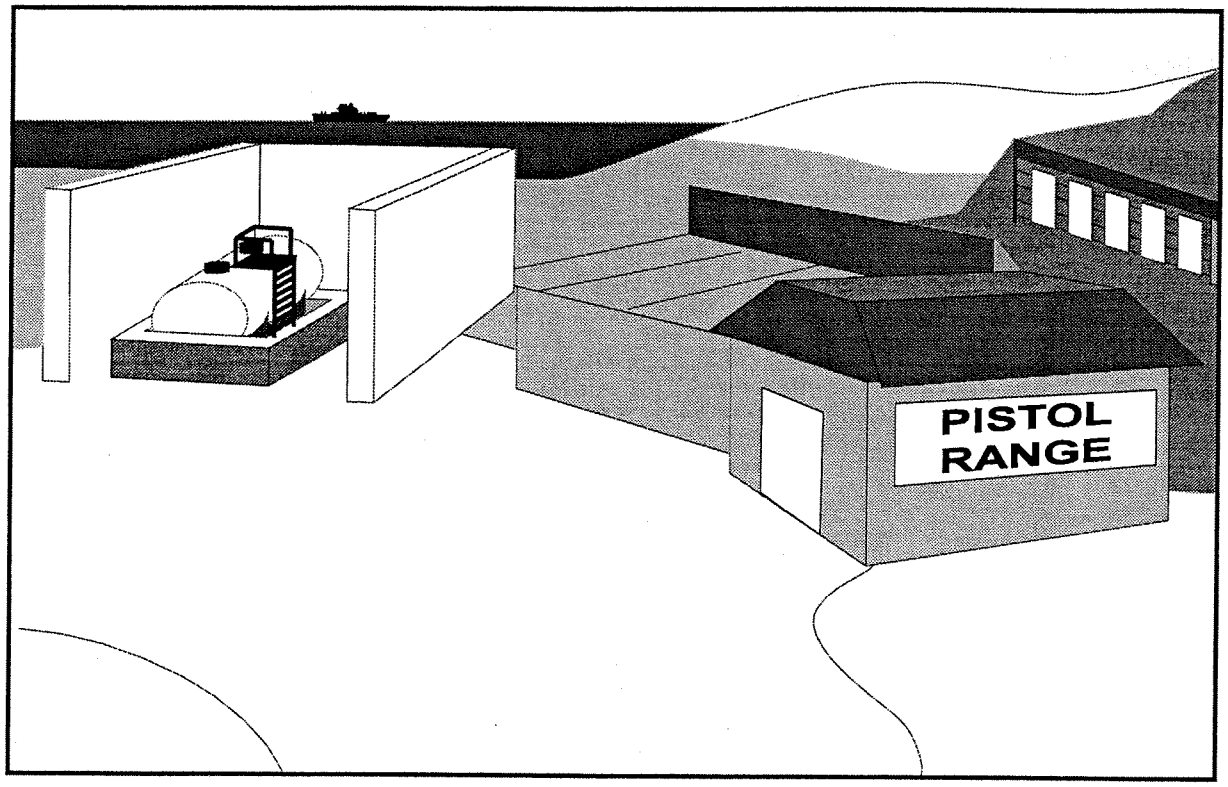
Training: N/A

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: None



BMP 074 - PROVIDE PROTECTION FOR PERMANENT ABOVEGROUND TANKS FROM DISCHARGE OF FIREARMS



Description of Potential Pollutant and Source: Stray munitions may penetrate aboveground storage tanks, causing spills and leaks of fuel or other significant materials. These materials can be exposed to storm water and transported to the storm drain and/or receiving waters.

Description of BMP: Use concrete barriers to protect tanks when aboveground storage tanks are located in areas where firearms are discharged. The concrete will protect against damage from stray fire.

Application Guidance: This practice will be followed wherever there is any chance of firearms being discharged in the vicinity of aboveground storage tanks.

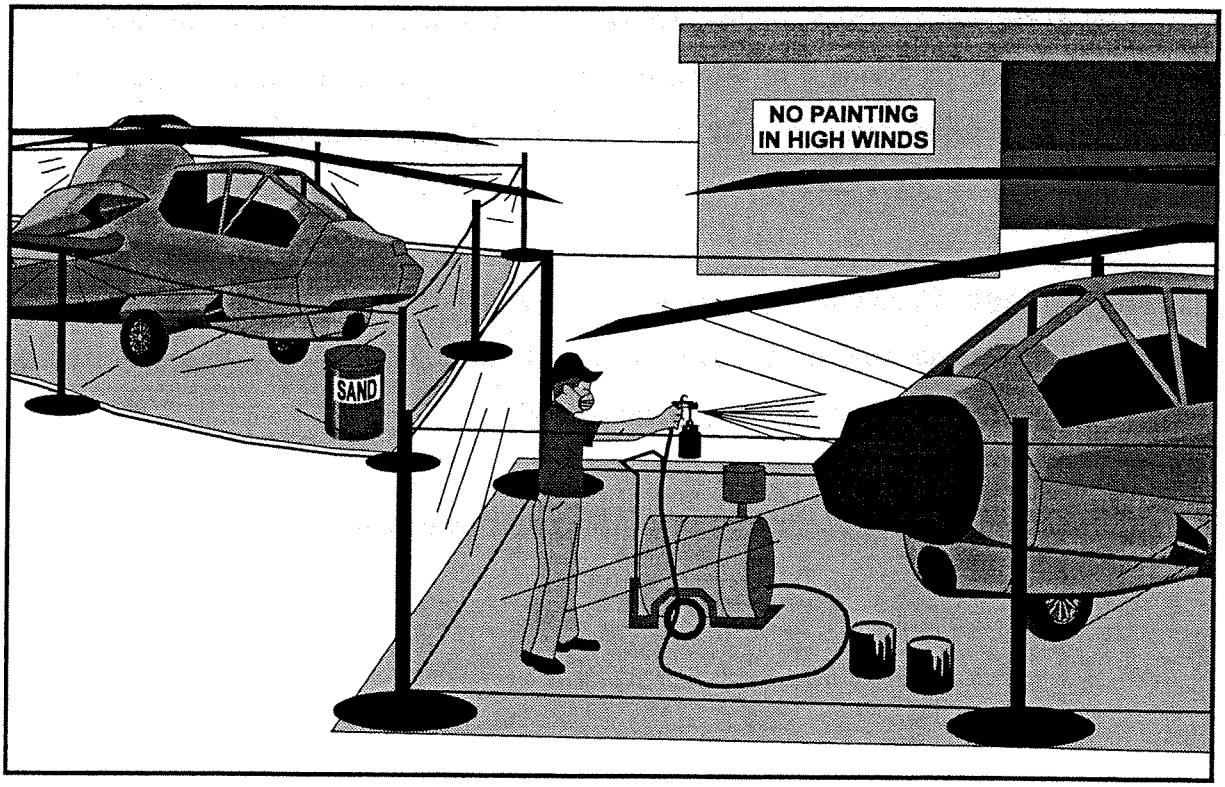
Training: N/A

Effectiveness and Cost: Concrete encapsulation is a highly effective, moderate-cost BMP.

Limitations: N/A

BMP 075 - DELETED

BMP 076 - ENCLOSE OUTDOOR SANDING AND PAINTING OPERATIONS AND USE TARPS TO CONTAIN AND COLLECT SOLID WASTES



Description of Potential Pollutant and Source: Sanding, in preparation for painting, and painting itself creates wastes including glass, metal, stone and other wastes that may become exposed to storm water if not properly collected and disposed. These materials can then be transported to storm drains and/or receiving waters.

Description of BMP: Contain paint-related wastes by covering all sanding and painting activities with tarps or plastic sheeting and by placing a tarp under and/or around all sanding and painting operations. These wastes will be collected in labeled drums and disposed of appropriately.

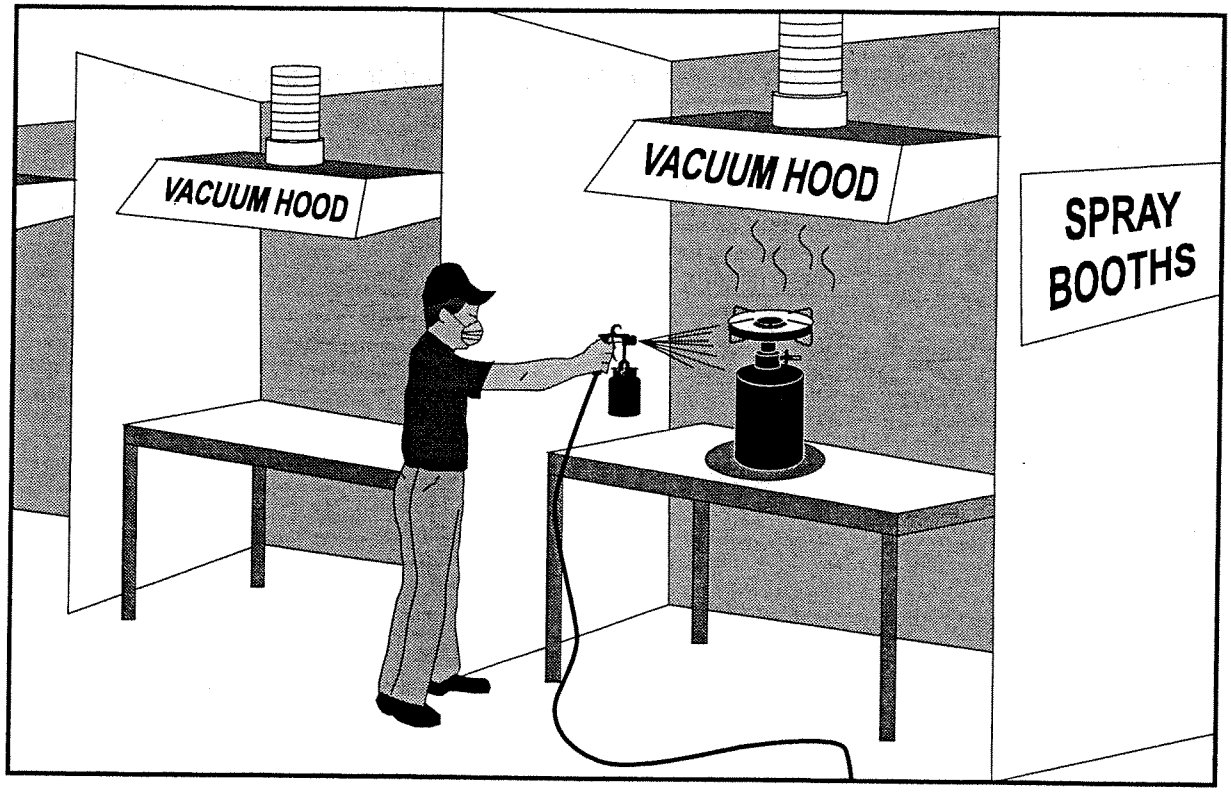
Application Guidance: This practice will be used in all sanding and painting operations performed outside of sanding or painting booths.

Training: Personnel will be instructed in procedures for the containment, collection and disposal for the control of particulates from sanding and painting; tarps will be monitored for holes. The waste will be recycled or disposed in a landfill if it is not a hazardous waste. Signs will be posted where sandblasting activities take place to remind personnel about proper disposal practices.

Effectiveness and Cost: Containment, collection and disposal of sandblasting wastes is a highly effective, usually moderate-cost BMP. However, costs for large-scale painting and sanding activities (e.g., ships and large equipment) could be high.

Limitations: The size of some operations may make implementation of this practice difficult.

BMP 077 - VACUUM PARTICULATE WASTES FROM SANDING OR PAINTING OPERATIONS



Description of Potential Pollutant and Source: Sanding, in preparation for painting, and painting itself creates wastes that may become exposed to storm water and transported to storm drains and/or receiving waters.

Description of BMP: Contain paint-related wastes by performing painting and sanding activities in facilities equipped with a vacuum and filters.

Application Guidance: This practice will be used in all sanding and painting operations.

Training: Personnel will be instructed in procedures for proper operation of vacuum and filters.

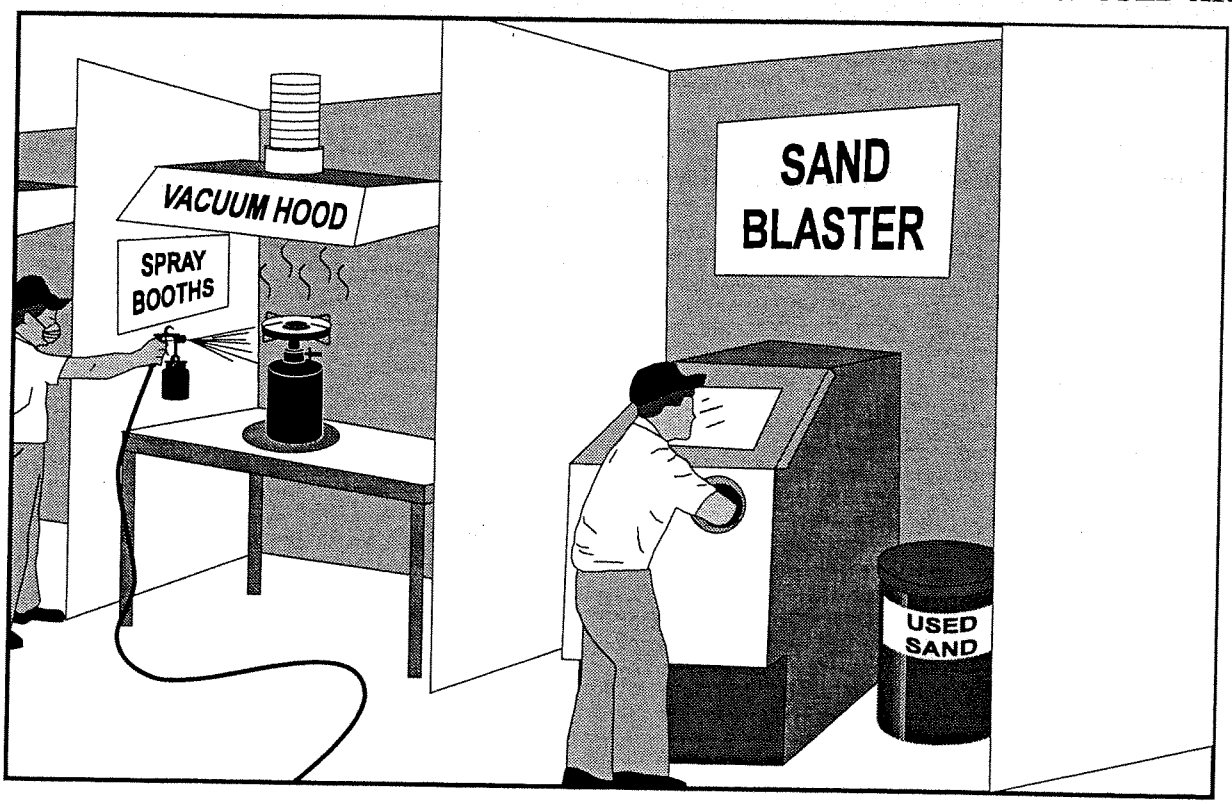
Effectiveness and Cost: Performing sanding and painting operations under vacuum is a highly effective, usually moderate-cost BMP. However, costs for large-scale sanding and painting

activities (e.g., ships and large equipment) could be high.

Limitations: The size of some operations may make implementation of this practice difficult.

BMP 078 - DELETED

BMP 079 - CONDUCT INDOOR SANDING AND PAINTING IN AN ENCLOSED AREA



Description of Potential Pollutant and Source: Paint, sand, glass, metal or stone particles from painting, sanding and sandblasting operations can become exposed to storm water if not properly contained. These materials may then be transported to storm drains and/or receiving waters.

Description of BMP: Conduct painting, sanding and sandblasting in an enclosed area to prevent contaminated particles from being exposed to storm water. Wastes from these operations will be disposed of appropriately.

Application Guidance: If possible, all painting, sanding and sandblasting activities will be performed indoors and preferably in an enclosed covered area.

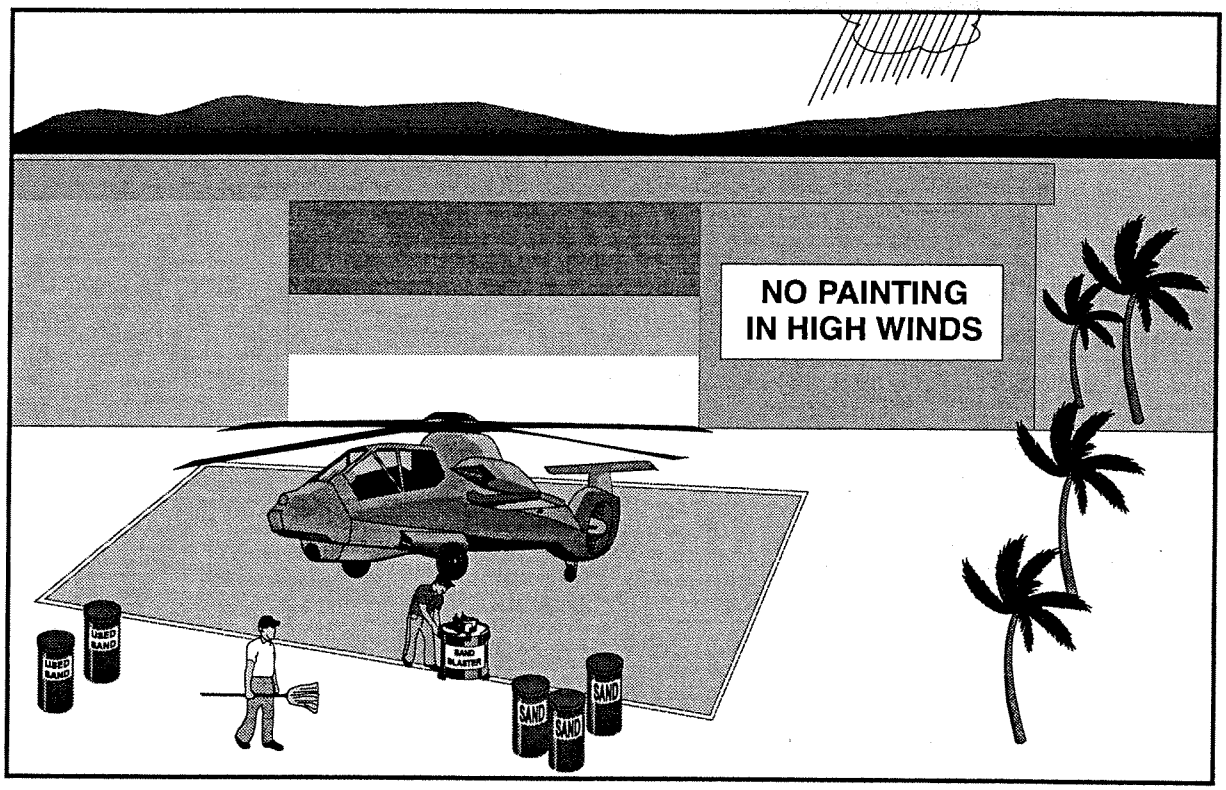
Training: Signs will also be posted to remind personnel about proper locations.

Effectiveness and Cost: Conducting painting, sanding and sandblasting in an enclosed area is an effective, variable-cost BMP.

Limitations: The size of some activities may make implementation of this BMP difficult.

BMP 080 - DELETED

BMP 081 - AVOID SANDING OR PAINTING IN WINDY WEATHER



Description of Potential Pollutant and Source: Sanding or painting in windy weather will cause dispersal of particulates which can expose them to storm water. These materials can then be transported to storm drains and/or receiving waters.

Description of BMP: If sanding or painting cannot be performed in an enclosed, covered area, avoid performing either operation in windy weather.

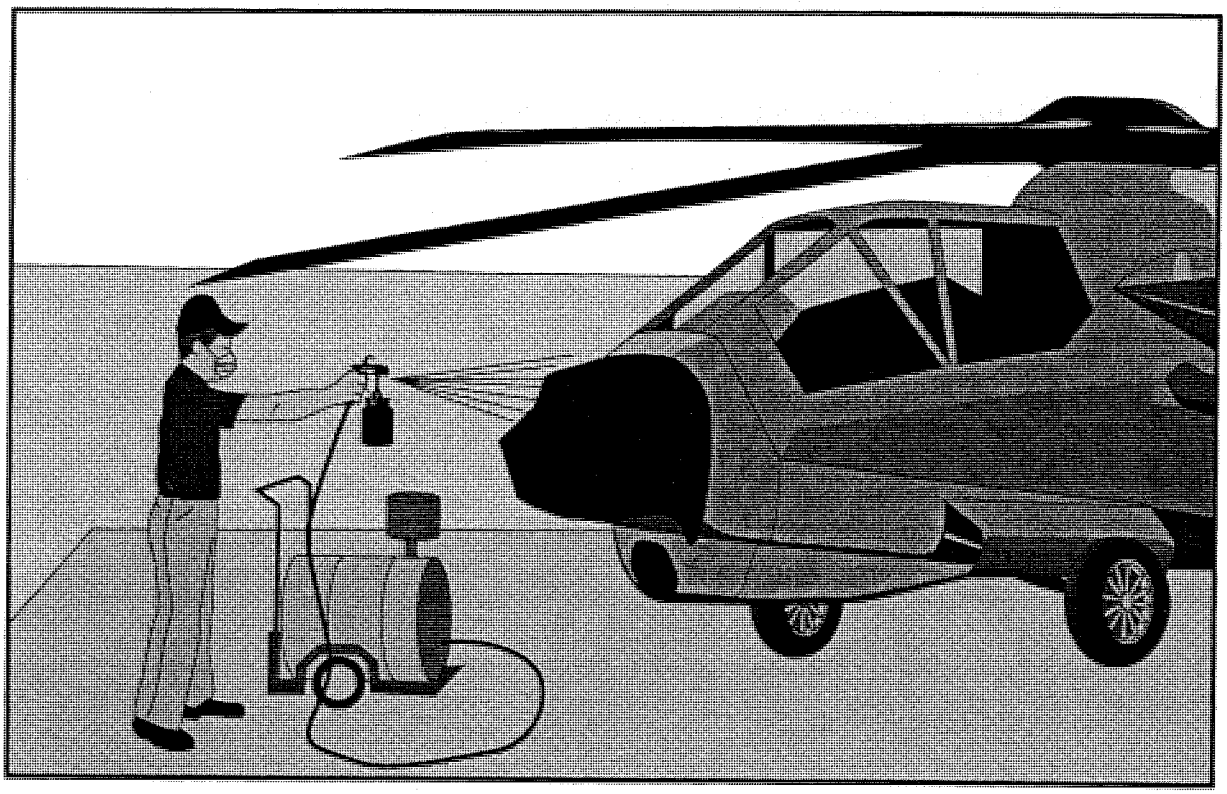
Application Guidance: This practice will be followed at all times.

Training: Personnel will be given instruction as to when it is too windy to perform sanding or painting. This information may be obtained from the equipment manufacturer.

Effectiveness and Cost: Avoiding windy weather is a moderately effective, low-cost BMP.

Limitations: May cause inconvenience.

BMP 082 - USE EFFICIENT PAINTING EQUIPMENT



Description of Potential Pollutant and Source: Traditional painting methods often result in loss of particulate matter to air and ground (paint chips, paint spray) and exposure to storm water. These materials can then be transported to storm drains and/or receiving waters.

Description of BMP: Use efficient painting equipment to reduce the amount of solid pollutants that can reach storm water. Highly efficient painting equipment is now available that reduces overspraying. More efficient equipment includes electrostatic spray guns, air-atomized spray guns, high volume/low pressure spray guns and gravity feed spray guns.

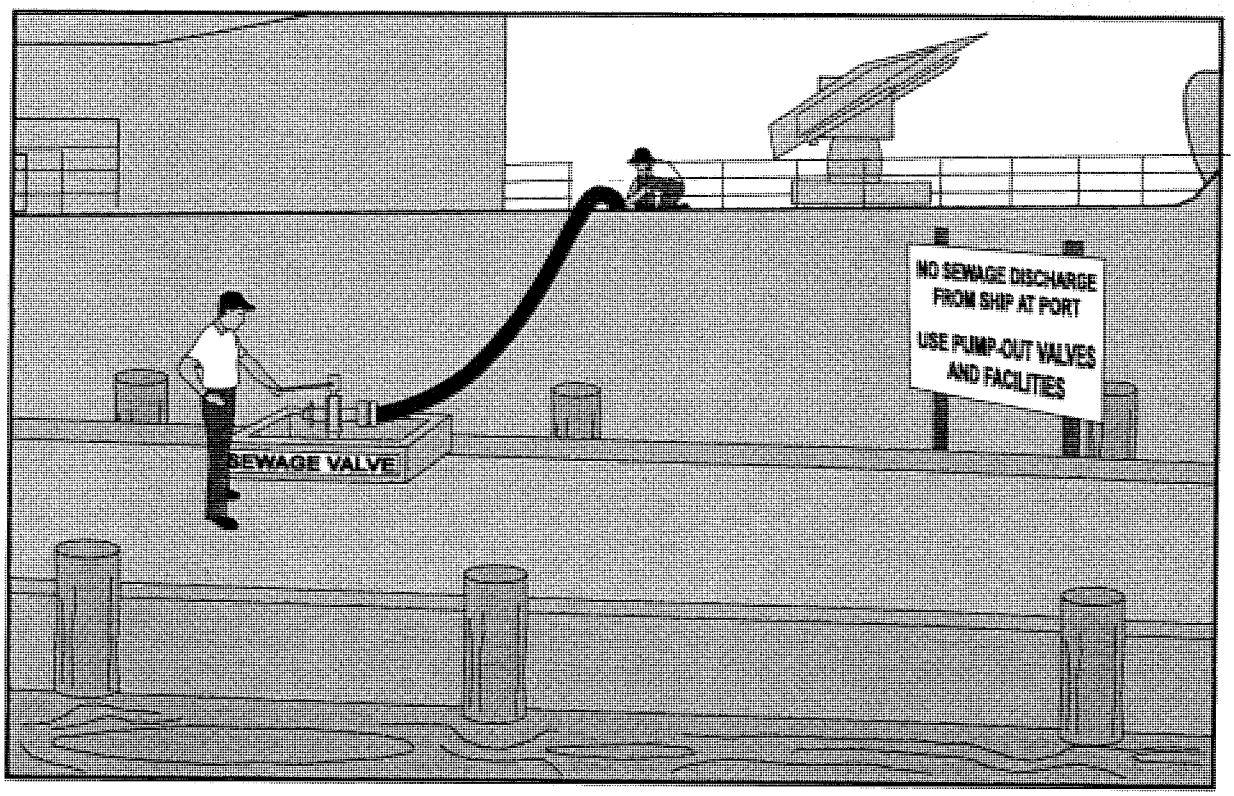
Application Guidance: All spray painting equipment will be replaced with more efficient equipment when economically feasible.

