Draft

STORM WATER MANAGEMENT PLAN (SWMP) FOR MARINE CORPS BASE HAWAII (MCB HAWAII)

Kaneohe Bay, Oahu, Hawaii

NPDES Permit No. HI S000007

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ADP	Available Demonstrated Practices
ADT	Available Demonstrated Technology
AFFF	Aqueous Film Forming Foam
AMS	Asset Management System
AUL	Authorized Use List
BAT	Best Available Technology Economically Achievable
BBL	Barrel
BCT	Best Conventional Pollutant Control Technology
BMP	Best Management Practice
BOD	Biochemical Oxygen Demand
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CETEP	Centralized Environmental Training and Education Program (Marine Corps Base Environmental Department)
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CMP	Corrugated Metal Pipe
CO	Base Commanding Officer
COD	Chemical Oxygen Demand
CWA	Clean Water Act
DOD	Department of Defense
DOE	Department of Education
DOH	Department of Health
DOT	Department of Transportation
DRMO	Defense Reutilization Marketing Office
DRMS	Defense Reutilization Marketing Service
EDOP	Effective Date of Permit
EA	Environmental Assessment

EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act (2007)
ENV	Marine Corps Base Environmental Department
EPA	Environmental Protection Agency
EQA	Environmental Quality Assessment
EPCRA	Emergency Planning and Community Right-to-Know Act
FEAD	Facilities Engineering and Acquisition Division, formerly “Resident Officer in Charge of Construction (ROICC)” (Marine Corps Base Hawaii)
FWPCA	Federal Water Pollution Control Act
GAC	Granular Activated Carbon
GIS	Geographic Information System
GP	General Permit
GPD	Gallons per Day
GPM	Gallons per Minute
HAR	Hawaii Administrative Rules
HAZMIN	Hazardous Waste Minimization
HM	Hazardous Material
HW	Hazardous Waste
IDDE	Illicit Discharge and Elimination
IP	Individual Permit
IPM	Integrated Pest Management
IRP	Installation Restoration Program
LFPE	Logistics Facilities Public Works Engineering
LID	Low Impact Development
MCB Hawaii	Marine Corps Base Hawaii
MCCS	Marine Corps Community Services
MCD	Facilities Engineering Maintenance, Maintenance Control Division (Marine Corps Base Hawaii)

MRO	Facilities Engineering Maintenance, Maintenance Repair Organization (Marine Corps Base Hawaii)
MEP	Maximum Extent Practicable
MGD	Million Gallons per Day
MPP	Monitoring Program Plan
MS4	Municipal Separate Storm Sewer System
MS4 Permit	U.S. Marine Corps Hawaii's Municipal Separate Storm Sewer System (MS4) NPDES Permit, No. HI S000007
MSDS	Material Safety Data Sheet
NAD 83	North American Datum 83
NAVFAC Hawaii	Naval Facilities Engineering Command Hawaii
NAVFAC Pacific	Naval Facilities Engineering Command Pacific
NEPMU-6	Navy Environmental Preventative Medicine Unit 6
NGPC	Notice of General Permit Coverage
NIOSH	National Institute for Occupational Safety and Health
NOI	Notice of Intent (for coverage under a general NPDES Permit)
NSDEPP	Non-Storm Water Discharge Elimination and Prevention Program
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
O&HS SC	Oil & Hazardous Substance Spill Contingency
OHS	Oil and Hazardous Substance
OJT	On the Job Training
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyls
pH	Hydrogen-Ion Activity
PID	Photoionization Detector
PM	Project Manager
PMP	Pest Management Plan, MCB Hawaii Kaneohe Bay
PPM	Parts Per Million

PPV Housing	Public-Private Venture Housing
PVC	Polyvinyl Chloride
POL	Petroleum, Oil, Lubricant
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendment and Reauthorization Act
SIC	Standard Industrial Classification
SLC	Shop Level Coordinator
SOP	Standard Operating Procedures
SPCC	Spill Prevention, Control, and Countermeasures
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
TSDF	Treatment, Storage, and Disposal Facility
TSS	Total Suspended Solids
UIC	Underground Injection Control
U.S.C.	United States Code
USCG	United States Coast Guard
USMC	United States Marine Corps
UST	Underground Storage Tank
VOC	Volatile Organic Compound

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. This methodology was published in a Federal Register notice on July 9, 1986 (51 FR 24974).

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.

Combined Sewer Overflow (CSO)

A pipe that discharges untreated wastewater during storms from a sewer system that carries both sanitary wastewater and storm water. The overflow occurs because the system does not have the capacity to transport and treat the increased flow caused by storm water runoff.

Combined Sewer System

A wastewater collection and treatment system where domestic and industrial wastewater is combined with storm runoff. Although such a system does provide treatment of storm water, in practice the systems cannot handle major storm flows resulting in untreated discharges from combined sewer overflows.

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 (EIS)

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 (NEPA) and the Hawaii Environmental Impact Statement Law, Chapter 343, HRS.

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 (POTW). 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 Clean Water Act, 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 (NPS)

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 a municipal separate storm water system, 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. For example, height, weight, sex, and hair color are all parameters that can be determined for humans. 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.