Training: Personnel will be trained on new equipment. A qualification test may be appropriate.

Effectiveness and Cost: New spray equipment is a moderately effective, variable-cost BMP.

Limitations: Cost may be high to retrofit/replace existing equipment.

BMP 083 - DO NOT EMPTY TOILET TANKS DURING TRANSIT OR IN THE PORT



Description of Potential Pollutant and Source: Toilet holding tanks in trains, aircraft, boats and ships are often emptied directly to the environment during transport or at the port, resulting in potential viral and bacterial contamination of storm water.

Description of BMP: Do not empty toilet holding tanks during transit or into storm drains at the port. Sanitary sewage from ships or boats can be disposed using pump-out stations, portable on-site pump-outs, or commercial mobile pump-out facilities.

Application Guidance: This practice will be implemented for all aircraft, rail cars, boats and ships.

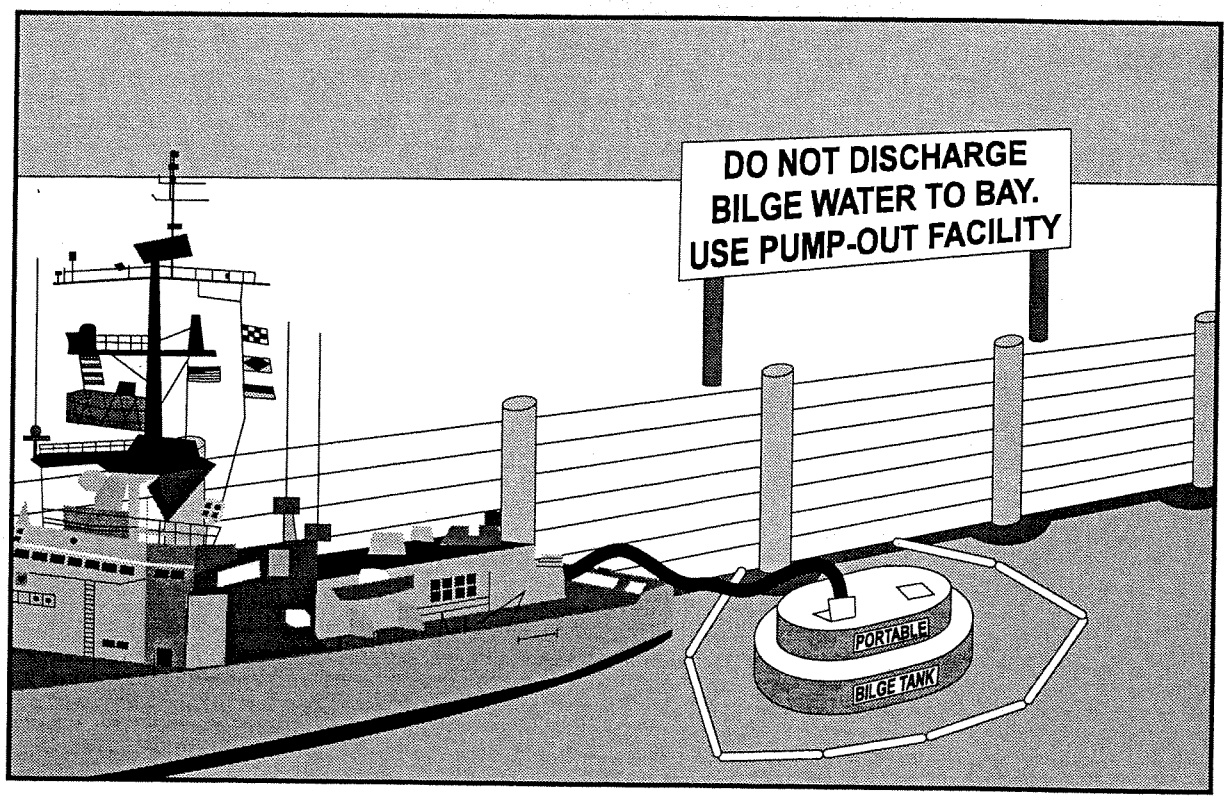
Training: Signs will be posted as reminders.

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: None

BMP 084 - DELETED

BMP 085 - DO NOT DISCHARGE BILGE WATER IN HARBOR



Description of Potential Pollutant and Source: Bilge water (sump water collected in the ship bottom) can contain a variety of pollutants, especially oil and grease. Water from throughout the ship, including the engine room, collects in the bilge.

Description of BMP: Eliminate the discharge of bilge water in harbors to reduce the chances of oil and fuel reaching storm water. This wastewater will be pumped to wastewater treatment facilities whenever this service is available.

Application Guidance: This practice will followed for all watercraft.

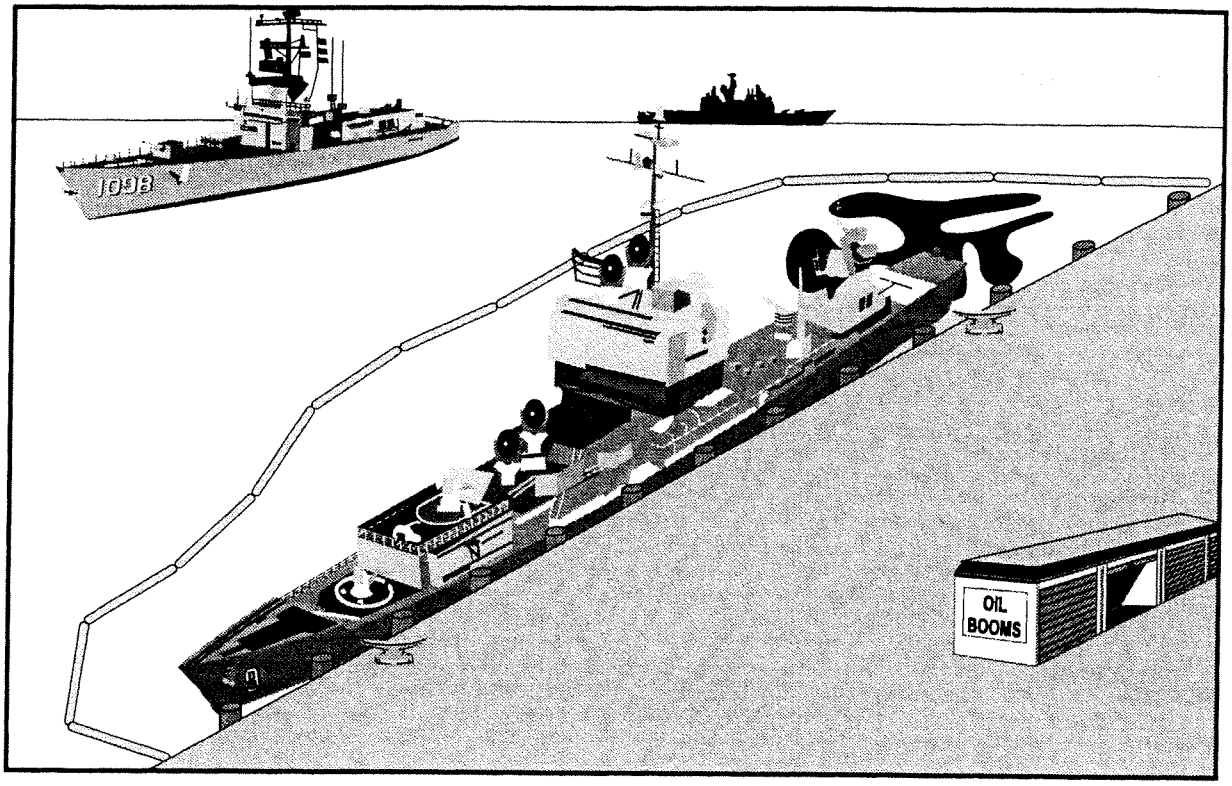
Training: Signs will be posted as reminders.

Effectiveness and Cost: This is a highly effective, variable-cost BMP.

Limitations: Sometimes discharge of bilge water in the harbor may be necessary for proper use of the ship.

BMP 086 - DELETED

BMP 087 - USE OIL CONTAINMENT BOOMS



Description of Potential Pollutant and Source: Maintenance of ships occurs in wet dock; maintenance may include painting, refueling and scrubbing, all of which generate potential pollutants which may become exposed to storm water and transported to receiving waters.

Description of BMP: Use oil containment booms to contain hydrocarbons that may be exposed to storm water during a ship's stay at a shipyard. Booms enable efficient cleanup of hydrocarbons. An oil containment boom is a barrier composed of a chain of floatable logs, which repel water and absorb oil and fuel.

Application Guidance: Oil containment booms will be place around ships under repair, prior to storms, while they are berthed at the shipyard.

Training: Personnel who deploy the booms will be properly trained in the use of oil containment berms.

Effectiveness and Cost: Oil containment booms are a moderately effective, moderate-cost BMP.

Limitations: None

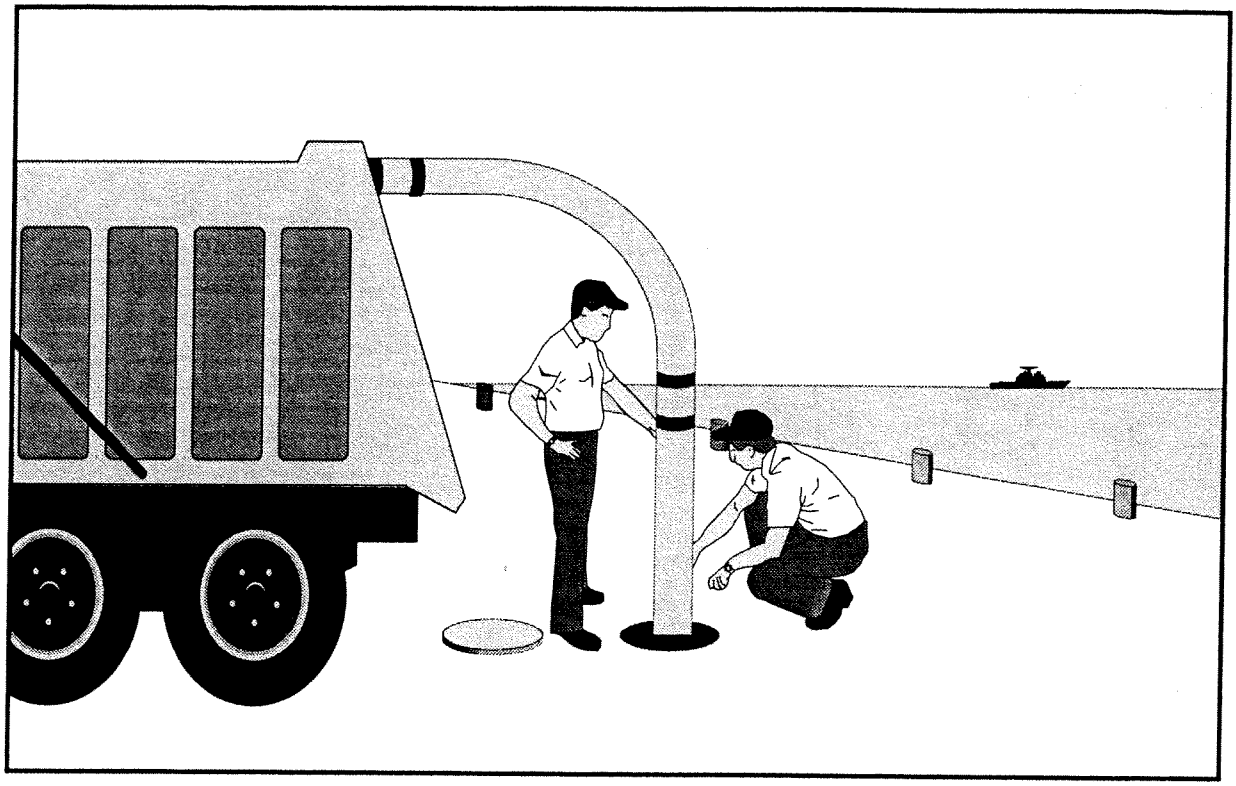
BMP 088 - DELETED

BMP 089 - DELETED

BMP 090 - DELETED

BMP 091 - DELETED

BMP 092 - PROPERLY DISPOSE OF SEDIMENT GENERATED BY CLEANING SANITARY SEWER LINES



Description of Potential Pollutant and Source: The cleaning of sewer lines and manholes generates sediments. These sediments contain both inorganic and organic materials, are odorous, and are contaminated with microorganisms and heavy metals which, if improperly managed, can becomes exposed to storm water. These materials can then be transported to storm drains and/or receiving waters.

Description of BMP: Dispose of sediments generated during the cleaning of sewer lines and manholes properly. This will often require disposal in permitted landfills.

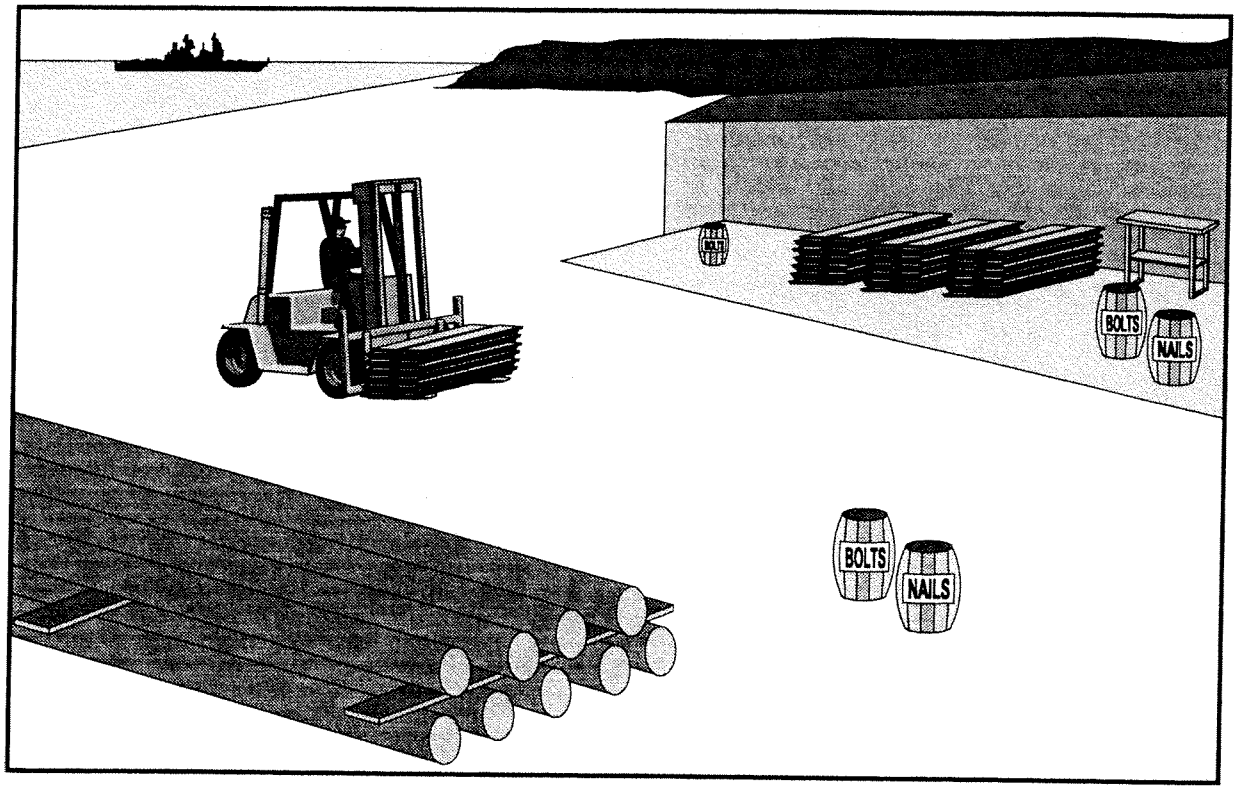
Application Guidance: This BMP will be used whenever cleaning the sewer line.

Training: Personnel will be trained regarding the proper disposal of the sediments.

Effectiveness and Cost: Properly disposing of sediments is a moderately effective, low-cost BMP.

Limitations: None

BMP 093 - ELIMINATE TREATED WOOD PRODUCTS OR USE WOOD TREATED WITH LESS-TOXIC CHEMICALS



Description of Potential Pollutant and Source: Wood products intended for outdoor use are generally coated with toxic chemicals such as creosote or pentachlorophenol, which can leach out of the wood and become exposed to storm water. These materials can than be transported to storm drains and/or receiving waters.

Description of BMP: Substitute, where feasible, alternate materials for wood products that are preserved with creosote or pentachlorophenol to the extent feasible.

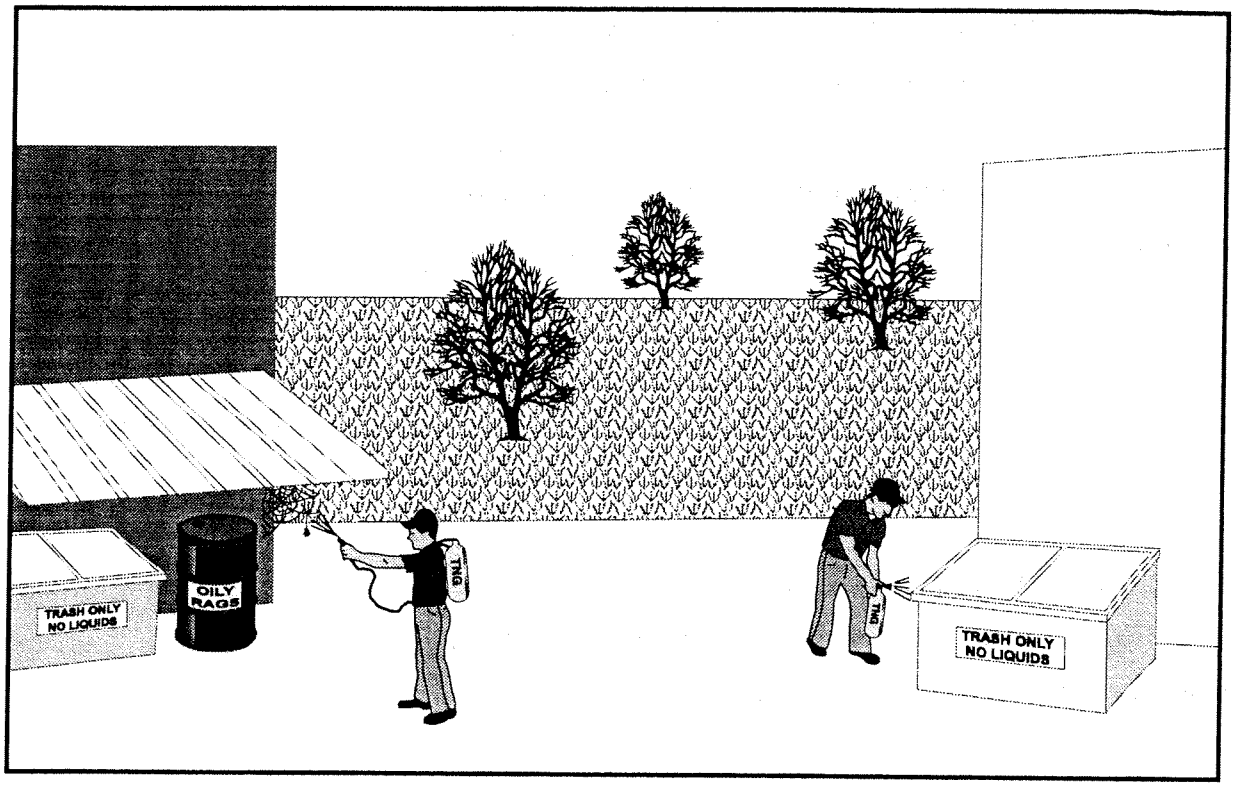
Application Guidance: This practice will be used when installing or replacing piers, railroad ties or utility poles, and other facilities using treated wood products.

Training: N/A

Effectiveness and Cost: This a moderately effective, variable-cost BMP.

Limitations: Cost may be prohibitive and acceptable alternatives may not be available.

BMP 094 - ESTABLISH INTEGRATED PEST CONTROL



Description of Potential Pollutant and Source: Pesticides and herbicides may be spilled, over-applied, and/or incorrectly applied, resulting in exposure of storm water. These materials can then be transported to the storm drain and/or receiving water.

Description of BMP: Establish integrated pest management control. This involves eliminating excessive pesticide use by proper application procedures and/or the use of alternatives. This reduces the amount of pesticides which can potentially enter the storm water. Pesticides include insecticides, herbicides, fungicides and rodenticides.

The use of pesticides for insect and weed control will be minimized by the following:

- Mechanical removal of weeds, eggs, larvae, cocoons and insects
- Habitat changes to minimize pest insect breeding
- Timing of application to the most vulnerable phase of the pest insect breeding

- Concentration of effort on the most affected areas
- Use of natural predators and pathogens specific to pests
- Use of degradable and non-carcinogenic pesticides

Additionally, no pesticides will be applied within three days prior to any predicted rain event. During the wet season, pesticide application will be kept to a minimum.

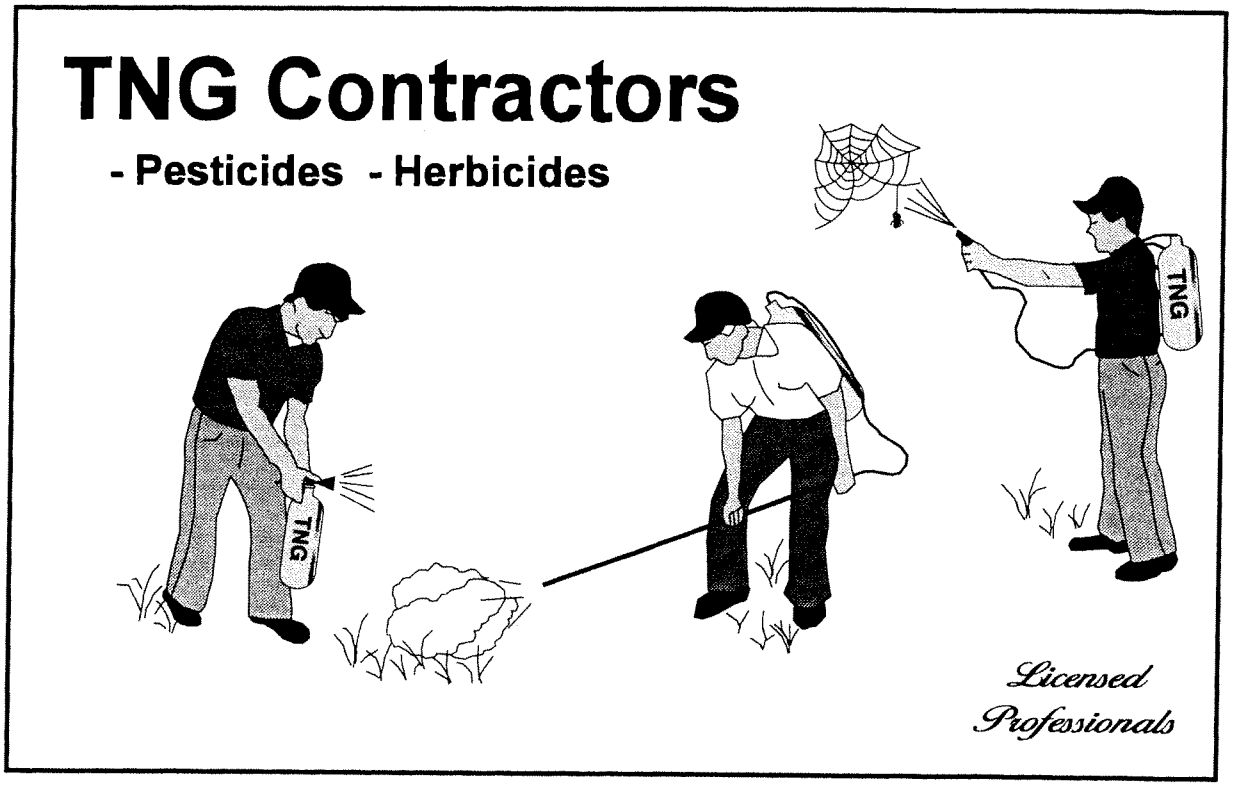
Application Guidance: Injury and tolerance levels will be used to determine if the pest problem is serious enough to justify some kind of treatment. Whenever pest control is necessary, an integrated management plan will be developed.

Training: All persons applying pesticides will be required to understand the pertinent provisions of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and state laws and regulations and be certified, if required.

Effectiveness and Cost: Effectiveness and cost will depend on whether natural or pesticide controls are used. This BMP can be highly effective and low cost when properly developed.

Limitations: None

BMP 095 - CONDUCT PESTICIDE OPERATIONS UNDER THE SUPERVISION OF LICENSED APPLICATOR



Description of Potential Pollutant and Source: Pesticides and herbicides may be spilled, over applied, or incorrectly applied, which would result in their exposure to storm water. These materials can then be transported to the storm drain and/or receiving waters.

Description of BMP: Use a licensed pesticide handler to conduct or supervise all activities related to pesticide handling.

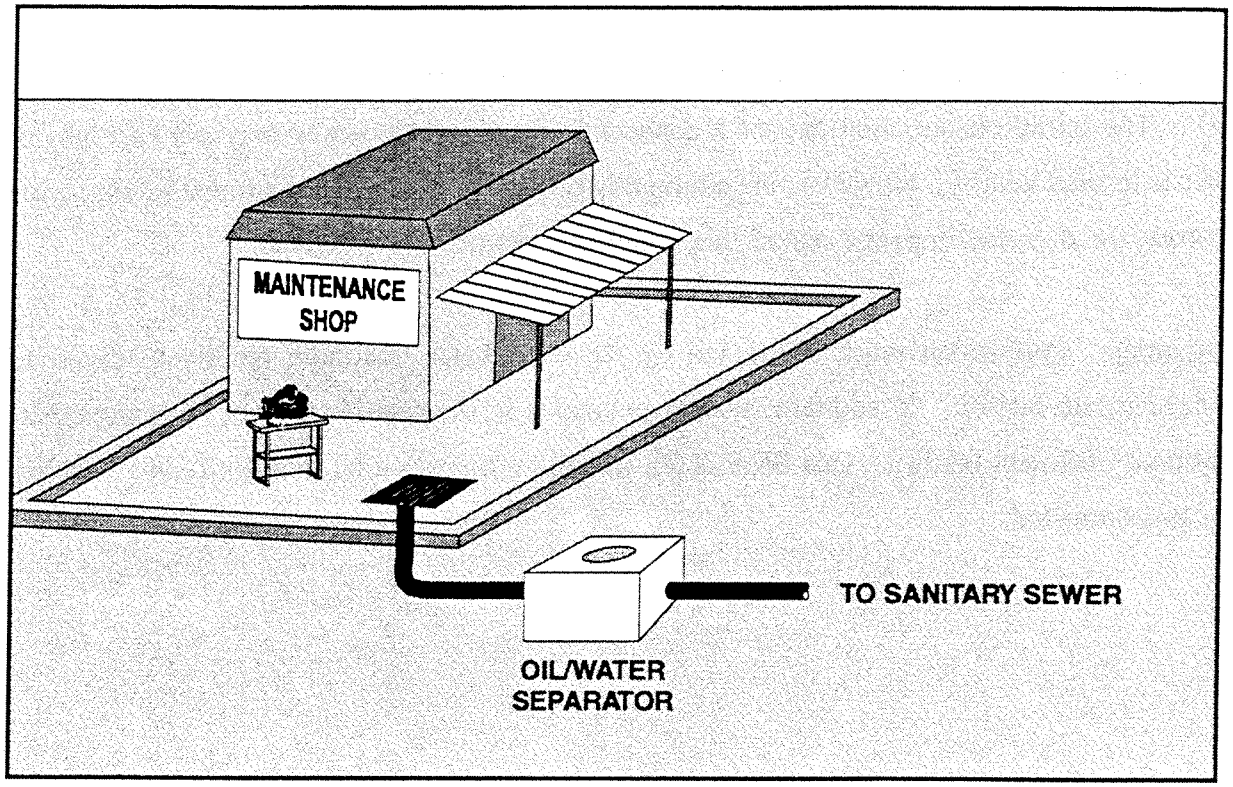
Application Guidance: This BMP will be applied whenever pesticides are used or stored.

Training: Personnel will be trained and certified in the application, mixing, and storage of pesticides.

Effectiveness and Cost: This is a moderately effective, moderate-cost BMP.

Limitations: None

BMP 096 - DIVERT DRAINAGE TO TREATMENT FACILITY/SANITARY SEWER



Description of Potential Pollutant and Source: Diverting drainage to treatment facilities prevents significant materials from entering the storm drain system.

Description of BMP: Use pipes, ditches, swales and other types of conveyance systems to divert drainage from industrial areas which may be exposed to significant materials to a wastewater treatment facility or sanitary sewer.

Application Guidance: If source controls cannot be used to keep pollutants from entering the storm water runoff, diverting drainage to treatment facilities/sanitary sewers is the most effective method or reducing pollutants to receiving waters.

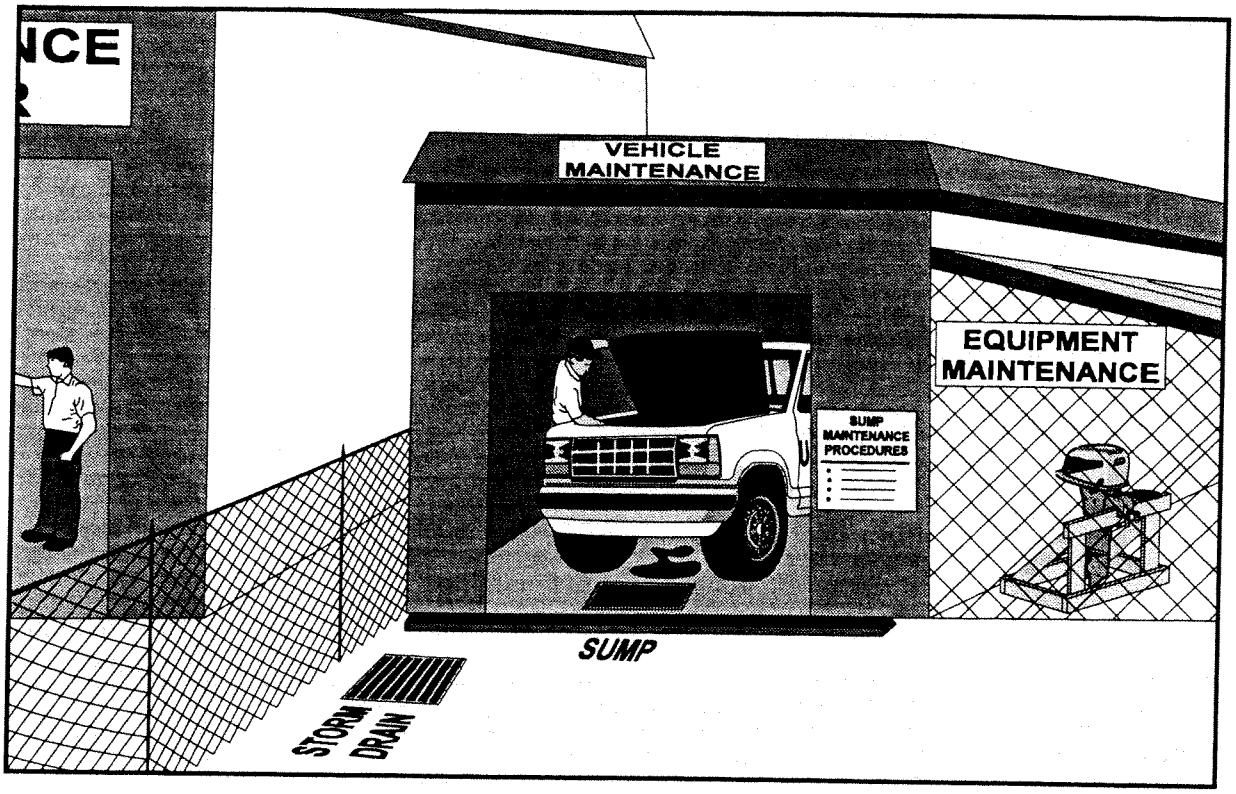
Discharge of large quantities of storm water is not practical or allowed by most wastewater treatment facilities. This BMP will only be used for small quantities of highly polluted water. This may include equipment or vehicle wash water, boiler blowdown, or runoff from

maintenance areas (with no off-site drainage onto area).

Effectiveness and Cost: Diverting drainage from industrial areas is a highly effective, high-cost BMP. The initial construction cost of a connection to a sanitary sewer may not be high, if a sewer is located nearby. However, the continuing operating cost of the treatment facility which will treat the diverted drainage makes this a high-cost BMP.

Limitations: Permission must be granted by the wastewater treatment facility to divert the drainage to the facility. In addition, certain pollutants in the runoff may not be removed at a traditional treatment facility. This BMP is not feasible if there is a large quantity of runoff that must be controlled.

BMP 097 - DIVERT DRAINAGE TO A LOW-FLOW SUMP



Description of Potential Pollutants and Source: Often spills flow directly into the storm drain system. Once the spilled material combines with the runoff in the storm drain, the pollutant concentrations can only be reduced with a structural control such an oil/water separator, wet pond or filtration basin.

Description of BMP: Divert drainage to a low-flow sump to collect small spills and prevent the spilled material from discharging into the rest of the storm drain system.

Application Guidance: Low-flow sumps will be used in areas where discharge into the storm drain system and spills are likely to occur. This may occur at refueling locations, material loading/unloading areas, and maintenance areas.

Operation and Maintenance: Low-flow sumps will be cleaned at least four times a year and after any major spill. Materials trapped in the sump will be properly disposed.

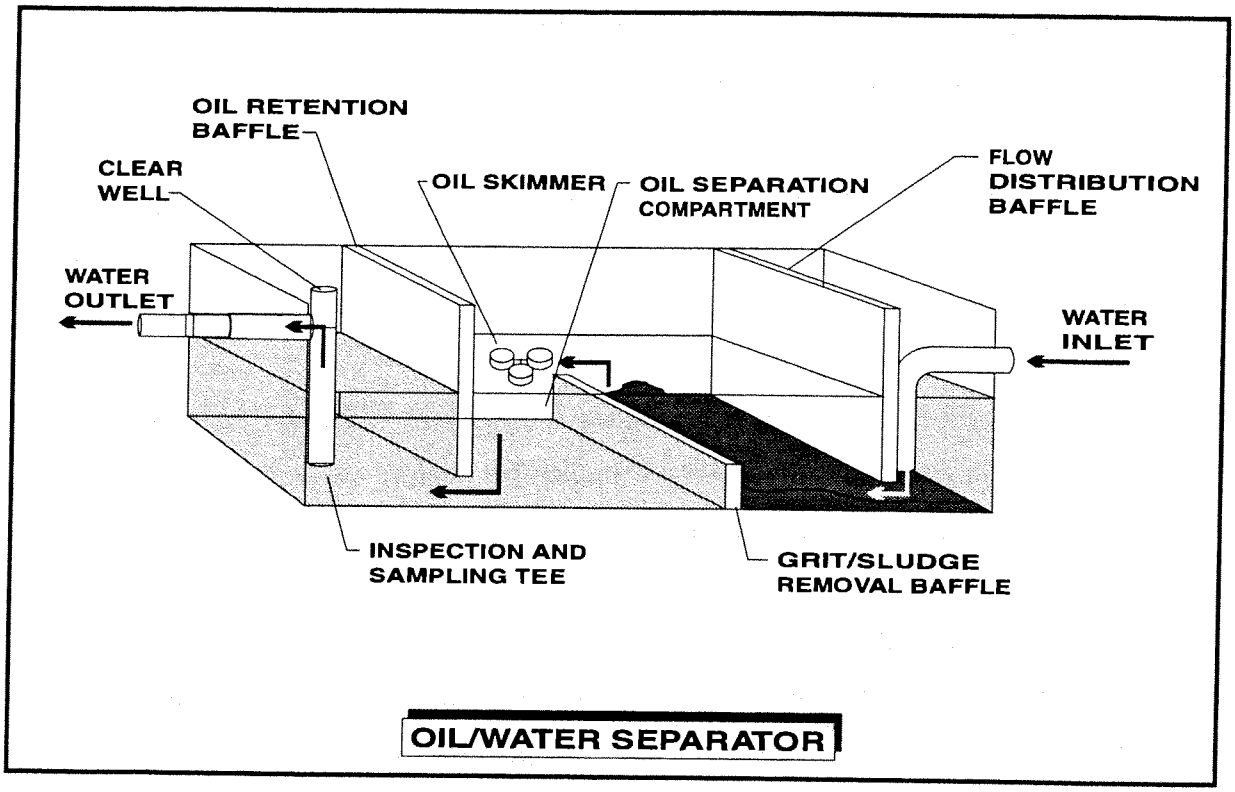
The frequency of implementation of this BMP has been suggested as general guidance. However, a facility operator may wish to establish a frequency more suitable to the facility. This will require a level of judgement on behalf of the SWPCP implementors. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria should be considered and rated either High, Medium or Low. If many of the criteria are assigned a High rating, consider increasing the frequency. Similarly, if many criteria are assigned a Low rating consider decreasing the frequency. However, it is essential to remember that the goal of this BMP is minimize exposure of pollutants to storm water.

CRITERIA	RATING H=High M=Medium L=Low
Probability of exposure/spills of significant materials to storm water	
Quantity of significant materials potentially exposed	
Frequency of use of significant materials potentially exposed	
Frequency of use of fueling pumps, loading/unloading areas, or maintenance areas	
Old age of poor condition of sump and pump	
Evidence of exposure (e.g., stains on pavement, etching of concrete, evidence of significant materials in drainage system)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Effectiveness and Cost: This BMP is highly effective for small leaks and spills. It is not effective for large spills or leaks. This is a moderate-cost BMP.

Limitations: The sediment removed during maintenance must be tested and may be a hazardous waste and must be disposed of properly.

BMP 098 - CONSTRUCT OIL/WATER SEPARATOR



Description of Potential Pollutants and Source: Oil/water separators are designed to remove petroleum compounds and grease from storm water. Separators will also remove floatable debris and settleable solids.

Description of BMP: Construct oil/water separators. Oil/water separators are underground vaults where storm water is piped in and out of the separator. Oil/water separators come in many configurations. A common configuration is the tree-chamber oil/water separator. The first chamber is the sedimentation chamber that allows for sedimentation of coarse materials and screening of debris. The second chamber provides separation of oil, grease and gasoline. The third chamber is provided to prevent any possibility of a surcharge pressure from occurring and as a safety relief for the structure if a blockage occurs.

Application Guidance: Oil/water separators are applicable to situations where the concentrations of oil-and-grease-related compounds will be usually high and source control cannot provide

effective control. This generally occurs at equipment maintenance and washing facilities, gas stations and loading areas. Separators may also be used in areas heavily used by mobile equipment such as loading wharfs at marine ports.

Operation and Maintenance: The degree and frequency of maintenance significantly affects the performance of the oil/water separator. Cleaning the oil/water separator will prevent the accumulated debris and oil to be discharged from the structure during intense storms.

Oil/water separators will be checked monthly during the wet season and will be cleaned at least four times a year. They will always be cleaned in October, before the start of the wet season. The accumulated oil will be properly disposed.

The frequency for implementing this BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, The frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

CRITERIA	RATING H=High M=Medium L=Low
Probability of exposure of significant materials to storm water in area draining to oil/water separator	
Quantity of significant materials potentially exposed in area draining to oil/water separator	
Frequency of use of significant materials potentially exposed in area draining to oil/water separator	
Evidence of exposure (e.g., stains on pavement, etching of concrete) in area draining to oil/water separator	
Proximity of source are to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant material (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

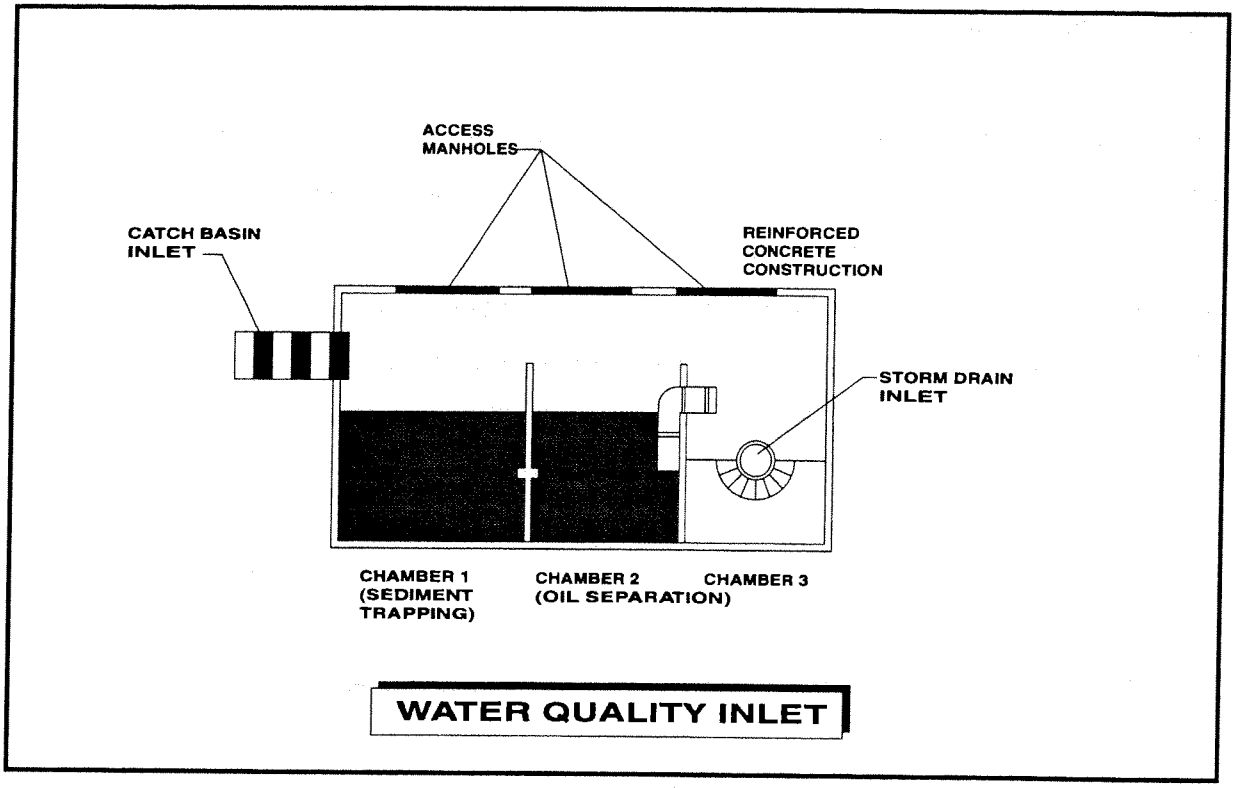
Effectiveness and Cost: This is a moderately effective, high-cost BMP.

Limitations: Oil/water separators are less effective when storm water runoff has high sediment concentrations or detergent levels which disperse oil.

Oil/water separators are only effective for highly pervious drainage areas. Oil/water separators cannot effectively treat large volumes of runoff. The maximum drainage area to oil/water separators is typically one acre.

The sediment removed during maintenance will be tested. If it is a hazardous waste, it will be disposed of accordingly.

BMP 099 - CONSTRUCT WATER QUALITY INLET-CATCH BASIN



Description of Potential Pollutant and Source: Water quality inlet-catch basins provide some removal of settleable solids.

Description of BMP: Construct water quality inlet-catch basins. These are storm drain inlet structures equipped with a small sedimentation basin or grit chamber with a capacity usually ranging from 0.5 to 1.5 cubic yards.

Application Guidance: Water quality inlet-catch basins will be used to remove large particles from storm water in highly impervious areas that have limited space for other storm water management practices. However, when space and costs allow, an oil/water separator will be used instead.

Operation and Maintenance: Accumulated sediment at the bottom of a water quality inlet-catch basin will be removed, or else it can be re-suspended during a storm and actually increase the

pollutant load from an individual storm. Water quality inlet-catch basins will be cleaned at least four times a year. One of the cleanings will be just prior to the rainy season.

The frequency for implementing of the BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign frequencies other that what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is minimize exposure of pollutants to storm water.

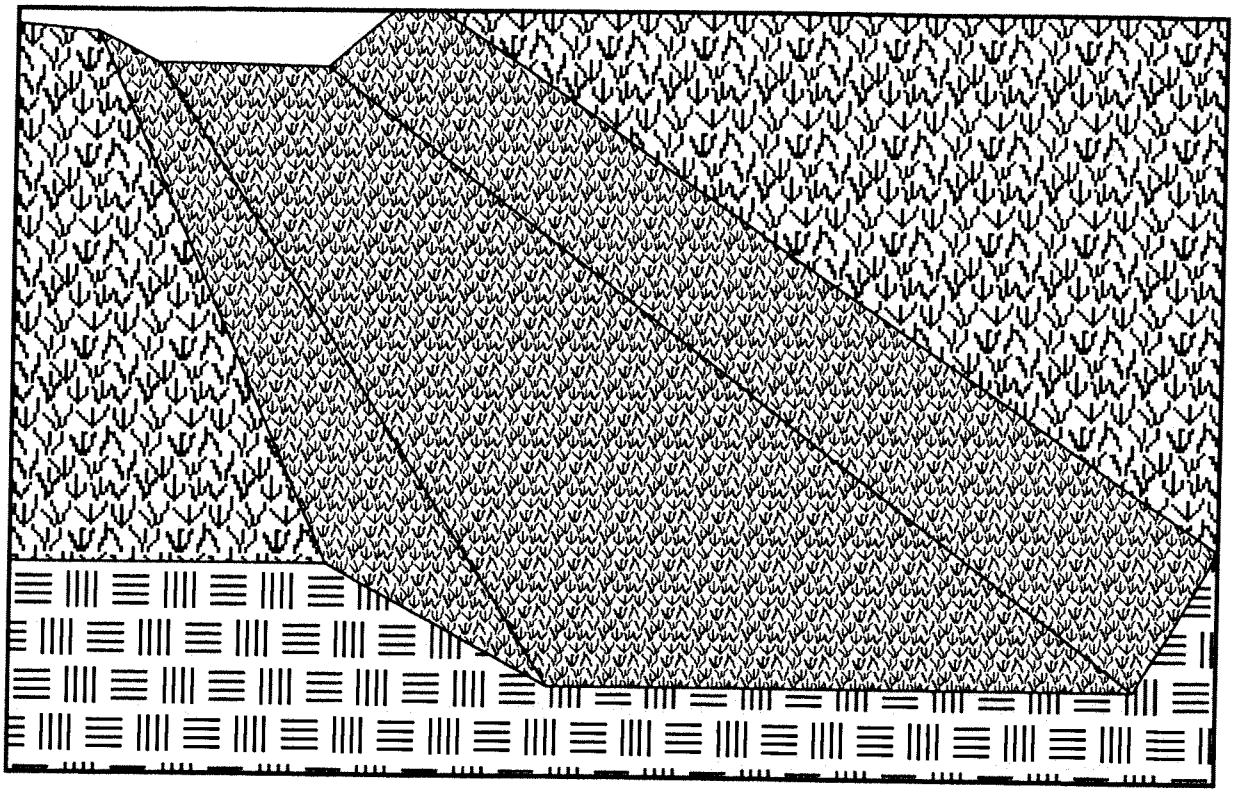
CRITERIA	RATING H=High M=Medium L=Low
Probability of exposure of significant materials to storm water in area draining to water quality inlet	
Quantity of significant materials potentially exposed in area draining to water quality inlet	
Frequency of use of significant materials potentially exposed in area draining to water quality inlet	
Evidence of exposure (e.g., stains on pavement, etching of concrete) in area draining to water quality inlet	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Effectiveness and Cost: Water quality inlet-catch basins are somewhat effective in trapping large particles and debris but ineffective in the removal of other pollutants. The average cost of water quality inlet-catch basins are similar to those for standard pre-cast inlets.

Limitations: Water quality inlet-catch basins must be frequently cleaned out in order to provide any pollutant removal. Water quality inlet-catch basins provide little pollutant removal.

The sediment removed during maintenance will be tested. If it is a hazardous waste, it will be properly disposed.

BMP 100 - USE GRASSED SWALES



Description of Potential Pollutant and Source: While concrete storm drains are highly efficient in transporting storm water, they also transport pollutants. However, when grassed swales are used to transport storm water the vegetation helps remove pollutants (by trapping particulates), slows flow velocities, and enhances infiltration,

Description of BMP: Use grassed swales. These are vegetated channels which have a small gradient. To effectively remove pollutants, the swales will have relatively small slope, adequate length, and be planted with erosion-resistant vegetation.

Application Guidance: Swales will replace curb and butter and storm sewer systems where the topography and volume of flow are appropriate and where the vegetation can be maintained. Swales are not feasible on steep slopes or very flat areas.

Operation and Maintenance: Maintenance requirements are basically the same as normal lawn activities such as mowing, watering, spot reseeding, and weed control. However, maintenance of swales can cause water quality problems by mowing too close to the ground or by excessive application of fertilizers.

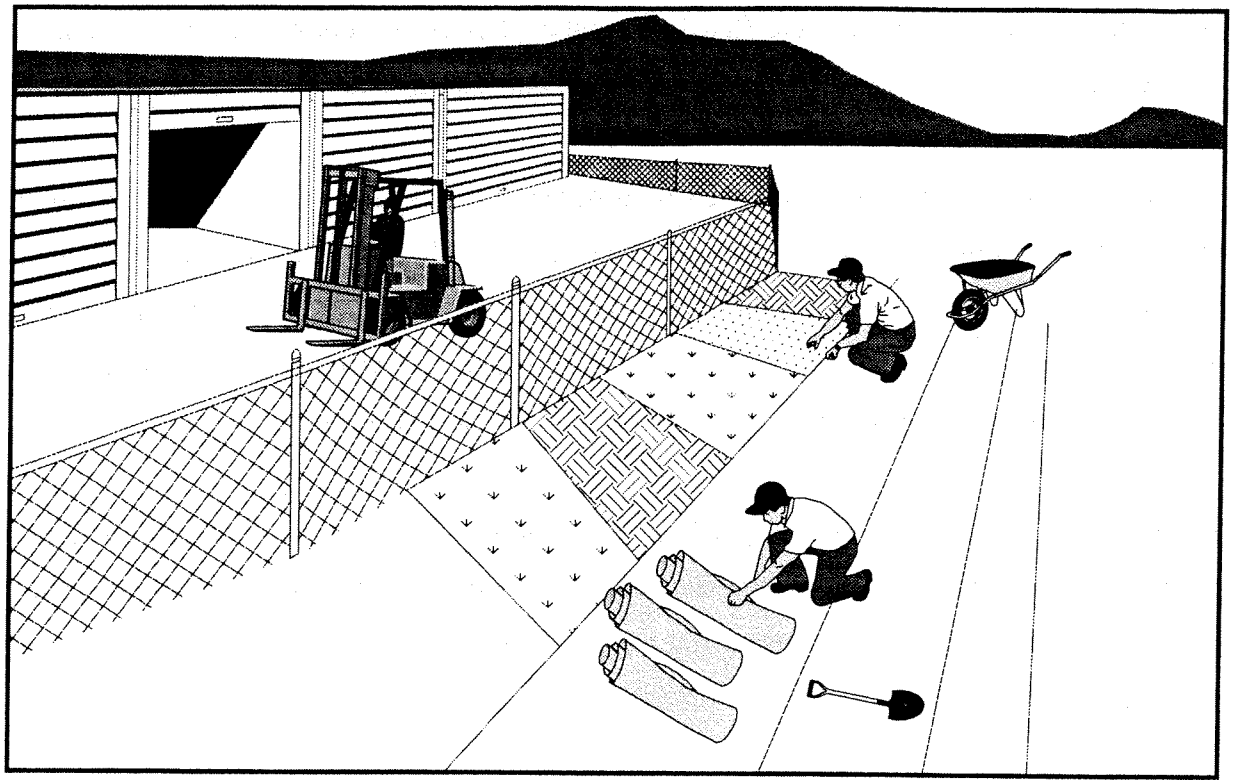
Effectiveness and Cost: Because swales do not have high pollutant removal rates, they are typically used as part of a storm water management system. Properly designed and functioning grassed swales provide some pollutant removal; however, the removal rates are low. In general, swales are not effective in removing soluble pollutants.

Grassed swales are moderately expensive.

Limitations: This BMP should not be used by itself because pollutant removal rates are low. Grassed swales typically cannot be used on highly impervious sites. Grassed swales are not effective on steep slopes or for short distances.

This BMP may be limited to areas with a constant source of water, depending on the type of vegetation planted.

BMP 101 - PROVIDE VEGETATIVE FILTER STRIPS



Description of Potential Pollutant and Source: Vegetative filter strips are typically located adjacent to a waterway, pollution source area, or property line.

Description of BMP: Provide vegetative filter strips. These are strips of vegetation designed to remove particulates from overland sheet flow. They may be grassed (seeded or sodded), or meadow, or other woodier vegetation. Runoff must be evenly distributed across the filter strip. If the water concentrates and forms a channel, the filter strip will not perform properly. Level spreading devices are often used to distribute the runoff evenly across the strip. A vegetative filter strip is typically twenty-five to three hundred feet long in the direction of flow.

Application Guidance: Vegetative filter strips will be used in areas with low to moderate pollutant concentrations in the runoff. Vegetative filter strips will not be used if the runoff is concentrated, such as in a swale or pipe.

Operation and Maintenance: Maintenance requirements for vegetative filter strips are low. the strips will be inspected frequently the first few months after construction and then annually to make sure a dense, vigorous vegetation is established and the flow does not concentrate.

If natural vegetative succession is allowed to proceed, little other maintenance is required. Natural succession typically enhances pollutant removal and includes the transformation of grass to meadow to second growth forest. Short strips are typically maintained as lawns and must be mowed two to three times a year to suppress weeds and to interrupt natural succession. Accumulated sediment must periodically be removed near the top the strip.

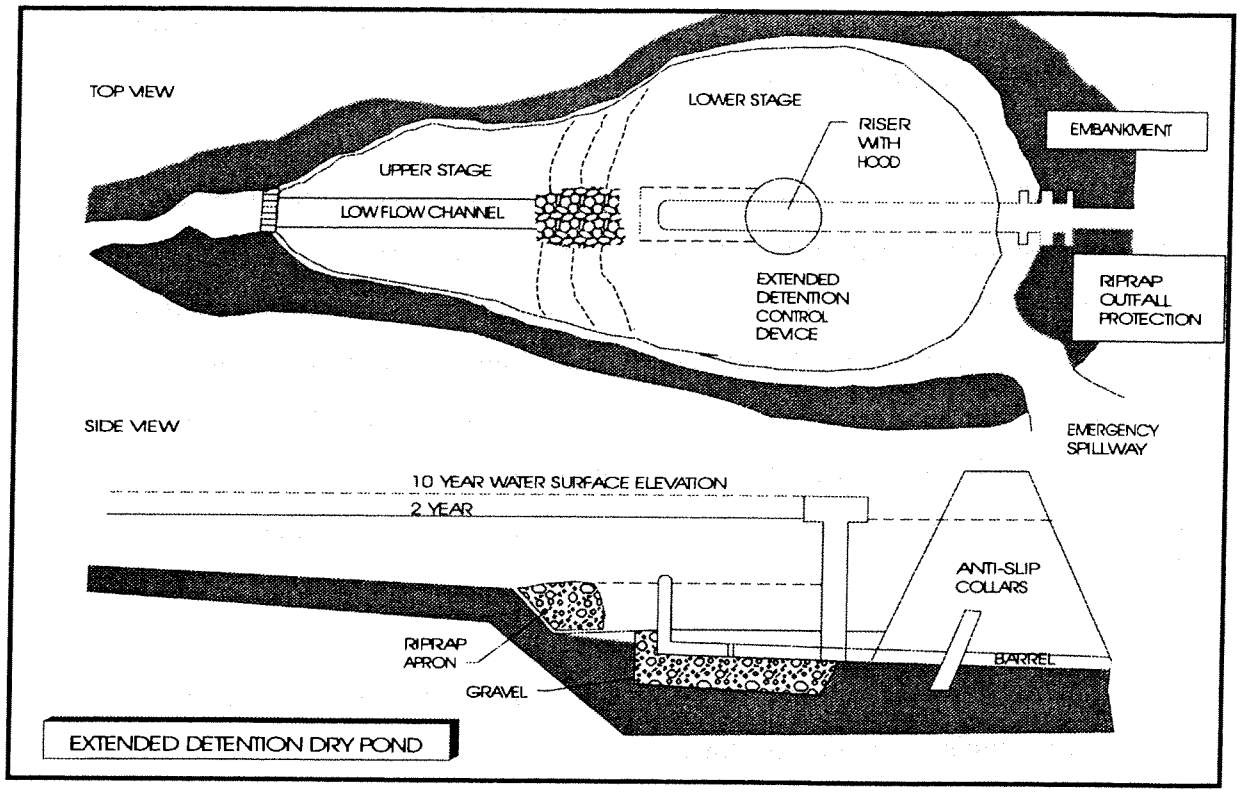
Effectiveness and Cost: Properly designed and functioning vegetative filter strips effectively remove particulates such as sediment, organic matter and may trace metals. Removal of soluble pollutants is not very effective. Forested filter strips appear to be more effective than grassed strips, but a longer length is required for optimal removal rates.

The cost of vegetative filter strips is dependent on the type of vegetation . If the natural vegetation is maintained, the cost is moderate.

Limitations: Vegetative filter strips should not be used if the storm water runoff concentrates. They may not be feasible in areas with limited space.

This BMP may be limited to areas with a constant source of water, depending on the type of vegetation planted.

BMP 102 - CONSTRUCT EXTENDED-DETENTION DRY PONDS



Description of Potential Pollutant and Source: Extended-detention dry ponds may be appropriate for large sites (over approximately five acres) where sources of pollution are dispersed and cannot be adequately controlled by source control BMPs.

Description of BMP: Construct extended-detention dry ponds. These are basins typically composed of stages: an upper stage which remains dry except for larger storms and a lower stage which is designed for typical storms. The pond's outlet structure is typically sized for water to be detained at least twelve hours, but fully drained within seventy-two hours.

Application Guidance: There must be an undeveloped area available to construct an extended-detention dry pond. At the proposed pond location, there will not be shallow (less than approximately two feet) groundwater or rock. If the soils are permeable, an infiltration basin will be constructed instead.

Extended-detention dry ponds are a practical means of retrofitting dry ponds to obtain water quality benefits. Until recently, dry ponds were often built to provide flood control, but they did not provide water quality benefits.

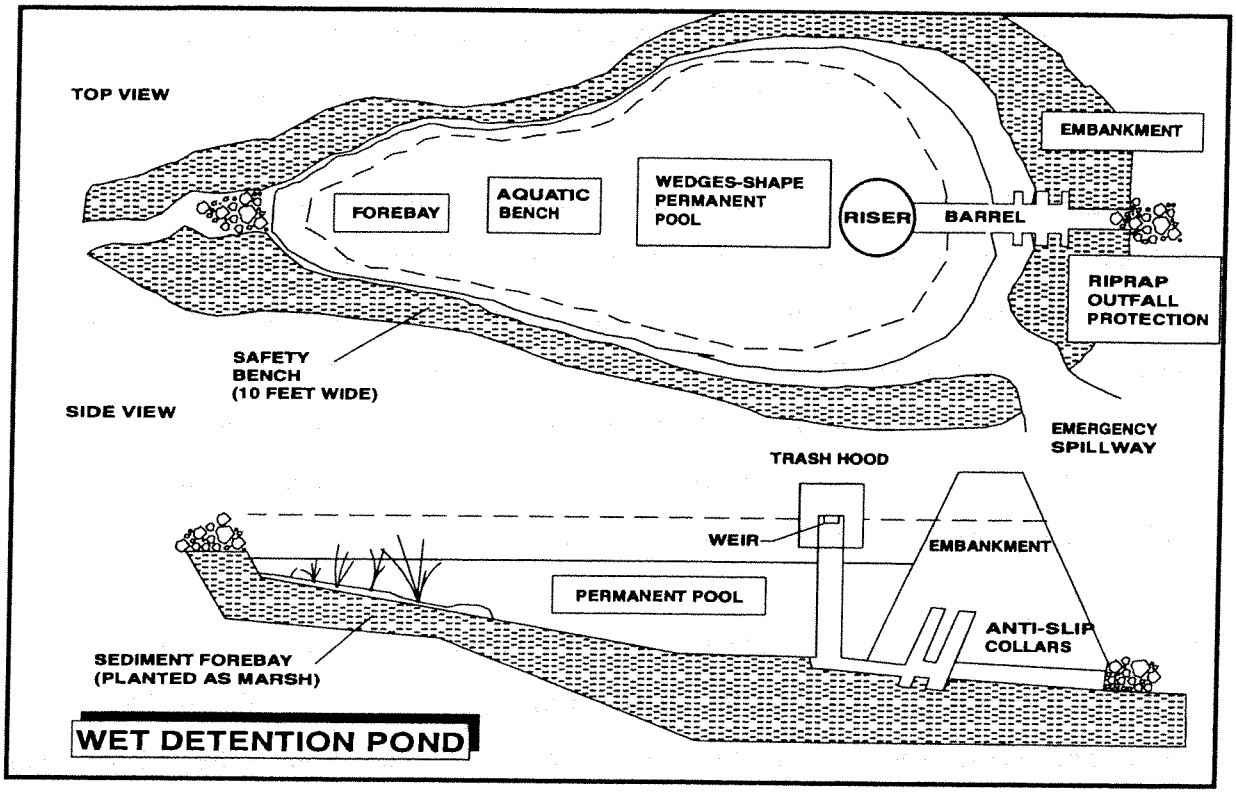
Operation and Maintenance: Routine maintenance includes mowing, debris/litter removal, inlet and outlet maintenance and inspection. In addition, nuisance control may be necessary for odors and mosquito problems that are caused by occasional standing water and soggy conditions within the lower stage of an extended detention pond. Non-routine maintenance includes sediment removal. Sediment removal for extended-detention dry ponds is typically recommended every five to ten years with more frequent spot removals around the outlet control device. The sediment removed during maintenance must be tested; if it is a hazardous waste, it must be properly disposed.

Effectiveness and Cost: The pollutant removal rates for suspended pollutants is moderate. The removal rates for soluble pollutants are low.

This is a relatively high-cost BMP. The cost of these ponds is directly related to the area draining to it. In addition, if the bedrock layer is close to the surface, high excavation costs may make extended-detention dry ponds impractical.

Limitations: Extended-detention dry ponds can breed mosquitoes and create undesirable odors if not adequately maintained. Space constraints often limit the use of extended dry ponds.

BMP 103 - CONSTRUCT WET DETENTION PONDS



Description of Potential Pollutant and Source: Wet detention ponds may be appropriate for large sites (over approximately ten acres) where sources of pollution are dispersed and cannot be adequately controlled by source control BMPs.

Description of BMP: Construct wet detention ponds. These are basins designed to maintain a permanent pool of water and temporarily store storm water runoff until it is released from the structure at flow rates less than predevelopment rates. Wet ponds may include extended detention which stores storm water for an extended period of time.

Application Guidance: There must be an undeveloped area available to construct a wet detention pond. Wet ponds typically require more than twice as much space as extended-detention dry ponds. Wet ponds will only be used in areas with a constant base flow of water or where an alternative source of water is available such as an irrigation water line.

Pond liners are required if the native soils are permeable or if there is fractured bedrock. If the bedrock layer is close to the surface, high excavation costs may make the wet pond impractical. Wet ponds are not typically used in heavily urbanized areas because of space constraints.

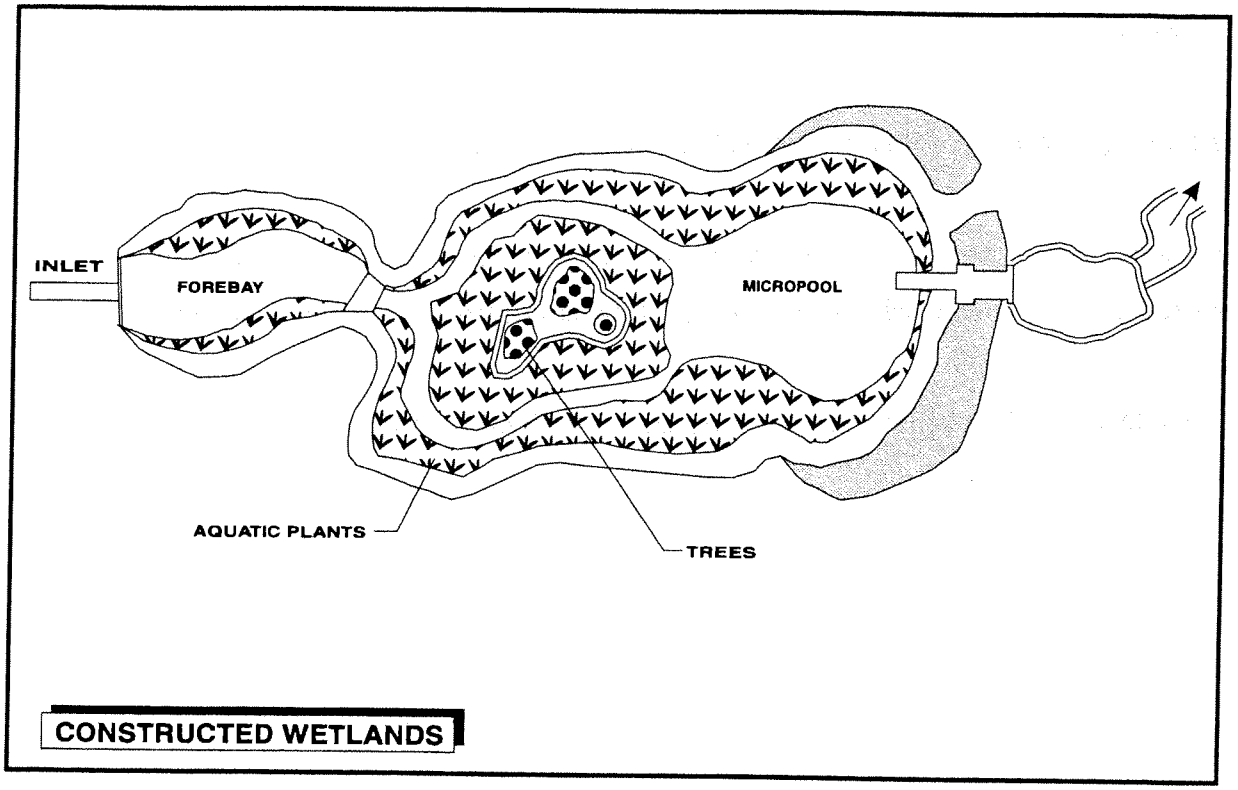
Operation and Maintenance: Wet ponds require routine maintenance, similar to extended-detention dry ponds. These ponds can be expected to lose approximately one percent of their runoff storage capacity per year due to sediment accumulation. The sediments accumulate out of sight, under the permanent pool. Wet ponds require less frequent sediment removal compared to extended-detention dry ponds. The recommended sediment clean-out cycle is about every ten to twenty years. The sediment removed during maintenance must be tested; if it is a hazardous waste, it must be properly disposed.

Effectiveness and Cost: Wet pond pollutant removal efficiency depends on its shape and size. The larger the wet pond is, the greater the removal efficiency. This is a high-cost BMP. The cost of wet ponds is directly related to the area draining to it. In addition, if the bedrock layer is close to the surface, the cost may increase exponentially.

Limitations: If poorly located, a wet pond can cause sediment and groundwater contamination, have poor water quality, and support degraded habitat. Wet ponds require large areas of land which limits their use in densely urbanized areas with expensive land. A base flow or supplemental water source is needed to maintain a wet pond's water level.

If wetlands are established as a result of the wet pond construction, the maintenance of the pond may be restricted by wetland regulations.

BMP 104 - PROVIDE CONSTRUCTED WETLANDS



Description of Potential Pollutant and Source: Constructed wetlands may be appropriate for large sites (over approximately five acres) where sources of pollution are dispersed and cannot be adequately controlled by source control BMPs.

Description of BMP: Provide constructed wetlands. These are newly created shallow marsh wetlands that are specifically designed to provide urban runoff control.

Application Guidance: Constructed wetlands are typically used for drainage areas greater that five areas. there must be a large undeveloped area available to construct wetlands. Wetlands typically require one percent of the total drainage area and require more space than any other BMP.

Operation and Maintenance: Constructed wetlands require maintenance similar to that required by wet ponds (see BMP 103). In addition, wetland vegetation should be harvested annually to

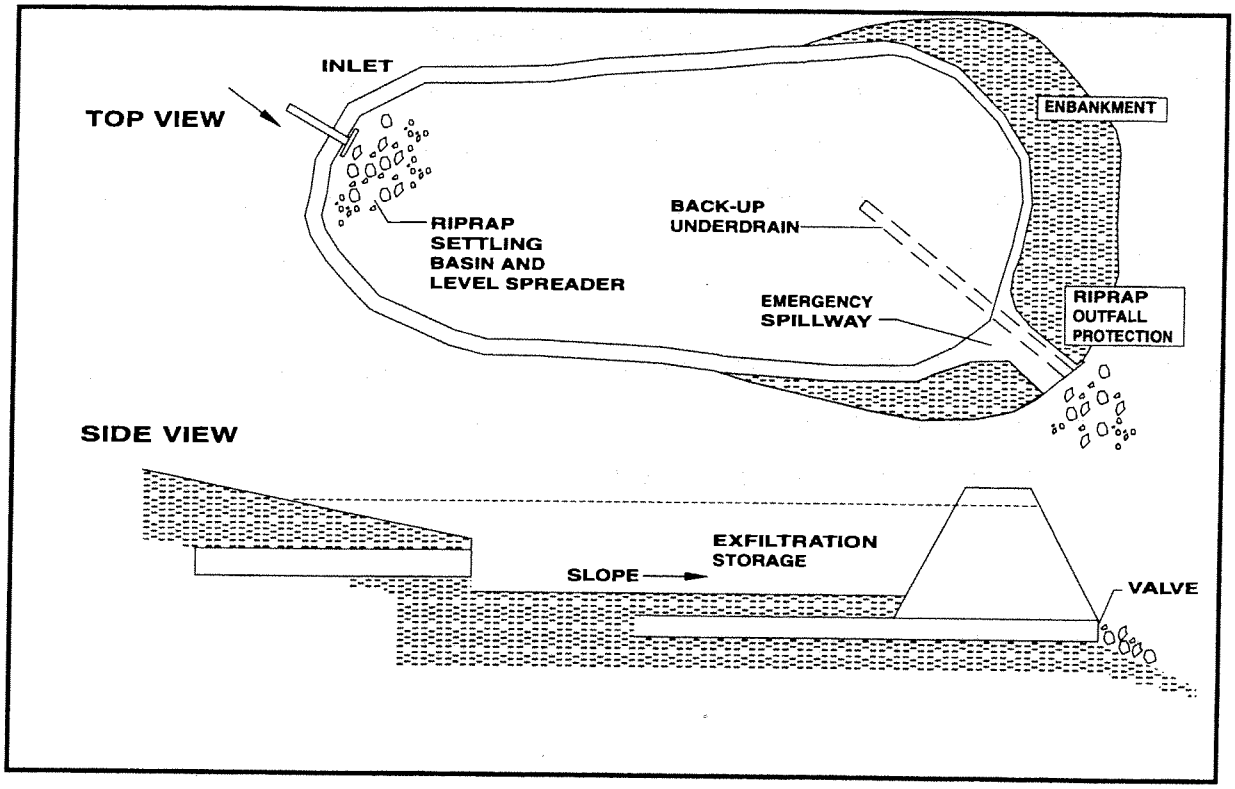
provide nutrient removal and prevent flushing of dead vegetation from the wetland during the die-down season.

Effectiveness and Cost: This is an effective, high-cost BMP.

Limitations: Storm water wetlands require considerable space which limits their use in densely urbanized areas with expensive land. A base flow is needed to maintain water levels.

The maintenance of wetlands may be restricted by wetland regulations.

BMP 105 - CONSTRUCT INFILTRATION BASINS



Description of Potential Pollutant and Source: Infiltration basins may be appropriate for large sites (over approximately five acres) where sources of pollution are dispersed and cannot be adequately controlled by source control BMPs.

Description of BMP: Construct infiltration basins. Infiltration basins temporarily store runoff while it percolates into the soil through the basins' bottom and sides. Infiltration basins are designed to drain within seventy-two hours and, therefore, are generally dry. Infiltration basins must be designed to trap coarse sediment before it enters the basin proper and clogs the surface soil pores on the basin floor.

Application Guidance: In-line infiltration basins are typically used for drainage areas of five to fifty acres. There will be at least four feet of permeable soil between the bottom of the basin and bedrock or high water table. There must be a low potential for long-term erosion in the watershed. There must be an open space available to construct an infiltration basin.

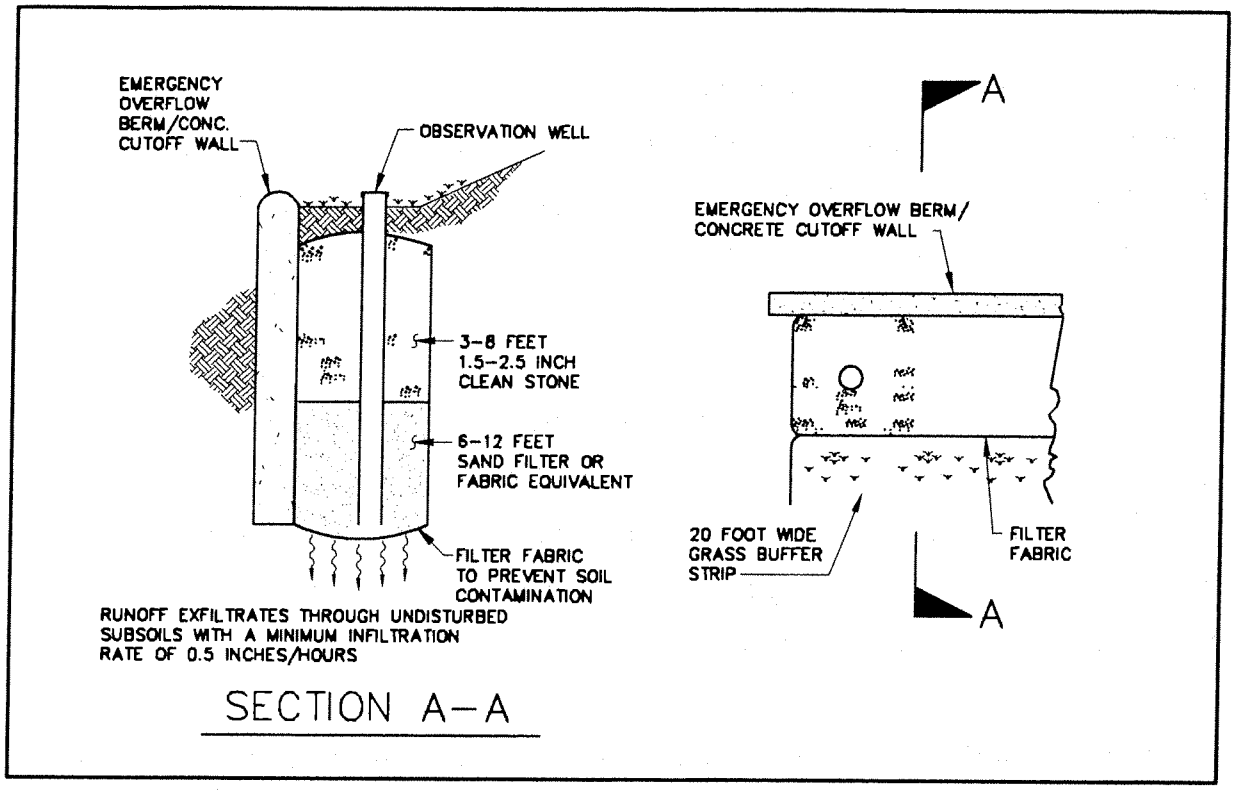
Operation and Maintenance: Routine maintenance requirements include inspecting the basin after every major storm for the first few months after construction and semi-annually thereafter (prior to and following the wet season), mowing frequently enough to prevent woody growth, removing litter and debris, and re-vegetating eroded areas. Accumulated sediment should be removed periodically. The sediment removed during maintenance must be tested; if it is a hazardous waste, it must be properly disposed.

Effectiveness and Cost: Infiltration basins effectively remove soluble and fine-particle pollutants in captured water and the coarse-grained pollutants should be removed before entering the basin proper to keep it from clogging. Actual removal rates in soil will depend on the solubility and chemistry of the pollutant.

This is a high-cost BMP. The cost of infiltration basins is directly related to the size of the area draining to it.

Limitations: Infiltration basins can cause groundwater contamination, have fairly high failure rates, and can breed mosquito and create undesirable odors if not adequately maintained. Infiltration basins cannot be used while construction is underway in the watershed. Infiltration basins should not be used in sandy soils located adjacent to water bodies.

BMP 106 - CONSTRUCT INFILTRATION TRENCHES



Description of Potential Pollutant and Source: Infiltration trenches may be appropriate for sites where sources of pollution are dispersed and cannot be adequately controlled by source control BMPs.

Description of BMP: Construct infiltration trenches. These are shallow excavated holes or ditches that have been backfilled with stone to form an underground reservoir. Runoff is temporarily stored in the trench as it percolates into the soil through the trench's bottom and sides. Infiltration trenches should drain within seventy-two hours. Infiltration trench systems must be designed to trap coarse sediment before it enters the trench proper and close the soil pores.

Application Guidance: Infiltration trenches are typically used for drainage areas of less than five acres. There must be at least four feet of permeable soil between the bottom of the trench and bedrock or high water table. There must be a low potential for long-term erosion in the

watershed.

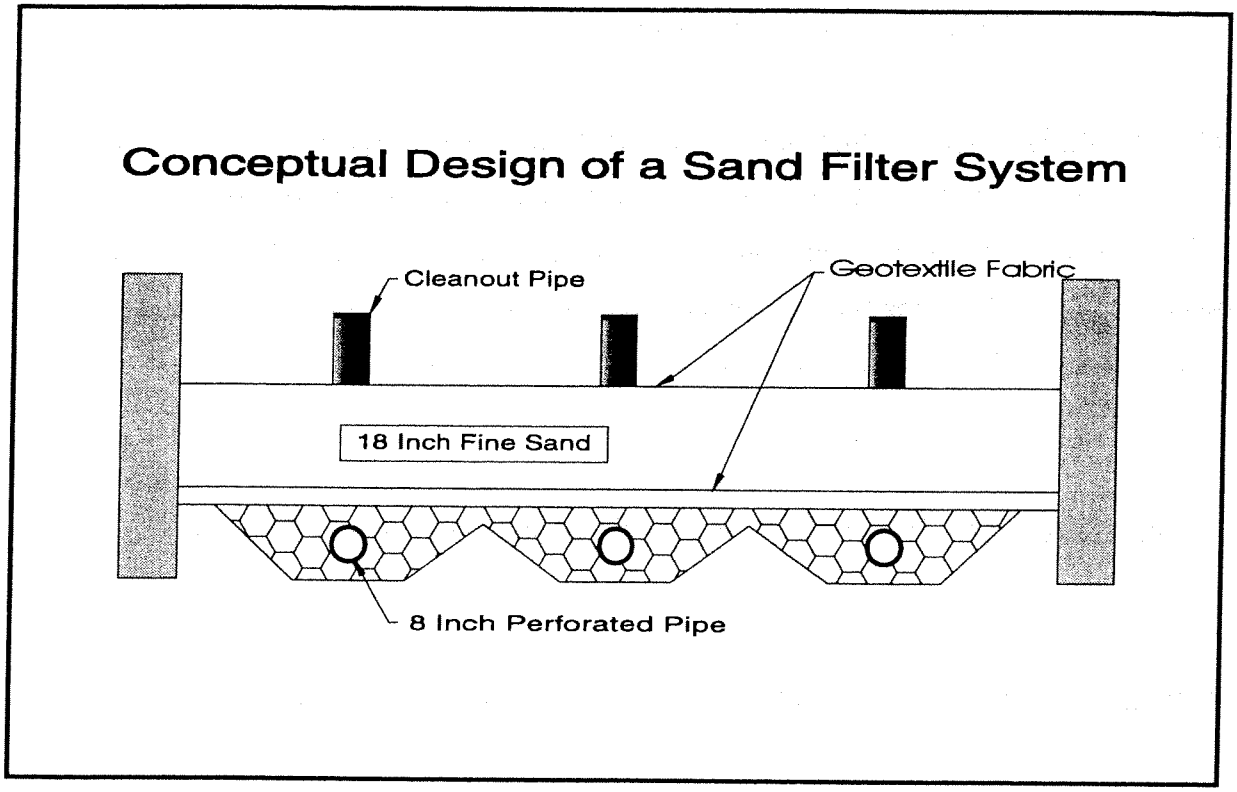
Operation and Maintenance: Routine maintenance requirements include inspecting the basin after every major storm for the first few months after construction and annually thereafter, mowing the filter strips frequently enough to prevent woody growth and removal of sediment form the pretreatment device. Despite careful design, construction, and maintenance, trenches eventually clog.

Effectiveness and Cost: Infiltration trenches have approximately the same pollutant removal effectiveness as infiltration basins. Infiltration basins effectively remove soluble and fine particle pollutants in captured water. Coarse grained pollutants should be removed before entering the trench proper to keep it from clogging. Actual removal rates in soil will depend on the solubility and chemistry of the pollutant.

This is a high-cost BMP. The cost of infiltration trenches is directly related to storage volume. As the storage volume increases, cost per unit volume decreases.

Limitations: Infiltration trenches can cause groundwater contamination and have fairly high failure rates. Because infiltration trenches are not as visible as other BMPs, they are less likely to be maintained. Infiltration trenches cannot be used while construction is underway in the watershed. Infiltration trenches should not be used in sandy soils located adjacent to water bodies.

BMP 107 - CONSTRUCT FILTRATION BASINS



Description of Potential Pollutant and Source: Filtration basins may be appropriate for large sites (over three acres) where sources of pollution are dispersed and cannot be adequately controlled by source control BMPs.

Description of BMP: Construct filtration basins. The basins are lined with a filter media (such as sand and gravel). Storm water runoff drains through the filter media and into perforated pipes that are located in the filter media. Detention time is typically four to six hours. The runoff typically requires some form of preliminary treatment such as sedimentation. Hence, sediment trapping structures (such as a forebay) are required for sedimentation to prevent premature clogging of the filter media.

Application Guidance: Filtration basins have been used for drainage areas of three to eighty acres. Filtration basins may be used on sites with impermeable soils since the runoff filter through specially placed filter media, not native soils. Filtration basins can be used where

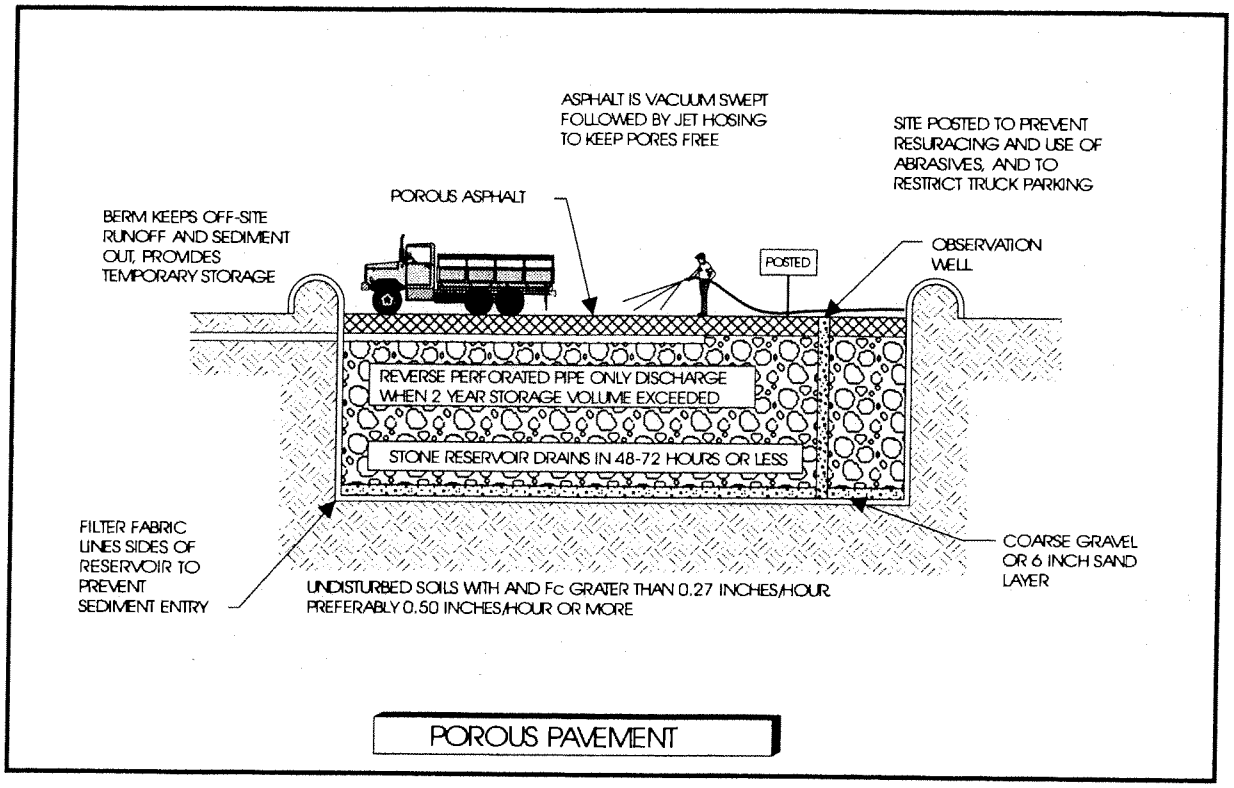
unavailability of water prevents the use of wet ponds, wetlands, or biofilters. There must be an open space available to construct a filtration basin.

Operation and Maintenance: Maintenance requirements include inspecting the basin after every major storm for the first few months after construction and annually thereafter, removing litter and debris and re-vegetating eroded areas. In addition, the accumulated sediment should be periodically removed and the filter media with sediment depositions removed and replaced. The sediment removed during maintenance must be tested; if it is a hazardous waste, it must be properly disposed.

Effectiveness and Cost: This practice has a relatively moderate pollutant removal rate and high cost.

Limitations: Do not use filtration basins while construction is underway in the watershed.

BMP 108 - CONSTRUCT POROUS PAVEMENT



Description of BMP: Construct porous pavement. Some porous pavement has a layer of porous top course covering an additional layer of gravel. A crushed rock-filled groundwater recharge bed is typically installed beneath these top layers. Runoff infiltrates through the porous asphalt layer and into the underground recharge bed. The runoff then exfiltrates from the recharge bed into the underlying soils or into a perforated pipe system. Other types of porous pavement include a geocomposite backfilled with soil and planted with grass. The geocomposite overlies a crushed rock recharge bed.

Application Guidance: Porous pavement can be used in parking areas which do not serve a high volume of traffic or heavy traffic. Porous pavement is only used to treat runoff from parking lots or other small areas.

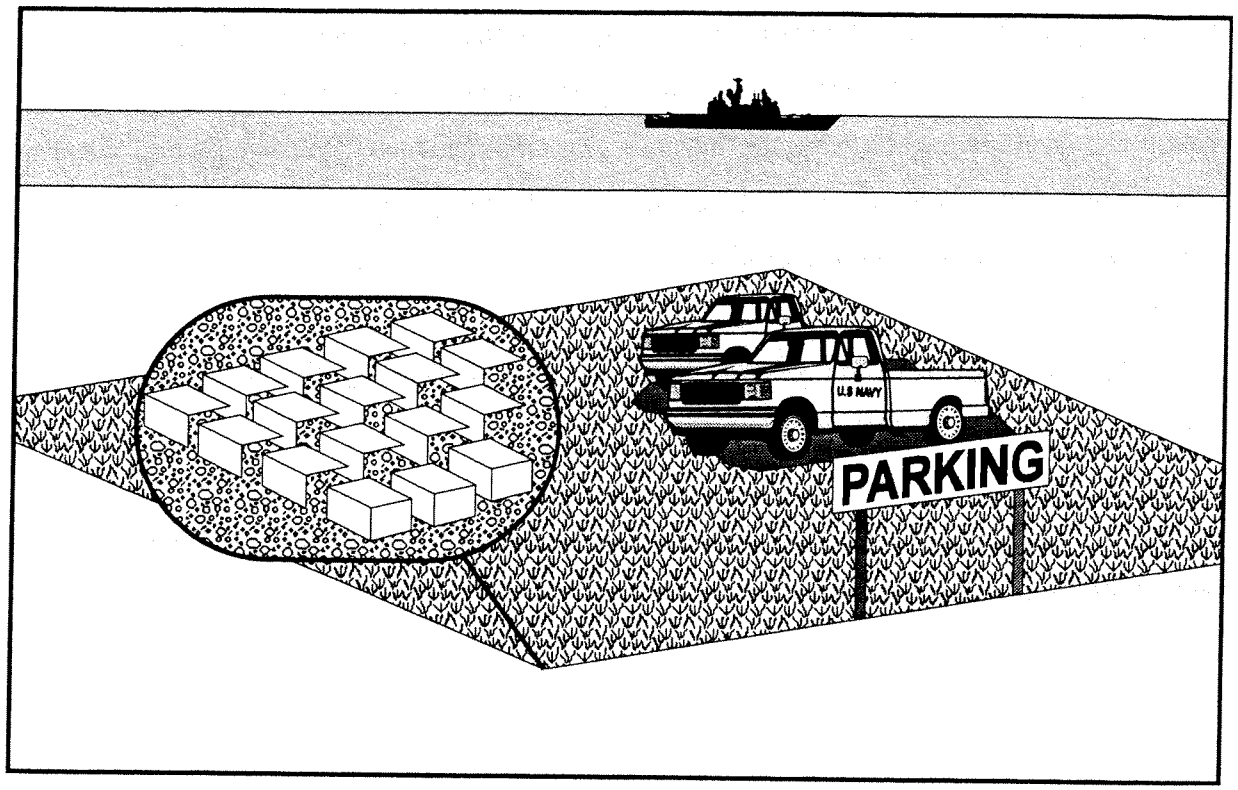
Operation and Maintenance: Routine maintenance of porous pavement includes having the surface vacuum swept followed by high pressure jet hosing at least four times per year to keep

the asphalt pores open. In addition, the site should be inspected after every major storm event replaced using conventional asphalt if the replaced area does not exceed ten percent of the total area. Spot clogging can be treated by drilling holes into the asphalt layer. However, if the facility becomes completely clogged it must be completely replaced.

Effectiveness and Cost: Porous pavement provides moderately effective pollutant removal. However, the life span can be shortened due to clogging of the surface from sediment. The use of porous pavement as a retrofit at an existing facility would require the removal of the existing pavement and its replacement with porous pavement. This would be a higher cost application than in new construction.

Limitations: Porous pavement is appropriate for areas that do not have high-volume traffic, such as parking lots. Porous pavement must be maintained to prevent clogging of the surface.

BMP 109 - CONSTRUCT CONCRETE GRID PAVEMENT



Description of Potential Pollutant and Source: Concrete grid pavement can be used to treat rainfall runoff from parking areas with low-volume traffic.

Description of BMP: Construct concrete grid pavement. This type of pavement consists of concrete blocks with regularly interspersed void areas which are filled with pervious materials such as gravel, sand or grass. The blocks are typically placed on a sand and gravel base and designed to provide a load-bearing surface that is adequate to support vehicles, while allowing infiltration of surface water into the underlying soil.

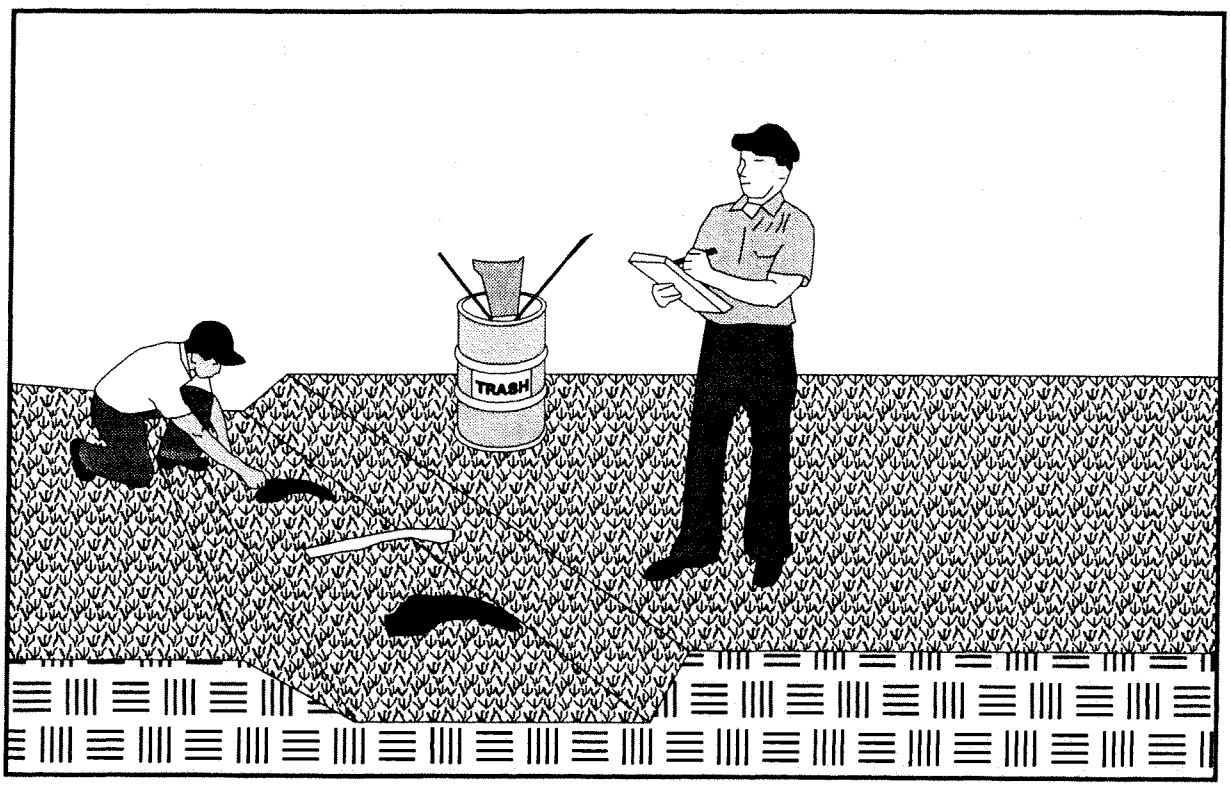
Application Guidance: Concrete grid pavement can be used in areas with low traffic volume. Suggested uses are low volume parking spaces, multi-use open space, fire lanes, and stream banks/lakeside erosion protection. Concrete grid pavement is only used to treat the runoff from the rainfall falling directly on it.

Operation and Maintenance: Concrete grid pavement offers an alternative means to providing a load-bearing surface without greatly increasing the impervious areas. Like all infiltration practices, they require maintenance to prevent clogging of the system. In addition, concrete grid pavement with grass requires additional "normal" grass maintenance, such as mowing, watering, and fertilizing. Extra care should be taken when applying fertilizers and pesticides that may have an adverse effect on concrete products.

Effectiveness and Cost: Concrete grid pavements provide moderately effective removal of fine particle pollutants. This is a relatively high-cost BMP.

Limitations: Concrete grid pavement can cause groundwater contamination and is not suitable for areas with high-volume traffic.

BMP 110 - REGULARLY INSPECT AND MAINTAIN STORM WATER CONVEYANCE SYSTEMS



Description of Potential Pollutant and Source: Over time, storm water conveyance systems may fill up with sediments and clog. Also, drainage swales may erode and be a source of sediment pollution to storm water.

Description of BMP: Inspect and maintain storm water conveyance systems on a regular basis. This will include inspection of drainage swales and outfall pipes to ensure that the area is not eroding.

Other storm water conveyance systems, such as oil/water separators, catch basins, and detention ponds, will be inspected and properly maintained.

Application Guidance: Storm water conveyance systems will be inspected monthly. The frequency for implementing of the BMP has been provided as general guidance. However, a

facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent), the following criteria will be considered and rated either High, Medium or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. The goal of implementing this BMP is to minimize exposure of pollutants to storm water.

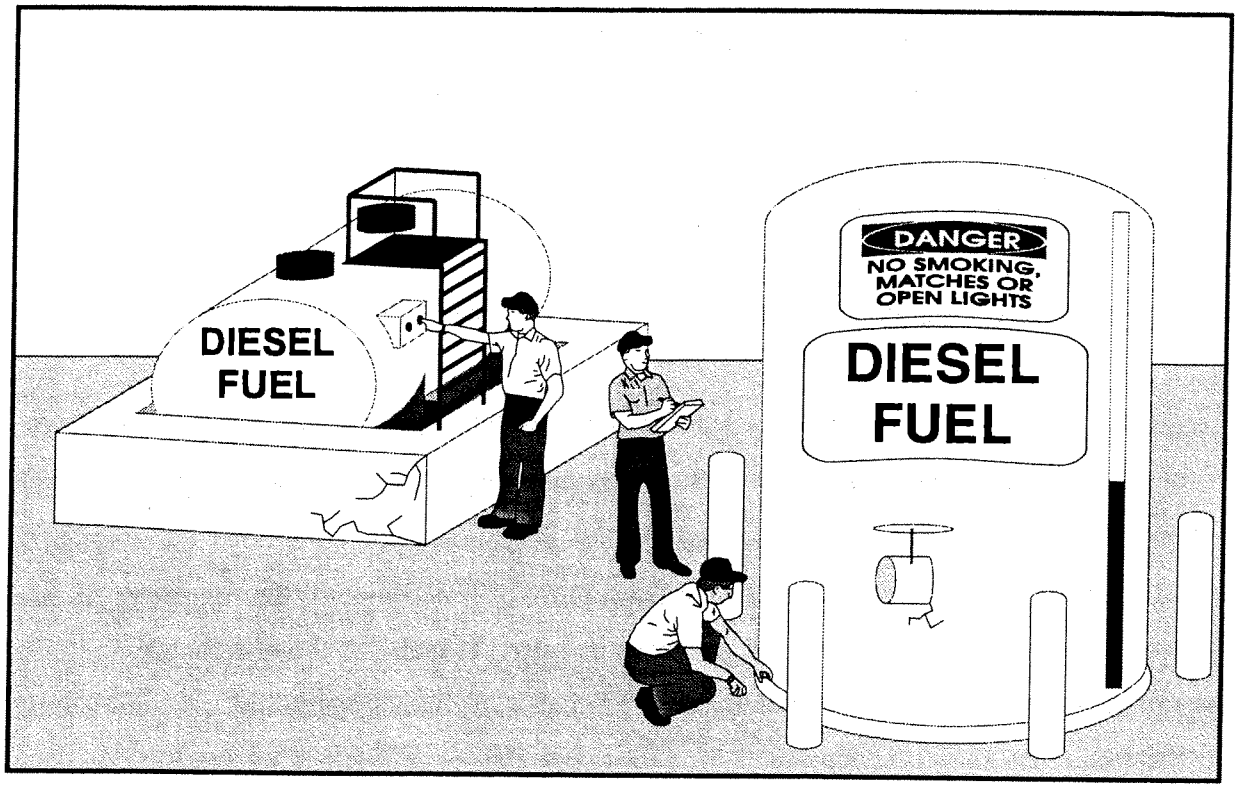
CRITERIA	RATING H=High M=Medium L=Low
Probability of exposure of significant materials to storm water in area draining to storm water conveyance system	
Quantity of significant materials potentially exposed in area draining to storm water conveyance system	
Toxicity of significant materials potentially exposed in area draining to storm water conveyance system	
Frequency of use of significant materials potentially exposed in area draining to storm water conveyance system	
Evident of exposure (e.g., stains on pavement, evidence of significant materials in drainage system)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

Training: The Storm Water Pollution Prevention Personnel will assign personnel responsible for inspections. Personnel will be provided a copy of a site plan showing the location of all storm water conveyance systems which need to be inspected.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: None

BMP 111 - REGULARLY INSPECT AND TEST EQUIPMENT



Description of Potential Pollutant and Source: Regular inspection and testing of equipment will prevent breakdowns and failures, which can result in the exposure of significant materials to storm water.

Description of BMP: Regularly inspect and test equipment. Inspections will uncover conditions such as cracks or slow leaks which could cause breakdowns or failures that result in discharges of chemicals to storm sewers or surface waters.

The following is a list of some of the equipment that will be included in the inspection and testing program:

- Aboveground storage tanks
- Machinery
- Material storage areas

- Pressure release valves
- Process and material handling equipment
- Pumps and piping
- Sumps
- Wastewater treatment plants

Application Guidance: Equipment will be inspected and tested monthly.

The frequency for implementing of the BMP has been provided as general guidance. However, a facility operator may wish to establish a more suitable frequency. This will require SWPCP implementors to make judgements based on facility operations and conditions. To assign a frequency other than what has been suggested (i.e., more or less frequent) the following criteria will be considered and rated either High, Medium or Low. If many of the criteria are assigned a High rating, the frequency may be increased. Similarly, if many criteria are assigned a Low rating, the frequency may be decreased. However, the goal of implementing the BMP will be to minimize exposure of pollutants to storm water.

CRITERIA	RATING H=High M=Medium L=Low
Probability of exposure of significant materials to storm water	
Frequency of use of equipment	
Intensity of use of equipment	
Old age or poor condition of equipment and systems	
Evidence of exposure (e.g., stains on pavement, etching of concrete)	
Proximity of source area to outfall or receiving water	
Sensitivity of receiving water to potentially exposed significant materials (e.g., waters with beneficial uses such as human contact, recreation, significant species habitat, etc.)	

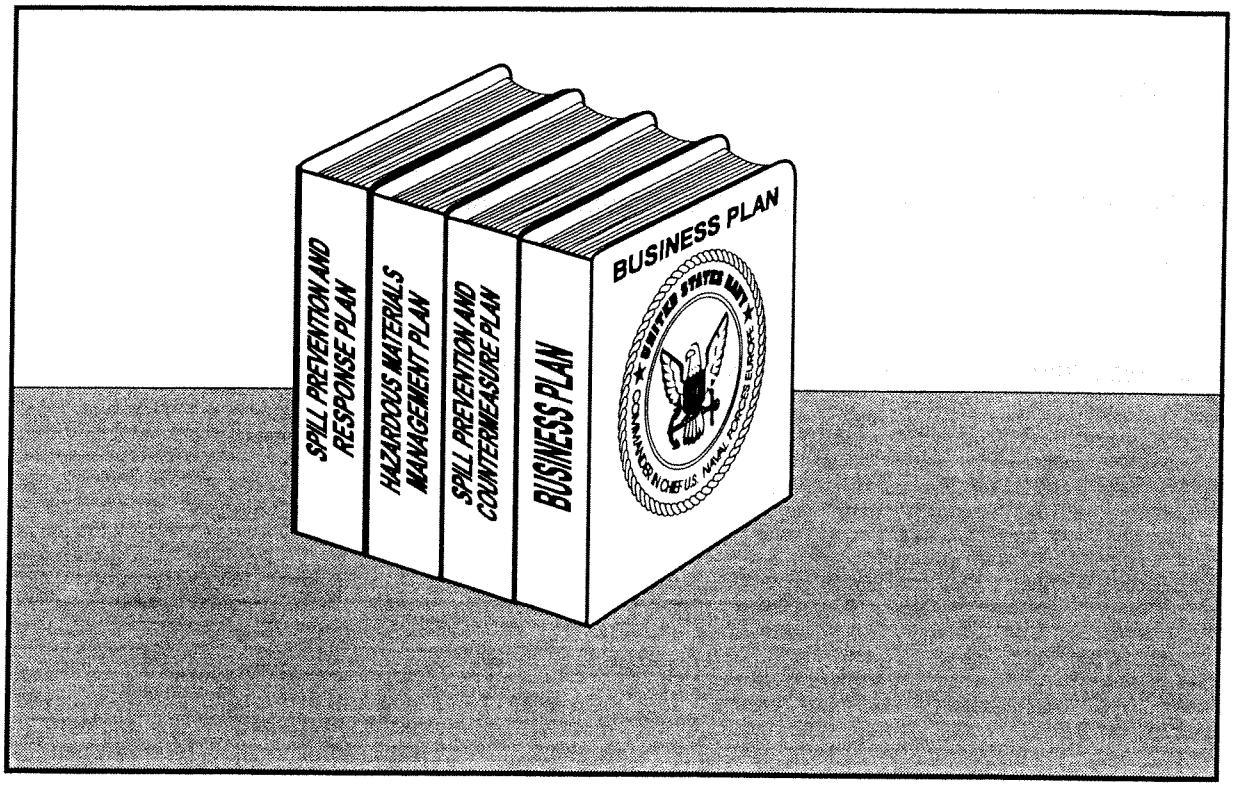
Training: An effective preventive maintenance program will include the following:

- Identification of equipment, systems, and facility areas that will be inspected.
- Schedules for periodic inspections or tests of these equipment and systems.
- Appropriate and timely adjustment, repair, or replacement of equipment and systems.
- Maintenance of complete records on inspections, equipment and system.

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: None

BMP 112 - PREPARE APPROPRIATE SPILL PREVENTION AND RESPONSE PLANS



Description of Potential Pollutant and Source: Spills of significant materials may be exposed to storm water and transported to storm drains and/or receiving waters.

Description of BMP: Prepare the appropriate plans to comply with all local, state and federal regulations related to spill prevention and response. The plans may include a Spill Prevention, Control, and Countermeasure (SPCC) Plan, Business Plan, Hazardous Materials Management Plan, and others. The plans will cover all industrial activities involving material handling and storage. 40 CFR 300 requires that sites which store or dispense petroleum products have an SPCC plan.

The plans address actions that will be taken in the event of a spill of hazardous materials. The plans will include the location of necessary equipment (e.g., absorbent material, fire extinguishers), and internal and external reporting procedures including the names and phone numbers of the appropriate people to notify in the event of a spill. In addition, the plans will

describe specific material handling procedures and storage requirements.

Application Guidance: N/A

Training: Personnel will be trained in the appropriate procedures for all spill prevention and response.

Effectiveness and Cost: This is an effective, low-cost BMP.

Limitations: None

BMP 113 - CONDUCT PERSONNEL TRAINING REGARDING THE SWPCP

Description of Potential Pollutant and Source: When properly trained, personnel are more capable of preventing spills, responding safely and effectively to an accident when it occurs, and recognizing situations that could lead to storm water contamination.

Description of BMP: Train personnel at all levels of responsibility in the components and goals of the SWPCP.

Application Guidance: Training will be conducted quarterly and at new personnel orientations.

Training: Training will address each component of the SWPCP, including how and why tasks are to be implemented. Topics will include:

- Good housekeeping
- Material management practices

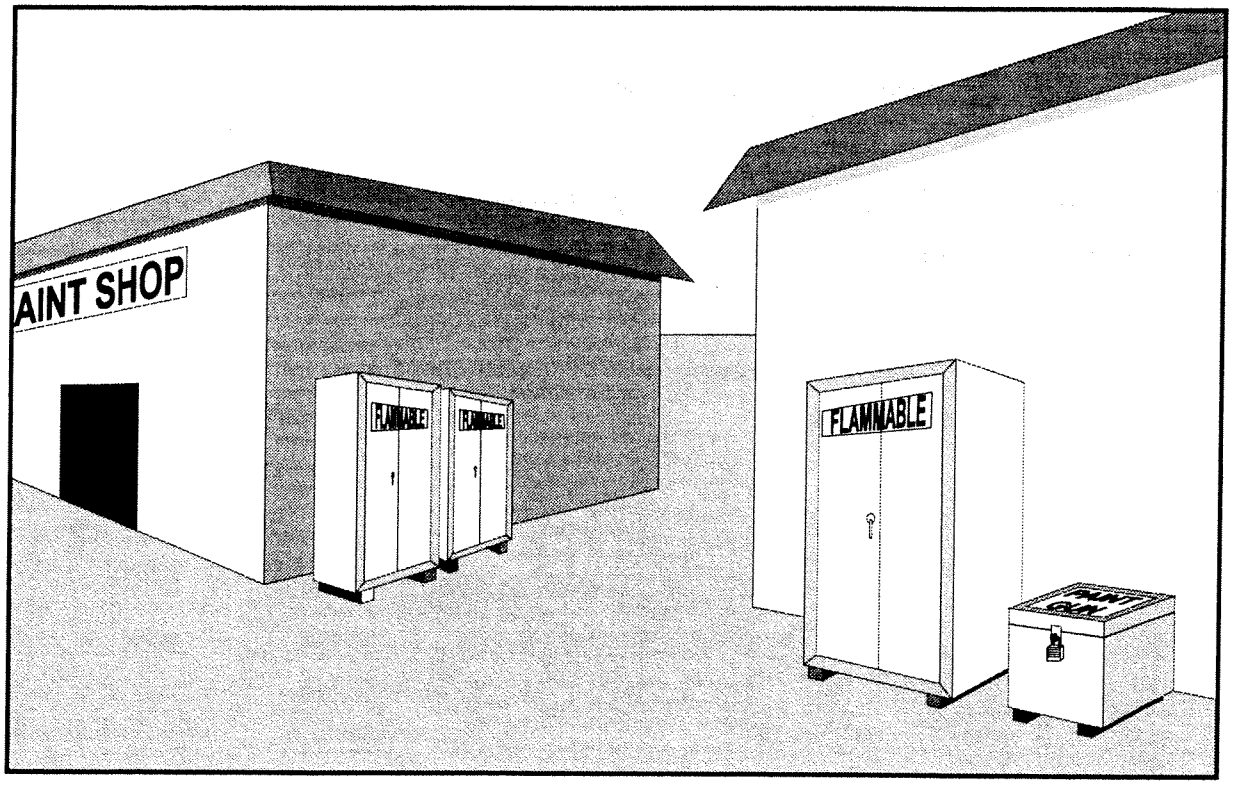
- Spill prevention and response

Effectiveness and Cost: This is a highly effective, moderate-cost BMP.

Limitations: None

BMP 114 - DELETED

BMP 115 - STORE CONTAINERS INSIDE SECONDARY CONTAINMENT



Description of Potential Pollutant and Source: Improper storage of containers of significant materials can result in the release of materials and chemicals that can cause storm water runoff pollution. Secondary containment can prevent storm water runoff pollution.

Description of BMP: Provide secondary containers for significant materials. Containers of significant materials will be stored inside secondary containment cabinets appropriate to the size and quantity of the substances stored. Cabinets will have covered shelves and provide secondary containment for spills of the substances that spill inside the cabinets. In many instances the cabinets will be locked to restrict access to the substances. Metal lockers typically used to store flammable substances are usually appropriate for preventing contact between significant materials and storm water.

The secondary containment will be placed away from vehicle traffic routes to reduce the potential for mechanical impact and accidental spills.

A manifest list of the materials stored inside the locker will be posted on or inside the locker.

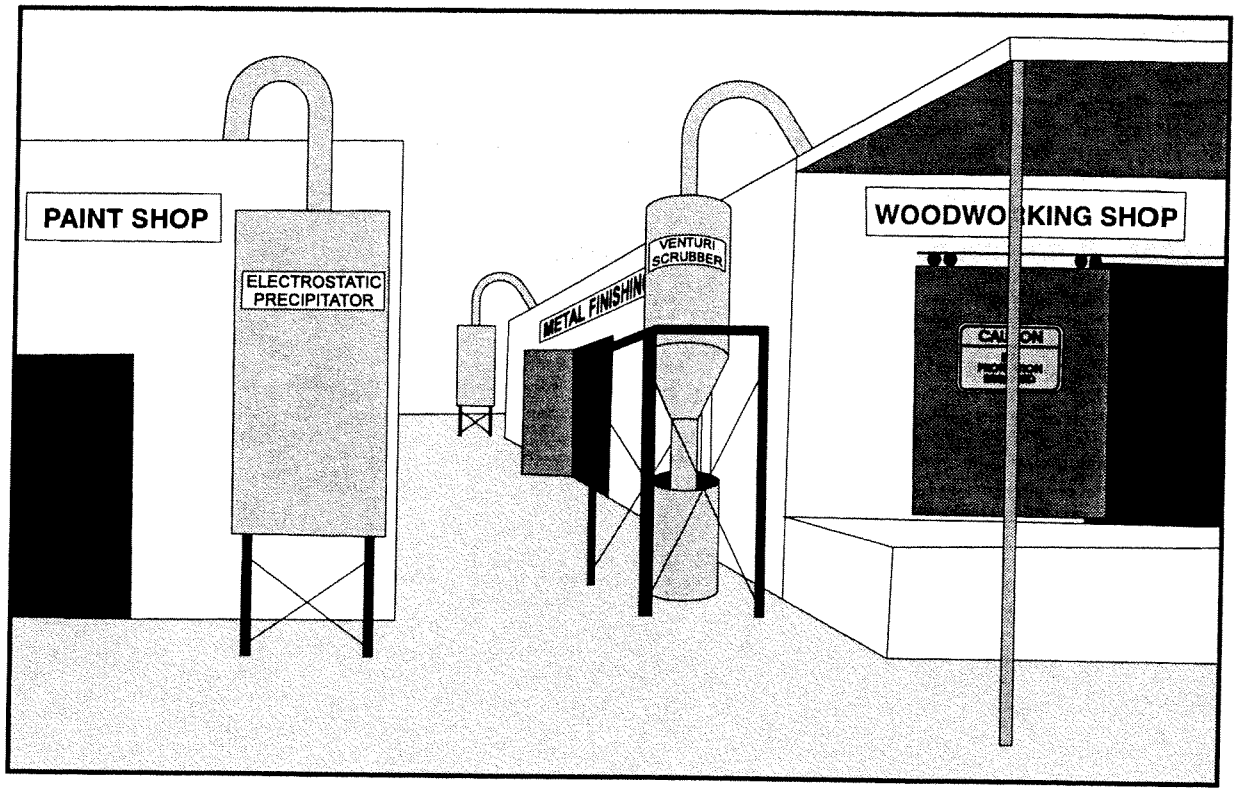
Application Guidance: Containers will always be properly stored.

Training: Personnel will be trained in preventing substances stored outside from entering the storm water and storing substance effectively.

Effectiveness and Cost: This is a moderately effective, low-cost BMP.

Limitations: None

BMP 116 - CONTROL DUST AND PARTICULATES



Description of Potential Pollutant and Source: Many indoor and outdoor industrial processes can generate significant quantities of dust and particulates. These materials contain pollutants that can be exposed to storm water if uncontrolled. Examples of industrial processes which generate significant quantities of dust and particulates include metal finishing, painting, sanding, grinding, sawing, milling, sandblasting, welding and cement manufacture.

Description of BMP: Control dust and particulates. The emission of dust and particulates from indoor and outdoor industrial processes will be controlled. Control measures include the use of filters, baghouses, electrostatic precipitators, cyclone concentrators, waterwalls and other measures.

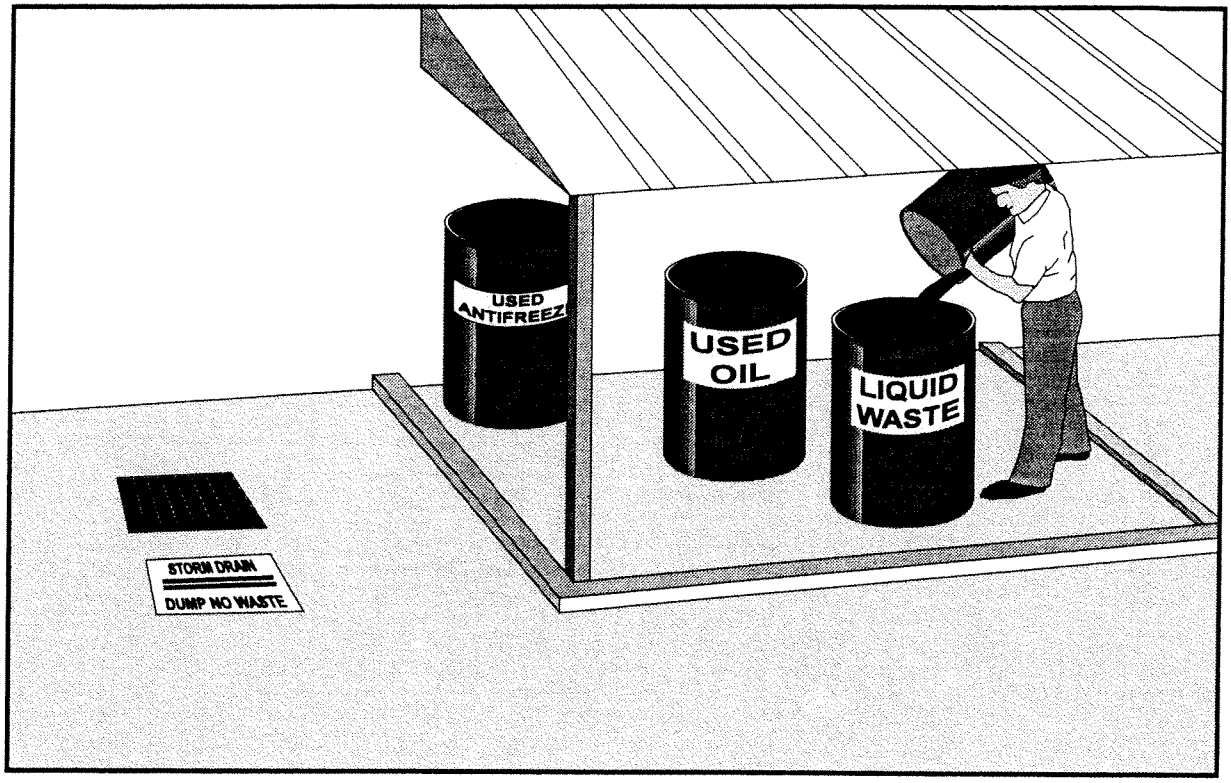
Application Guidance: All industrial processes which generate dust and particulates will be fitted with dust control devices.

Training: Personnel will be trained to properly use and maintain dust and particulate control equipment.

Effectiveness and Cost: This is an effective, moderate-cost BMP.

Limitations: It may not be possible to control outdoor processes.

BMP 117 - DO NOT POUR OR DEPOSIT WASTE INTO STORM DRAINS



Description of Potential Pollutant and Source: Waste poured or deposited into storm drains contains pollutants that can enter the storm drain system and receiving waters without treatment.

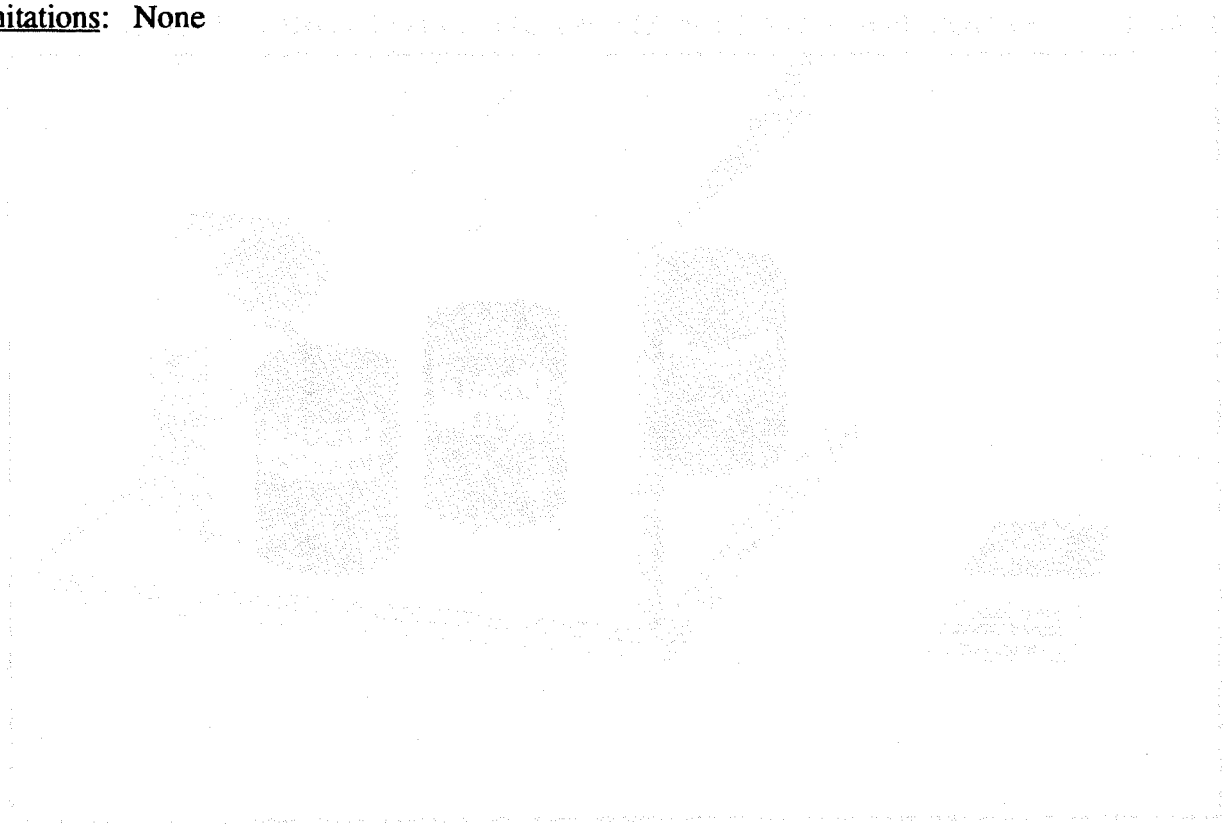
Description of BMP: Do not pour or deposit waste into storm drains or storm drain connections. All wastes will be disposed properly or recycled. Refer also to BMP 027, "Stencil Signs On Storm Drain Inlets."

Application Guidance: Wastes will always be properly disposed.

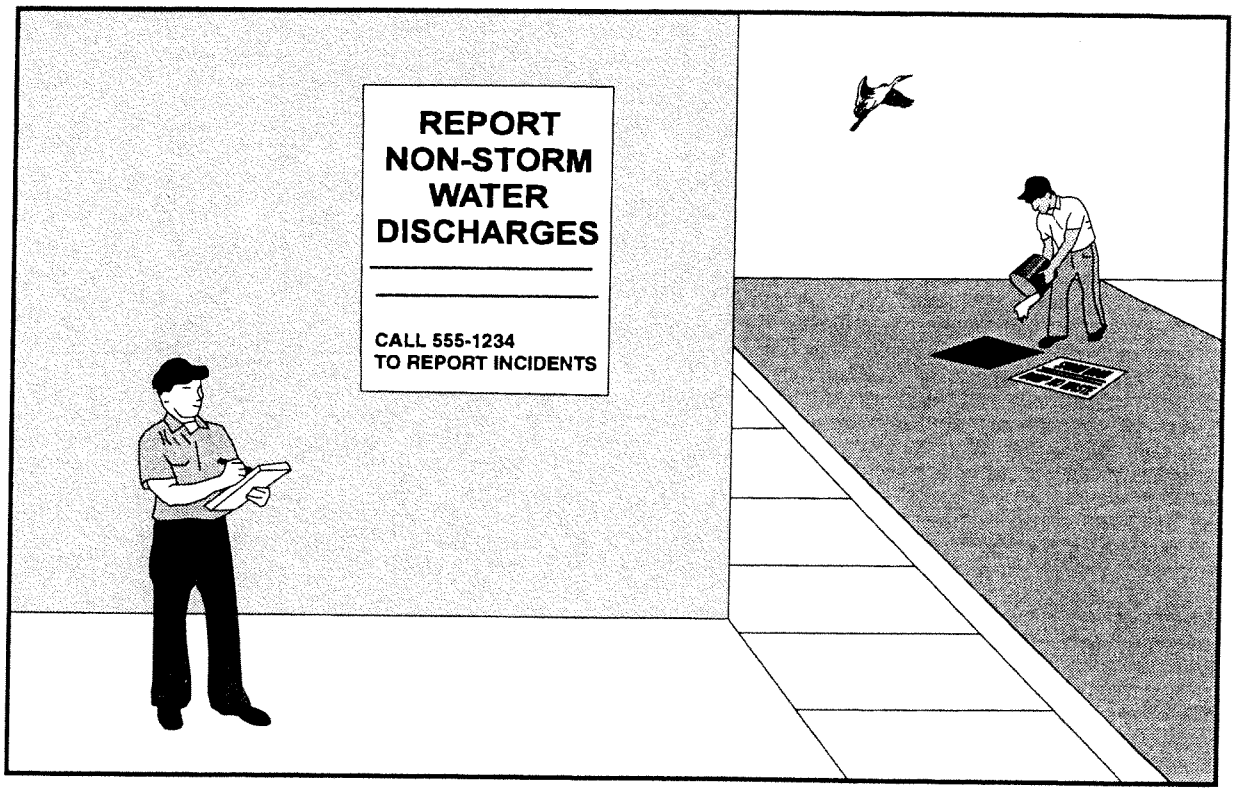
Training: Personnel will be trained in proper disposal procedures. Signs will be posted at storm drain inlets.

Effectiveness and Cost: This is a highly effective, low-cost BMP.

Limitations: None



BMP 118 - ROUTINELY REPORT ANY OBSERVED NON-STORM WATER DISCHARGES



Description of Potential Pollutant and Source: Unknown significant materials may be present in non-storm water discharges resulting from improper disposal of wastes or illicit connections to the storm drain system. These non-storm water discharges drain to receiving waters without treatment.

Description of BMP: Develop adequate routine reporting procedures and make them available to all personnel who may observe either an act of illegal dumping or an unexplained non-storm water discharge. Information regarding reporting procedures will be posted in all industrial facilities. A member of the pollution prevention team will be designated to respond to reports.

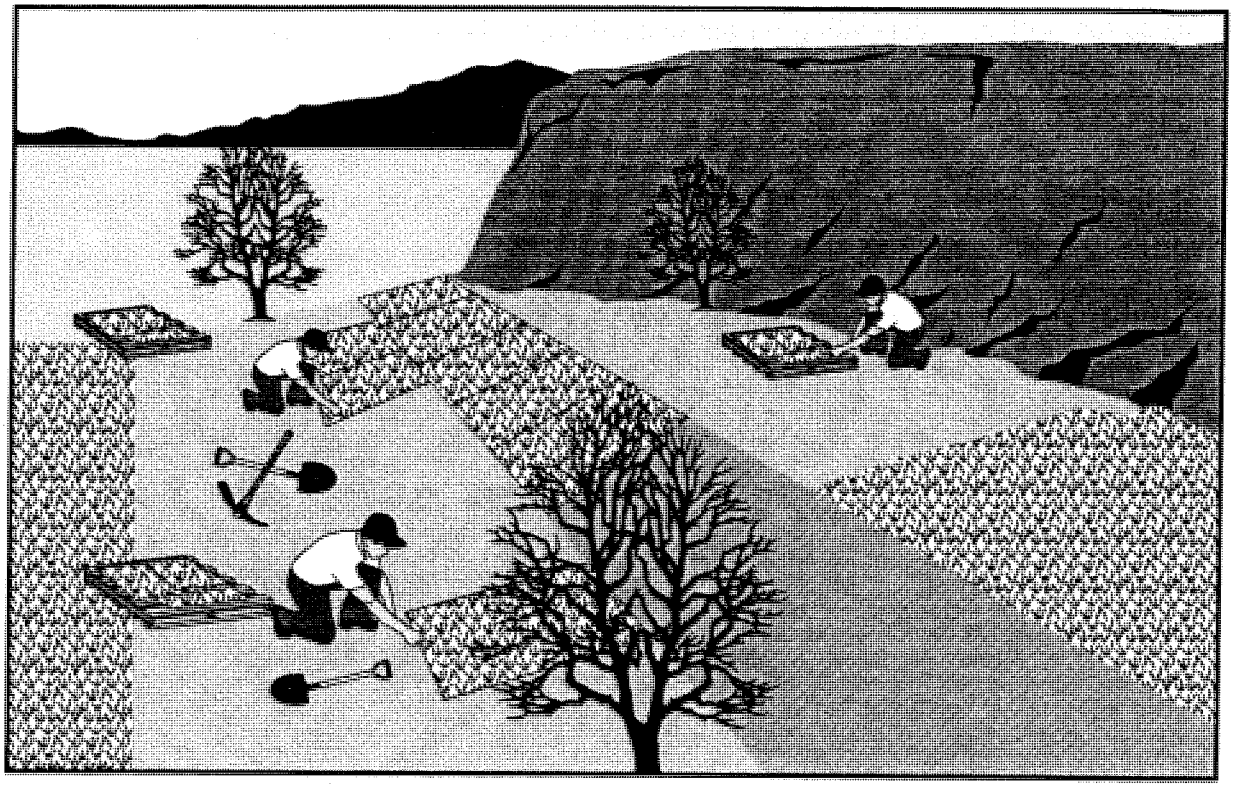
Application Guidance: Reporting forms will be made available at all times.

Training: Training will be performed as part of BMP 009 training.

Effectiveness and Cost: This is an effective BMP, and the costs are low.

Limitations: None

BMP A - REVEGETATE BARREN AREAS



Description of Potential Pollutant and Source: Barren areas are typically sources of erosion-related pollutants.

Description of BMP: Seeding, sodding and planting shrubs and trees can be used to revegetate a barren area. It is usually necessary to fertilize and water in order to establish new vegetation. Native plants should be used wherever possible to reduce water demands. The local Soil and Water Conservation District and the Board of Water Supply have information regarding appropriate native plants and seed mixes. See BMPs B and C for information on mulches and soil binders.

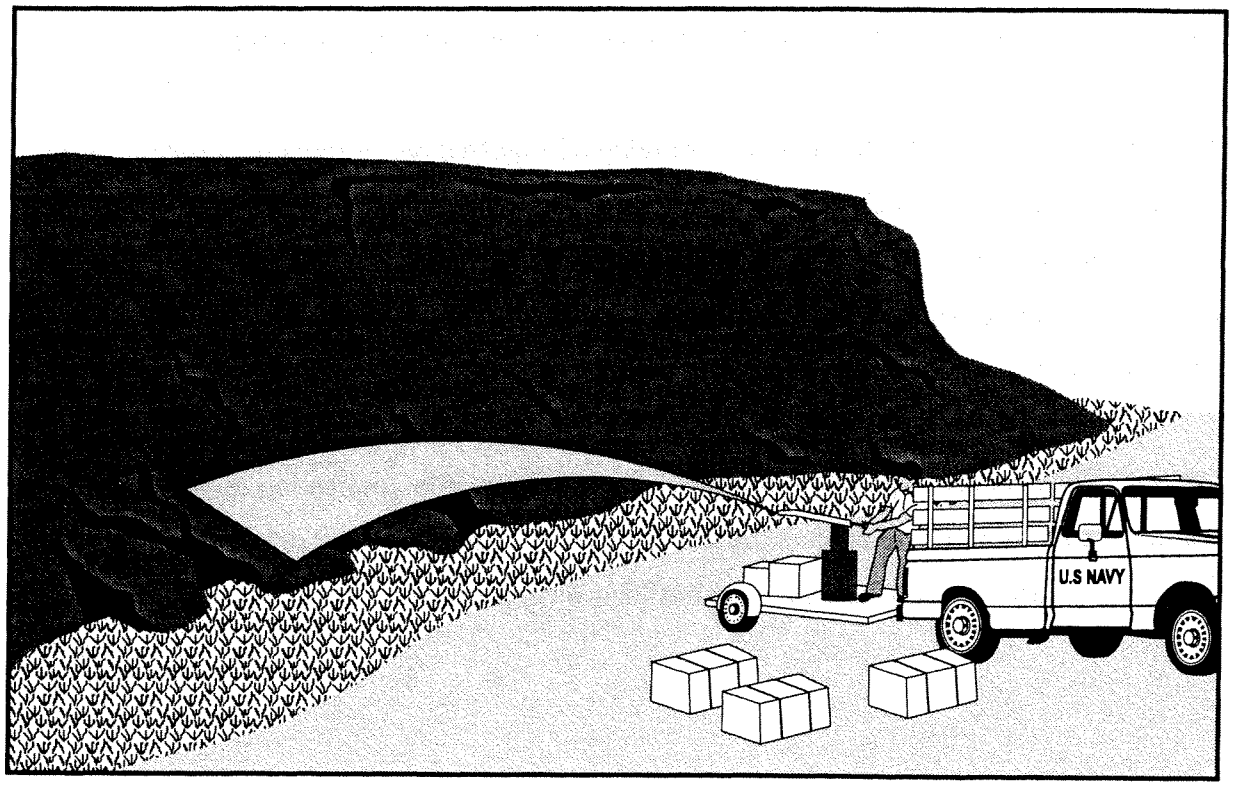
Application Guidance: Sites which are eroding due to lack of vegetation will be revegetated.

Maintenance: Maintenance activities may include fertilizing, irrigation, pruning, and weed and pest control.

Effectiveness and Cost: Establishing vegetation is very effective in reducing erosion. The cost of revegetation will vary depending on the method used, the availability of water, and size of area.

Limitations: It may be difficult to establish vegetation in areas which are heavily used, lack sufficient water, or have poor soils. Irrigation is required for revegetation until plants are established.

BMP B - MULCH EXPOSED AREAS



Description of Potential Pollutant and Source: Exposed areas are sources of erosion-related pollutants.

Description of BMP: Mulch exposed areas. Organic mulching is used to provide temporary erosion control, moisture, and shade to areas being revegetated. Organic mulches include hay, straw, wood fiber, and recycled paper. Mulches must be crimped or netted into the soil. Inorganic mulches, such as gravel, cobbles, and decomposed granite can be used for permanent protection of exposed soil from raindrop impact and runoff in areas where the establishment of new vegetation is not feasible.

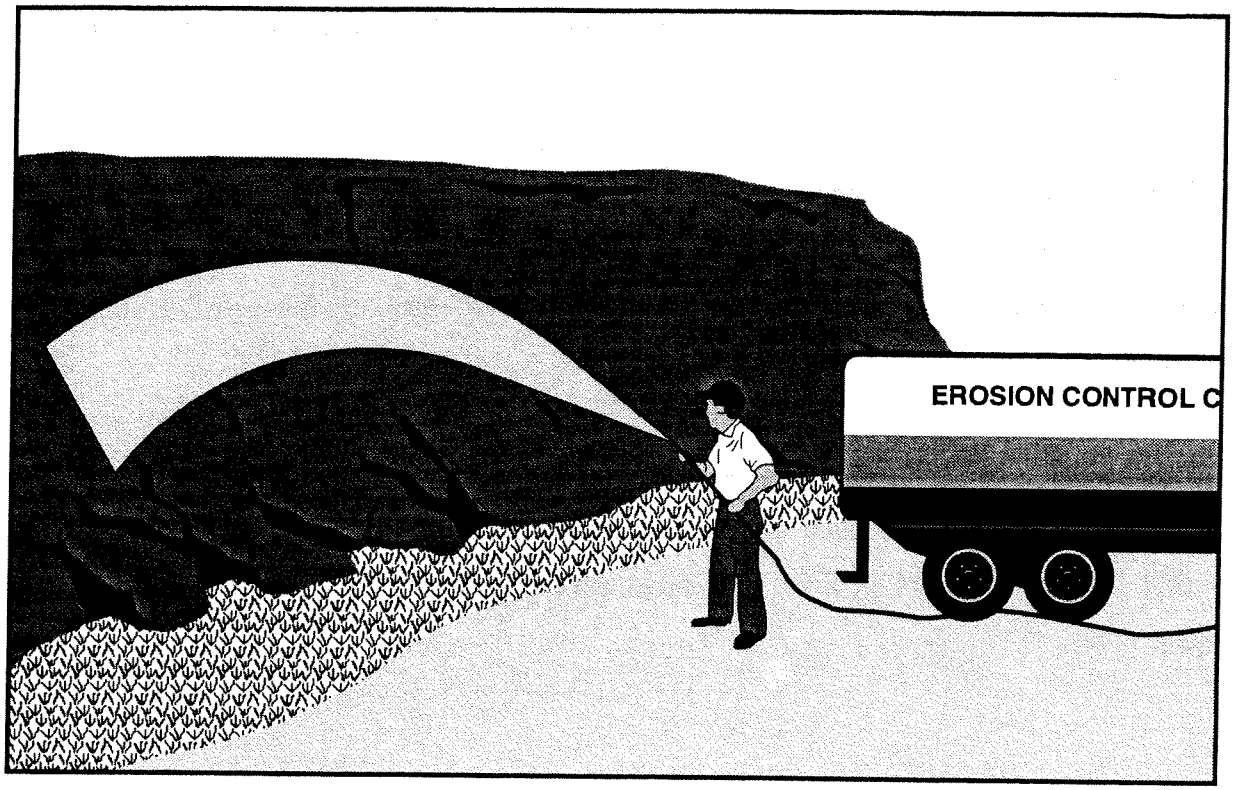
Application Guidance: Organic mulching will be used to provide temporary erosion control and to enhance the establishment of new vegetation. Inorganic mulches can be used to stabilize areas that cannot be seeded or planted, such as areas that are heavily trafficked or have insufficient rainfall.

Maintenance: Areas that have been mulched will be periodically inspected, and any damaged areas will be remulched. Organic mulches will be inspected weekly and after every rainfall.

Effectiveness and Cost: Organic mulches are relatively ineffective in reducing erosion, but are highly effective in the establishment of new vegetation. The cost varies with the size of area and type of mulch selected. Inorganic mulches are highly effective in reducing erosion provided the soil is adequately covered. The cost varies with the size of the area and the availability and type of mulch selected.

Limitations: Mulches are applied hydraulically and are limited in application to slopes adjacent to areas accessible by large equipment. Mulches provide limited temporary erosion control and are intended primarily to enhance the establishment of vegetation.

BMP C - USE SOIL BINDERS



Description of Potential Pollutant and Source: Exposed areas are sources of erosion-related pollutants.

Description of BMP: Use soil binders. These are also known as chemical mulches, chemical stabilizers, or soil palliatives. Binders made of acrylic co-polymers, emulsifications, and other materials are sprayed onto the surface of the soil to hold the soil in place and provide short-term protection against erosion from storm water runoff and wind. Soil binders can be used alone, as temporary "bare earth" erosion control, or with seed and mulch as temporary erosion control until the new vegetation is established. Some soil binders are completely biodegradable.

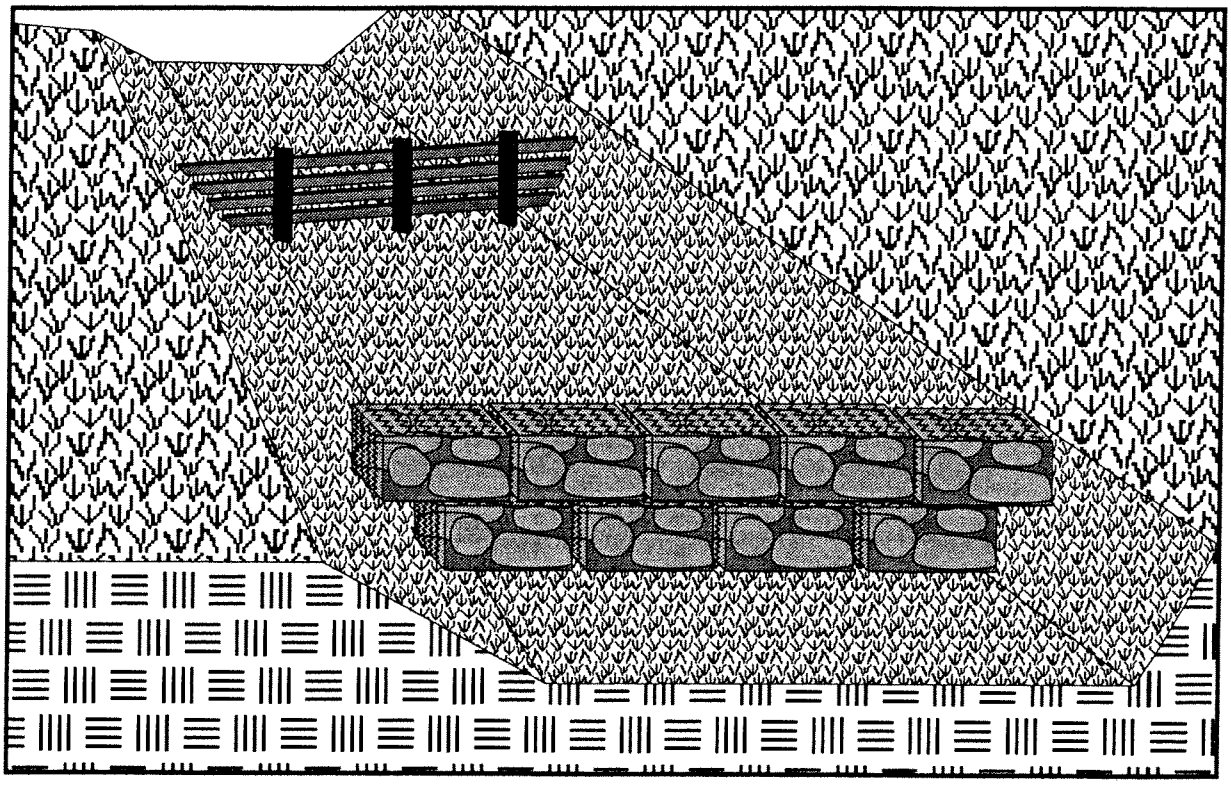
Application Guidance: Soil binders will be used in eroding areas where temporary seeding practices cannot be used because of season, or where more effective erosion control is needed until the vegetation is established. Soil binders provide immediate protection to soils that are in danger of erosion. Soil binders are not a long-term solution to erosion.

Maintenance: Soil binders are a temporary practice and must be periodically reapplied to be effective. Some soil binders can last twelve to eighteen months on bare earth when applied at the appropriate rate.

Effectiveness and Cost: Soil binders, when applied with seed and mulch, can provide immediate and inexpensive short-term erosion control that is more effective than seeding and mulching without binders. Soil binders used alone can provide effective, relatively inexpensive, short-term erosion control.

Limitations: The use of soil binders is a temporary erosion control practice. The application rates and procedure recommended by the manufacturer of the soil binder product must be followed. Soil binders are applied with large spray equipment and are limited to readily accessible areas.

BMP D - USE CHECK DAMS TO REDUCE RUNOFF VELOCITY



Description of Potential Pollutant and Source: Water in an unlined channel or swale which flows at a high velocity can cause erosion and transport of sediment downstream.

Description of BMP: Use check dams to reduce runoff velocity. Check dams are small dams constructed across a swale or drainage channel. Check dams can be built from logs, stones, or gabions. Check dams are used to reduce the velocity of the flow, which reduces the amount of erosion caused by the flow.

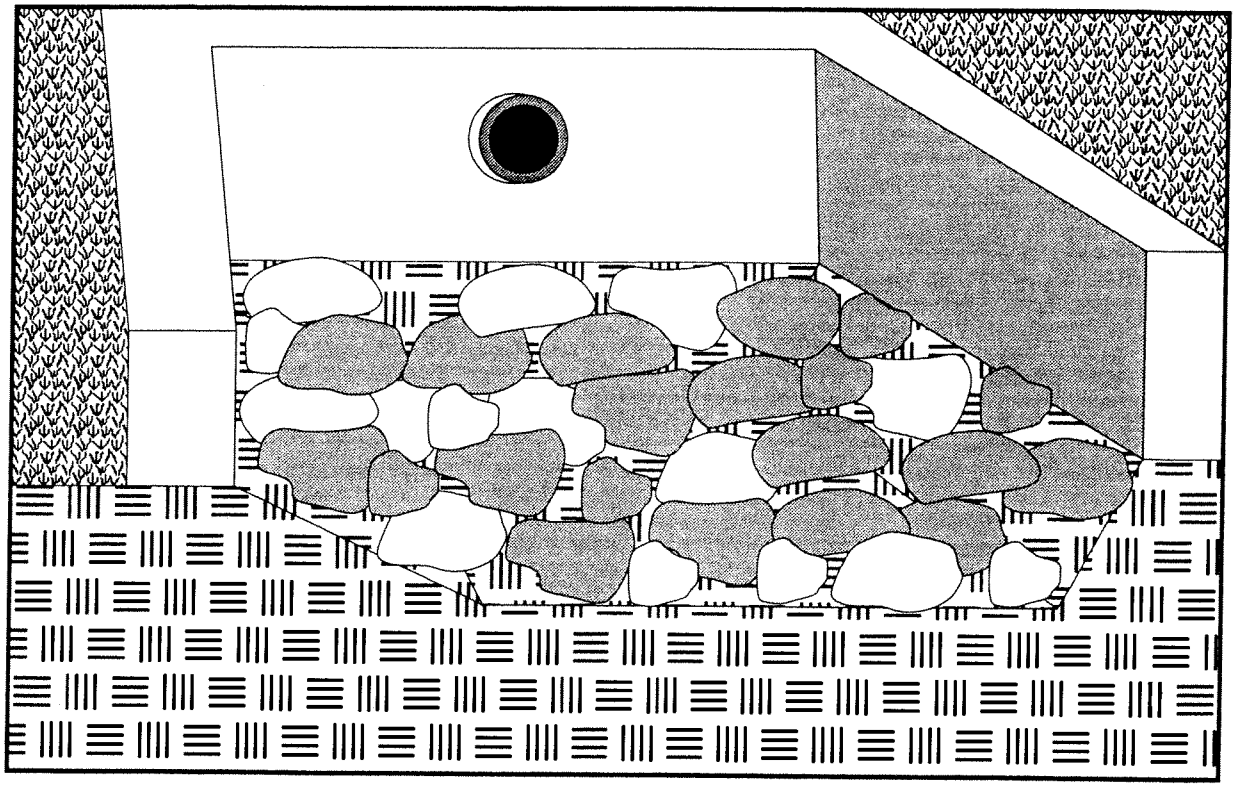
Application Guidance: Check dams will be used when erosion is caused by high velocities in a swale or drainage channel. This will typically occur in a steeply sloped swale. Check dams will only be used in small ditches and swales that drain ten acres or less.

Maintenance: Check dams will be inspected for sediment and debris accumulation after every major storm event. The accumulated sediment must periodically be removed.

Effectiveness and Cost: Check dams can provide effective, inexpensive erosion control for stream banks.

Limitations: Check dams should not be placed in streams.

BMP E - REDUCE FLOW VELOCITY AT OUTLET



Description of Potential Pollutant and Source: Concentrated storm water runoff exiting a pipe or swale outfall can cause erosion and transport of sediment downstream.

Description of BMP: Use outlet protection to reduce the velocity of storm water flowing out of storm water pipe outlets or the end of channels. Stone, riprap, pavement, or concrete can be used for outlet protection.

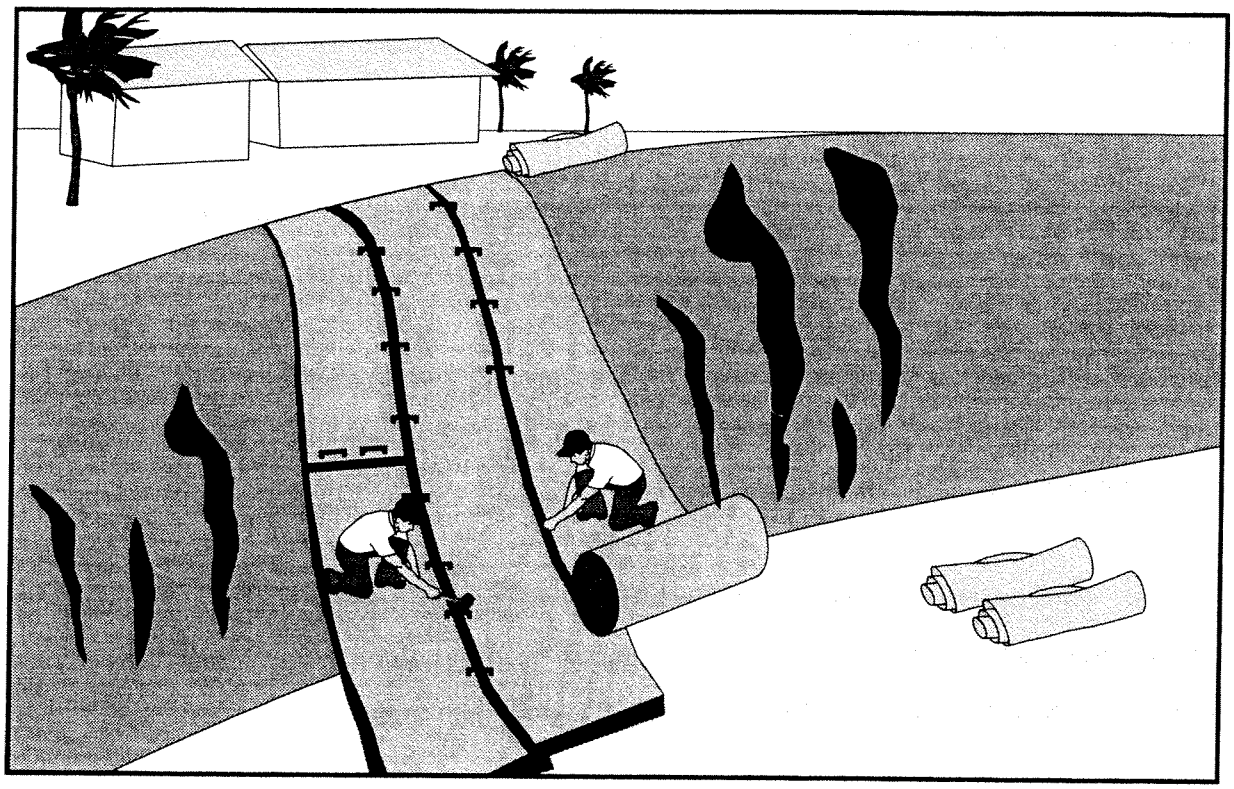
Application Guidance: Outlet protection will be used whenever there is erosion at storm water pipe or channel outlets.

Maintenance: Outlet protection will be periodically inspected for erosion and scouring.

Effectiveness and Cost: Outlet protection can provide effective, inexpensive erosion control.

Limitations: None

BMP F - USE EROSION CONTROL BLANKETS



Description of Potential Pollutant and Source: Exposed areas are sources of erosion-related pollutants.

Description of BMP: Use erosion control blankets. These are used with seeding to provide temporary and/or permanent erosion control, depending on the type of blanket. Biodegradable blankets made of wood fiber, straw, coconut, or combinations are used in conjunction with seeding for short-term erosion control on steep or rapidly eroding areas where mulches or binders would not be effective enough. Synthetic blankets made of vinyl, rigid nylon, or flexible polypropylene are used with seeding for long-term erosion control in swales, ditches, channels or other areas of concentrated flow. Turf reinforcement mats are three dimensional mats that are soil filled and seeded to provide a permanent reinforces soil-map-vegetation matrix. Soil fibers, either individual or continuous fibers (roving), are sprayed on the soil with seed to provide an in-place matrix for short-term or long-term erosion control, depending on whether organic or synthetic fibers are used.

Application Guidance: Erosion control blankets will be used in critical (steep or rapidly eroding) areas or areas of concentrated flow in conjunction with seeding for the establishment of vegetation.

Maintenance: Maintenance activities include inspection after major storms for securing or damage.

Effectiveness and Cost: Erosion control blankets are highly effective for short-term and long-tern erosion control. Costs are higher initially than mulches or binders, erosion control blankets but can be cost-effective in the long-term.

Limitations: Erosion control blankets are placed by hand and, therefore, are not limited in application; they also may be applied on slopes steeper than one to one. In contrast, soil fibers are placed with equipment and are limited to readily accessible areas.

APPENDIX 12-1

Sampling Locations and Rationale

[Redacted due to national security concerns]

APPENDIX 12-2

Other Permit-identified Sites

[Redacted due to national security concerns]

APPENDIX 13-1

Final Program Effectiveness Assessment Plan

RE-FINAL (REDACTED), PREDECISIONAL FOR DISCUSSION PURPOSES ONLY, DO NOT CITE OR QUOTE

PROGRAM EFFECTIVENESS ASSESSMENT PLAN

Storm Water Management Plan

Department of the Navy, Navy Region Hawaii

NPDES Permit No. HI S000257

Prepared by:

Navy Region Hawaii

April 2022

Table of Contents

1 Introduction 1
1.1 Strategy 1
1.2 Assessment Measures 3
1.3 Measurable Goals 4
1.4 Program Assessment and Reporting 4
1.5 Document Organization 5
2 Public Education and Outreach 6
3 Illicit Discharge Detection and Elimination 7
4 Construction Site Runoff Control 9
5 Post-Construction Management in New Development and Redevelopment 11
6 Pollution Prevention and Good Housekeeping 13
7 Industrial and Commercial Discharge Management 16
8 Monitoring 18

Figures

Figure 1: Outcome Levels 2

Tables

Table 1: Assessment Methods for Different Outcome Levels 4

List of Acronyms and Abbreviations

BMP	Best Management Practice
CASQA	California Storm Water Quality Association
DOH	State of Hawaii Department of Health
GIS	Geographic Information System
JBPHH	Joint Base Pearl Harbor-Hickam
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NAVFAC	Naval Facilities Engineering Systems Command
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRH	Navy Region Hawaii
O&M	Operation and Maintenance
Permit	Navy Region Hawaii's NPDES Permit No. HI S000257
SWMP	Storm Water Management Plan
SWPCP	Storm Water Pollution Control Plan
WLA	Waste Load Allocation

1 Introduction

As of the effective date, February 1, 2021, the Department of the Navy, Navy Region Hawaii (NRH) is required to comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) Small Municipal Separate Storm Sewer System (MS4) and Navy Industrial Facilities Permit No. HI S000257 (referred to hereinafter as the "Permit"). The Permit includes authorized storm water and specified non-storm water discharges into waters in and around Oahu, Hawaii (Pearl Harbor, Halawa Stream, Kaiapo Canal, Kaukonahua Stream, Kumumauu Canal, Mailiilii Stream, Mamala Bay, Manuwai Canal, Poamoho Stream, Transportation Canal, Ulehawa Stream, Unnamed Tributary of Waikele Stream, and unnamed Gulches in Wahiawa, Waikakalaua, and Waiawa Streams). Per the Permit, Part G.2.b.vi, NRH is required to provide a Program Effectiveness Assessment Plan. The Permit states:

> *Reporting Requirements, Part G.2.b.vi:*
>
> *"Program Effectiveness Reporting - The Permittee shall continue to implement 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 annually."*

For the purpose of this Program Effectiveness Plan, the term "Base" is inclusive of all areas covered by the Permit. This includes Joint Base Pearl Harbor Hickam (JBPHH) and other specified Navy industrial areas and facilities. This plan presents the strategy for:

(1) Measuring progress of permit compliance and implementation of Best Management Practices (BMPs);
(2) Tracking program component effectiveness over the permit period; and
(3) Setting the framework to be able to link program implementation with environmental improvements over time.

1.1 Strategy

This plan has been developed to incorporate elements of the California Storm Water Quality Association (CASQA) approach to program effectiveness as detailed in their 2007 manual. The approach is based on expected outcomes that result from implementing the various components of the storm water management program. The outcomes are characterized into six Outcome Levels as shown on Figure 1, which has been adapted from CASQA. The pyramid structure illustrates the progression from implementing activities to protecting water quality. The Outcome Levels help categorize and define the desired results or goals of programs and control measures.

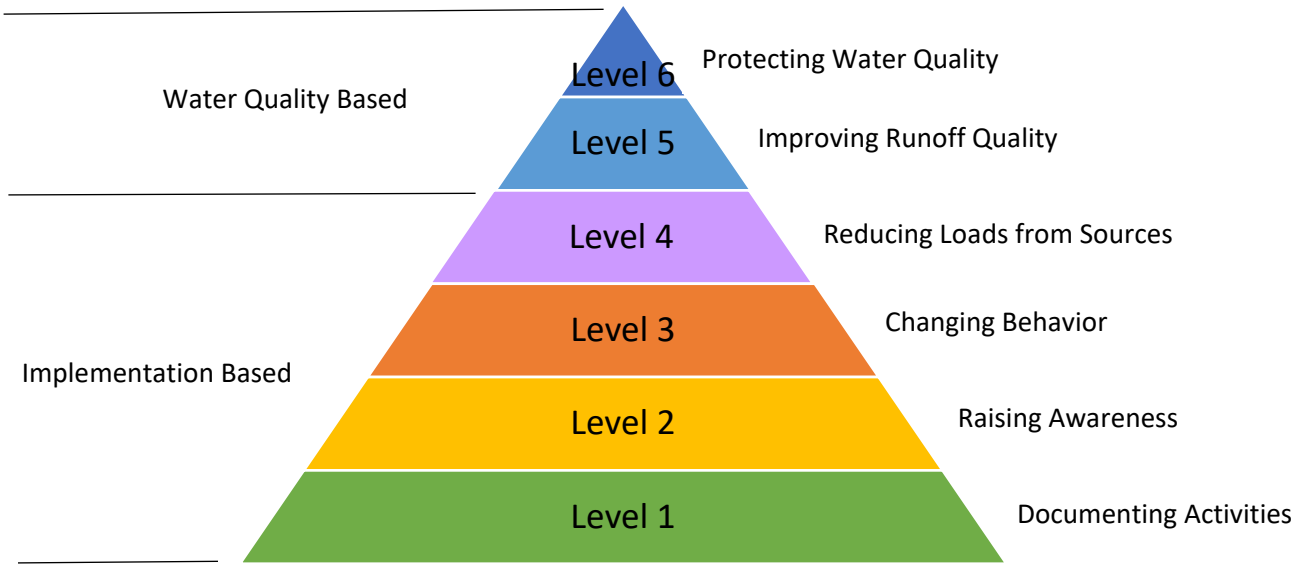


Figure 1: Outcome Levels

The Outcome Levels are defined as follows:

Level 1 – Documenting Activities

Many program activities are directly established as permit requirements and can be tracked by simply documenting activities. Level 1 outcomes may take the form of a confirmation of task completion (yes/no answers) or direct tabulation of efforts (such as the number of inspections completed or plans reviewed). Level 1 outcomes can also include documenting progress towards measurable goals by confirming whether they have been met or not. Level 1 outcomes reflect program implementation and permit compliance and are assumed to be beneficial to water quality but are not indicators of the direct impact of program implementation on environmental conditions.

Level 2 – Raising Awareness

Level 2 outcomes reflect how well the program is able to increase the level of knowledge and awareness and change attitudes of target audiences including tenant commands, civilian workers, residents, commercial and industrial businesses, contractors, and designers. Measuring these outcomes is done through various methods including surveys and training quizzes, and may be inferred through observations of community involvement such as the number of visits to the NRH environmental website, and other partner websites. Similar to Level 1 outcomes, Level 2 outcomes are assumed to be beneficial to water quality but are not indicators of the direct impact of program implementation on environmental conditions.

Level 3 – Changing Behavior

The goal of raising knowledge and awareness (in Level 2 outcomes) is to effect behavior change that results in the implementation of recommended BMPs. Level 3 outcomes indicate how effective program components are in motivating behavior change and BMP implementation

among target audiences. These changes can be tracked using surveys; site visits and inspections to observe BMP implementation at sites such as construction sites or industrial facilities; and tabulating changes in program involvement.

Level 4 – Reducing Pollutant Loads from Sources

Many BMPs are intended to reduce the amount of pollutants that have the potential to discharge into the MS4. Level 4 outcomes provide program managers with feedback/ data regarding reductions in pollutant loads as a result of the implementation or enhancement of a BMP. These outcomes can include information such as the amount of debris collected during street sweeping, the amount of trash collected during volunteer cleanups, and by examining photos of the debris present in drainage ways and detention basins. The data are compared to baseline estimates to provide feedback on the effectiveness of BMPs and control strategies.

Level 5 – Improving Runoff Quality

The primary goal of the Storm Water Management Plan (SWMP) is to reduce pollutants to the MS4 to the maximum extent practicable (MEP) and to ensure that discharges do not cause or contribute to exceedances of water quality standards in receiving waters. Level 5 outcomes may be the most direct measure of program effectiveness as it relates to improving the quality of storm water runoff. Level 5 outcomes may be measured as reductions in one or more specific pollutants and may reflect effectiveness of BMP implementation at the above outcome levels.

Level 6 – Protecting Receiving Water Quality

The ultimate objective of any NPDES SWMP is to protect receiving water quality. These outcomes are the most challenging to document and are many times affected by more than the quality of storm water discharges, including sanitary sewer overflows, rising groundwater, agricultural runoff, and other non-point source pollutants. Additionally, receiving water quality is dependent upon partnerships with other agencies, landowners and stakeholders, and the general public. Assessment methods include compliance with water quality standards, Total Maximum Daily Load programs, biological assessments, and other monitoring assessments. It may take years to establish a reliable data set and even longer periods of time to allow the cumulative impacts of multiple program elements to take effect.

1.2 Assessment Measures

In each outcome level, several methods are available to determine if outcomes are being achieved. These methods include:

- Confirming that permit requirements have been met;
- Tabulating specific activities and load reduction;
- Surveying employees and residents;
- Inspecting construction sites and post-construction BMPs; and
- Monitoring runoff and receiving waters.

A summary of the assessment methods and their application to each outcome level are listed in Table 1, below.

Table 1: Assessment Methods for Different Outcome Levels

	Outcome Level					
Assessment Method	**Level 1 Documenting Activities**	**Level 2 Raising Awareness**	**Level 3 Changing Behavior**	**Level 4 Reducing Loads from Sources**	**Level 5 Improving Runoff Quality**	**Level 6 Protecting Receiving Water Quality**
Confirmation	X					
Tabulation	X	X	X	X		
Survey		X	X			
Inspection	X	X	X	X		
Monitoring				X	X	X

Notes: Table has been adapted from CASQA Municipal Stormwater Program Effectiveness Assessment Guidance, 2007.

The various data collected will be tracked and compared from year to year in order to meet goals or as a way to view trends and help guide the program for subsequent years. The data will be tracked using program databases and the Navy's Geographic Information System (GIS), which contains an inventory of MS4 features and other related data. Updating the GIS and data tracking will be an ongoing process that is integral to allow for effective monitoring and preventative storm water quality measures.

1.3 Measurable Goals

As required by the Permit, NRH has developed specific measurable goals or milestones related to each program component. The measurable goals are based on past experiences, previous trends or results of previous surveys, or based on compliance with the Permit. Measurable goals have been incorporated into this approach as data assessment measures and are used to assist tracking program effectiveness.

1.4 Program Assessment and Reporting

Overall Program Assessment will be incorporated into the Annual Report required by the Permit. Most program assessment will be conducted at the implementation level (Outcome Levels 1 to 4). Water quality assessments (Outcome Levels 5 and 6) are conducted as part of NRH's ongoing Annual Monitoring program.

1.5 Document Organization

The following chapters describe the outcomes that NRH aims to achieve during this Permit term and the data collected that will be used to assess each of the following programs:

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

Each section will present outcome objectives and assessments measures as follows:

- Outcome Objectives: lists the desired outcomes that each program will strive to achieve during the permit term. The outcomes are categorized by the Outcome Levels.
- Assessment Measures: lists the data that will be used to assess each desired outcome. The measures are categorized by assessment method (i.e., confirmation, tabulation, etc.) and may directly or indirectly measure progress towards the desired outcome.

2 Public Education and Outreach

Assessing the Public Education and Outreach is an iterative process that relies on a variety of methods. The target audiences include tenant commands; civilian personnel; residents; industrial and commercial businesses; construction operators; and schools, including staff, students, and contractors. The desired outcomes are to raise awareness and effect behavior change through a variety of methods including distributing educational materials, conducting media campaigns, holding workshops, forming partnerships with other agencies and groups, and participating in special events. This program will be assessed to Outcome Levels 1 through 3.

Outcome Level	Outcome Objectives and Data Assessment
1 2	*Objective:* Increase public support, interest, knowledge, and awareness of Storm Water Management Program. *Assessment Measures:* <u>Confirmation:</u> o Distribute brochures/pamphlets to new arrivals (e.g., residents and commercial/industrial workers) in orientation materials. o Provide storm water pollution prevention information to Base staff, contractors, and industrial and commercial businesses during environmental training classes. o Implement outreach through community newsletters and the Base website. o Stencil storm drains, with priority given to industrial and commercial areas, and areas with pedestrian traffic. <u>Tabulation:</u> o Number of brochures/pamphlets distributed to new arrivals. o Number of training classes and number attendees. o Number of volunteer hours. o Number of storm drains stenciled. o Annual survey. o Number of public informational/training meetings.
1 2 3	*Objective*: Increase public participation in special events. *Assessment Measure:* <u>Tabulation:</u> o Number of events. o Number of volunteers. o Number of volunteer hours. o Number of participants in special events each year.

3 Illicit Discharge Detection and Elimination

The goal of NRH's Illicit Discharge Detection and Elimination Program is to eliminate improper discharge activities. This will be accomplished through maintenance of up-to-date records and maps of the storm drain system; training and implementation of Navy instructions prohibiting illicit storm water discharges; advertising and providing locations for turn-in of household waste materials; continuing the review and approval process for new storm drain connections; responding to complaints; inspection of facilities and the storm drain system; and maintaining spill prevention and response programs for wastewater and subsurface oil. This program will be assessed primarily at Outcome Levels 1 through 3.

Outcome Level	Outcome Objectives and Data Assessment
1 2 3	*Objective:* Encourage and facilitate public involvement in identifying and reporting illicit discharge. *Assessment Measures:* <u>Confirmation:</u> o Maintain base hotline and respond to complaints. <u>Tabulation:</u> o Number of complaints.
1 2 3	*Objective:* Decrease the number of improper discharge activities. *Assessment Measure:* <u>Confirmation:</u> o Maintain base hotline and respond to complaints. o Advertise and provide locations for turn-in of household waste materials. o Inspection of facilities and the storm drain system. <u>Tabulation:</u> o Number of complaints. o Number of illicit discharge investigations. o Number of follow-up visits. o Number of corrective actions completed including distribution of educational materials. o Number of spills. <u>Inspection:</u> o Photo documentation of identified problem areas.

1 2	*Objective:* Continue to maintain an educated Base staff regarding illicit discharge detection and elimination. *Assessment Measure:* <u>Confirmation:</u> o Provide training to Base staff including industrial and commercial workers on Environmental Standard Operating Procedures and Spill Prevention and Response. <u>Inspection:</u> o Results of in-house audits. o Results of annual Storm Water Pollution Control Plan (SWPCP) inspections.
1	*Objective:* Continue review of new storm drain connections by Naval Facilities Engineering Systems Command (NAVFAC) Hawaii and approval by Navy Region Hawaii. *Assessment Measure:* <u>Confirmation:</u> o Maintain up-to-date map of storm water system components in GIS. <u>Tabulation:</u> o Number of new drain connection agreements approved each year, as required.

4 Construction Site Runoff Control

The Construction Site Runoff Control Program focuses on storm water discharges from construction projects that drain to drainage facilities and natural drainage ways that NRH has ownership and responsibility for. Construction projects on Base include smaller projects completed by the Production Division or the Utilities Management , larger projects completed by NAVFAC, and other projects by the Department of Education, Navy Exchange, Army and Air Force Exchange Service, and Housing Public Private Venture contractors.

NRH tracks the implementation of BMPs to minimize polluted runoff through design drawing review and completing inspections of active construction sites. The Construction Site Runoff Control Program will be assessed at Outcome Levels 1 through 3.

Outcome Level	Outcome Objectives and Data Assessment
1	*Objective:* Continue to maintain an effective plan review program to ensure proper permits are obtained and followed. *Assessment Measures:* <u>Confirmation:</u> o BMP Checklist for Construction Site Plan Approval is completed. o Construction sites of one or more acres will submit a notice of intent (NOI) for coverage under DOH's general permit for construction activities or an individual NPDES permit application. o Plan review will ensure new developments meet Federal and State regulations, NPDES permit conditions, and building and landscape design criteria.
1	*Objective:* Continue to maintain an effective construction site inspection program. *Assessment Measure:* <u>Confirmation:</u> o Construction sites inspected in accordance with established frequencies. o Scheduled follow-up inspections are conducted. o Construction Site BMP Checklists are completed for all inspections. o Appropriate enforcement actions are taken when warranted.

1 2	*Objective:* Continue to maintain an educated and trained staff. *Assessment Measure:* <u>Confirmation:</u> o Provide training for employees responsible for plan review. o Provide training for employees responsible for construction site inspections.
1 2 3	*Objective:* Increase contractor effectiveness. *Assessment Measure:* <u>Tabulation:</u> o Number of written notices issued. o Number of stop work orders issued. o Number of contract enforcement provisions applied. o Number of DOH referrals. o Number of repeat violations. o Response time for corrective actions.
1	*Objective:* Continue to maintain inventory of construction sites. *Assessment Measure:* <u>Confirmation:</u> o All approved projects added to database. o Inspection data recorded.
1	*Objective:* Continue review and approval of new storm drain connections by Navy Region Hawaii. *Assessment Measure:* <u>Confirmation:</u> o Maintain up-to-date map of storm water system components in GIS. <u>Tabulation:</u> o Number of new drain connection agreements approved each year, as required

5 Post-Construction Management in New Development and Redevelopment

Post-construction storm water discharges can impact receiving waters by increasing the type and quantity of pollutants in storm water, and by increasing the overall quantity of storm water delivered to the receiving water body during storms. The objective of post-construction runoff controls is to improve storm water quality by installing and maintaining post-construction BMPs, both structural and non-structural, in applicable development and redevelopment projects that have the potential to discharge pollutants into the MS4.

The Post-Construction Management Program includes inspection and operation and maintenance of post-construction BMPs, which also includes routine training and outreach for staff. The Post-Construction Management Program will be assessed at Outcome Levels 1 through 3.

Outcome Level	Outcome Objectives and Data Assessment
1	*Objective:* Continue to maintain an effective plan review program to ensure post-construction runoff controls are incorporated into new development and redevelopment projects. *Assessment Measures:* <u>Confirmation:</u> o BMP Checklist for Construction Site Plan Approval is completed. o Plan review will ensure new developments meet Federal and State regulations and NPDES permit conditions.
1 2	*Objective:* Continue to maintain an effective post-construction BMP inspection and maintenance program. *Assessment Measure:* <u>Confirmation:</u> o Post-construction BMPs inspected for operation and maintenance (O&M) in accordance with established frequencies. o Scheduled follow-up O&M inspections are conducted. o Permanent BMP Inspection Reports are completed for all inspections. o O&M completed in accordance with established frequencies. o Asset management system is kept up to date to track the frequency of inspections and maintenance of post-construction BMPs. <u>Tabulation:</u> o Number of post-construction BMP O&M inspections. o Number of follow-up O&M inspections.

1 2	*Objective:* Continue to maintain an educated and trained staff. *Assessment Measure:* <u>Confirmation:</u> o Provide training for employees responsible for plan review. o Provide training for employees responsible for post-construction BMP O&M inspections.
1 2 3	*Objective:* Increase awareness of post-construction facility responsibilities. *Assessment Measure:* <u>Confirmation:</u> o Education/outreach to facilities with post-construction BMPs. <u>Tabulation/Inspection:</u> o Number of O&M inspections with missing or incomplete inspection and maintenance logs. o Number of inspections with corrective actions required. o Number of O&M inspections requiring follow-up inspections.

6 Pollution Prevention and Good Housekeeping

The objective of the Pollution Prevention/Good Housekeeping Program is to reduce the amount of pollutants entering receiving bodies of water through both education and proper procedures. It requires examination and subsequent alternation of actions to help ensure a reduction in the type of pollution that:

(1) Collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and
(2) Results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm drain systems.

The program is assessed at Outcome Levels 1 through 4.

Outcome Level	Outcome Objectives and Data Assessment
1 2	*Objective:* Continue to maintain an educated and trained staff. *Assessment Measures:* <u>Confirmation:</u> o Inspect industrial facilities included in the Permit annually. o Inspect commercial facilities according to the priority schedule developed. o Train maintenance personnel annually and have new maintenance employees trained as part of the orientation program.
1 4	*Objective:* Decrease potential for storm water impact from street debris. *Assessment Measures:* <u>Confirmation:</u> o Complete street sweeping. o Conduct cleaning and debris removal from drainage structures. o Stencil storm drains, with priority given to industrial and commercial areas, and areas with pedestrian traffic. <u>Tabulation:</u> o Number of storm drains stenciled o Number of curb miles swept. o Volume of trash collected.
1 2 4	*Objective:* Decrease potential for storm water impact from chemical applications. *Assessment Measures:* <u>Confirmation:</u>

	o Develop an Authorized Use List of chemicals used. o Monitor fertilizer and pesticide application in application logs and reduce usage where feasible. o Periodically collect and dispose of unused pesticides, herbicides, and fertilizers according to manufacturers' instruction. o Conduct annual training for personnel on proper maintenance activities. o Conduct annual training for personnel and contractors applying pesticides, herbicides or fertilizers. <u>Tabulation:</u> o Volume of excess/unused chemicals collected for disposal. o Number of facilities inspected annually. o Number of training sessions, and/or number of attendees to training sessions.
1 3 4	*Objective:* Improve implementation of temporary or permanent BMPs to reduce pollutants to the MS4 *Assessment Measure:* <u>Confirmation:</u> Develop, implement, and maintain up-to-date site-specific BMPs and SWPCPs developed and implemented, as needed. <u>Inspections:</u> o Number of facilities inspected annually.
1 4	*Objective:* Improve condition and utility of storm water system through inspection and maintenance program. *Assessment Measure:* <u>Confirmation:</u> o Conduct cleaning and debris removal from storm drainage structures, at least once during the term of the permit. <u>Tabulation:</u> o Number of inlets/catch basins cleaned or maintained. o Number of inlets/catch basins inspected. o Number of inspections resulting in recommendations of additional maintenance. o Volume of debris removed.

1	*Objective:* Continue to maintain an updated inventory of the MS4. *Assessment Measure:* Confirmation: o Maintain an up-to-date map of storm water system components in GIS.
1 4	*Objective:* Reduce discharge of pollutants to the MS4 by Retrofitting Structural BMPs. *Assessment Measure:* Confirmation: o Develop and implement an Action Plan for Retrofitting Structural BMPs. Tabulation: o See Action Plan for Retrofitting Structural BMPs.
1 2 4	*Objective:* Reduce discharge of trash into and out of the MS4. *Assessment Measure:* Confirmation: o Develop and implement a Trash Reduction Plan Tabulation: o See Trash Reduction Plan
1 4	*Objective:* Reduce effects of erosion on storm water quality. *Assessment Measure:* Confirmation: o Develop and implement an Erosion Control BMPs Program Plan. Tabulation: o See Erosion Control BMPs Program Plan

7 Industrial and Commercial Discharge Management

The Industrial and Commercial Activities Discharge Management Program addresses environmental compliance at industrial and commercial facilities within the Base. The program focuses on documenting the inspection efforts, raising awareness among private commercial and industrial facility personnel, and increasing use of BMPs by these personnel. This program is assessed at Outcome Levels 1 through 3.

Outcome Level	Outcome Objectives and Data Assessment
1 2 3	*Objective:* Increase use of BMPs among industrial and commercial facilities to reduce possible spills, illegal connections and illicit discharges. *Assessment Measures:* <u>Confirmation:</u> o Inspect industrial facilities included in the Permit semi-annually. o Inspect commercial facilities at least once every five years. o Require a permit or written equivalent approval for drainage connections and discharge of surface runoff into the MS4. o Provide all facilities educational/BMP handouts or other outreach materials. o Deficiencies corrected by facilities issued a non-compliance notice. o Conduct annual training for inspectors (to identify deficiencies, assess potential impacts to receiving waters, and evaluate the appropriateness and effectiveness of deployed BMPs). <u>Tabulation/Inspection:</u> o Number of inspections conducted. o Number of revisits completed. o Number of deficiencies issued. o Number of corrective actions completed including distribution of educational materials. o Number of contract enforcement provisions applied. o Number of inspector training sessions, and/or number of attendees to inspector training sessions.
1 2 4	*Objective:* Improve implementation of temporary or permanent BMPs at industrial and commercial facilities to reduce pollutants to the MS4 *Assessment Measure:* <u>Confirmation:</u> o Develop, implement, and maintain up-to-date site-specific BMPs and SWPCPs developed and implemented, as needed. o Require a permit or written equivalent approval for drainage connections and discharge of surface runoff into the MS4.

	o Conduct annual training for inspectors (to identify deficiencies, assess potential impacts to receiving waters, and evaluate the appropriateness and effectiveness of deployed BMPs). Inspections: o Number of facilities implementing temporary or permanent BMPs. o Number of inspector training sessions, and/or number of attendees to inspector training sessions.
1 2	*Objective:* Improve monitoring and tracking of industrial and commercial discharge management. *Assessment Measure:* Confirmation: o Maintain up-to-date inventory/database of industrial facilities and activities. o Maintain up-to-date inventory/database of commercial facilities and activities, sorted by priority area. o Require a permit or written equivalent approval for drainage connections and discharge of surface runoff into the MS4. o Develop and maintain database of permits/written approvals for drainage connections and discharge of surface runoff into the MS4.

8 Monitoring

NRH conducts storm water monitoring at industrial facilities annually. The results of the monitoring are summarized in the Annual Monitoring Report submitted to DOH. Analytical results are also submitted to DOH through facility specific Discharge Monitoring Reports, which are submitted after each sampling event. As data are collected over time, the results can be used to evaluate long-term trends in pollutant reductions and assist in determining the effectiveness of the various programs in the SWMP. NRH may also utilize water quality monitoring analysis results conducted by other agencies such as the City and County of Honolulu, the United State Geological Survey, and DOH to provide a comparison between discharges from the MS4 and water quality in receiving waters. The water quality monitoring results from sampling the MS4 will be used to compare relative contributions and progress towards improving water quality. The monitoring program provides data assessment measures to assess the program at Levels 1 and 4 through 6 and sets the framework for an integrated assessment between all Outcome Levels.

Waste load allocations (WLA) have been developed for discharge from the MS4 into the North Fork of Kaukanohua Stream. In accordance with the Permit, installation of the additional BMPs will be completed by 2023 after which turbidity monitoring will be conducted for at least one year. An updated WLA Completion Report for the North Fork of Kaukanohua Stream will be submitted with the next permit renewal application.