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 CERCLA; any chemical the facility is required to report pursuant to Section 313 of Title III of SARA; 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 waste waters; 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 (HRS) §391-1. *“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 non-man made 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

As of the effective date, October 15, 2014, the U.S. Marine Corps Base Hawaii (MCB Hawaii) Municipal Separate Storm Sewer System (MS4) is required to comply with the conditions of the National Pollutant Discharge Elimination System (NPDES) Permit No. HI S000007 (referred to hereinafter as the "MS4 Permit"). The MS4 Permit was issued by the State of Hawaii Department of Health (DOH). Refer to Appendix 1-1 for the final permit and rationale. It includes authorized storm water and specified non-storm water discharges from the MS4, and storm water runoff from industrial sites into Kaneohe Bay, Nuupia Ponds, Kailua Bay, and the Mokapu Central Drainage Channel (MCDC).

Per the Permit, Part D.1, MCB Hawaii is required to further develop, improve, implement and enforce its existing Storm Water Management Plan (SWMP). The Permit states:

*"**Part D.1. Development, Improvement, Implementation and Enforcement of SWMP***

> *The Permittee shall further develop and improve, implement, and enforce a SWMP designed to address the requirements of this permit and reduce, to the ["maximum extent practicable"] MEP, the discharge of pollutants to and from its MS4 to protect water quality and to satisfy the appropriate water quality requirements of the Act. The SWMP shall include the following information for each of the SWMP components described in Part D.1.a to Part D.1.g below:*
>
> - *The BMPs, including the underlying rationale that will be implemented for each of the program components.*
> - *The measurable standards and milestones for each of the BMPs, including the underlying rationale and interim measures to aid in determining the level of effort and effectiveness of each program component.*
> - *The name or position title and of the person or persons responsible for implementation or coordination of each program component.*
> - *A monitoring program to determine effectiveness of the controls and the overall storm water program.*
>
> *Submittal Date - The SWMP shall be: updated and modified per the requirements of this permit; consistent with the format of this permit; submitted to the DOH in accordance with Part A.6 within 18 months after the effective date of this permit, or as otherwise specified; and fully implemented upon submittal. The Permittee shall implement the existing SWMP until submittal of the revision. The SWMP and any of its revisions, additions, or modifications are enforceable components of this permit."*

The MS4 Permit requires that MCB Hawaii continue to comply with its existing SWMP until a revised SWMP is submitted to DOH. This revised SWMP is to be implemented upon submittal to DOH, no later than April 15, 2016.

1.1 Objective

Above all, the primary goal of MCB Hawaii's SWMP is to protect and restore the water quality of the surface waters affected by its MS4. The SMWP will accomplish this goal using a multi-faceted approach outlined by various program components that have been specified in the MS4 Permit.

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

A summary of the objectives of this SWMP include:

- Promoting awareness of MCB Hawaii's SMWP among all of its tenants.
- Education and training of all parties responsible for complying with, or managing the MCB Hawaii Storm Water Program;
- Identification of potential sources of pollutant discharges into storm water runoff that are regulated by the MS4 Permit;
- Evaluation and modification, as needed, of existing Best Management Practices (BMPs) to meet changing conditions and MS4 Permit requirements;
- Facilitating implementation of the Base-wide and facility-specific Storm Water Pollution Control Plans;
- Continued monitoring to ensure that the quality of storm water discharges at the facility are in compliance with Discharge Prohibitions, Effluent Limitations, and Receiving Water Limitations specified in the MS4 Permit;
- Regular inspection and enforcement of MS4 Permit regulations at all applicable facilities; and
- Measuring the effectiveness of prescribed BMPs in preventing, minimizing or removing pollutants in storm water discharges, for continued development of the SWMP.

This SMWP is intended to be a user-friendly document to assist and promote the effective implementation of MCB Hawaii's Storm Water Management Program. It is aimed at the development and implementation of comprehensive, cost-effective, Base-wide practices that prevent, reduce, and eliminate pollutants in storm water discharges, generated by MCB Hawaii, to the maximum extent practicable (MEP).

1.2 Marine Corps Base Hawaii Background

1.2.1 Location

MCB Hawaii is located on the Mokapu Peninsula along the eastern shore of the island of Oahu, Hawaii. The Base encompasses a total land area of approximately 2,951 acres. It is bordered on the north by the Pacific Ocean, on the east by Kailua Bay, and on the west and southwest by Kaneohe Bay. A vicinity map showing the location of the Base and its geographic surroundings is shown in Figure 1-1.

The Base's primary mission is to operate and maintain facilities that provide services and material support for the air and ground units of its tenant organizations.

1.2.2 Drainage and Topography

Approximately 80 percent of the area comprised in MCB Hawaii is relatively flat, with slopes less than 10 percent. Impervious areas at MCB Hawaii include roofed buildings, patios, sheds, roads, aircraft runways, sidewalks and paved lots. An estimated 35 percent of the area on Base is impervious to storm water infiltration, and an additional 10 percent that is made up of the Nuupia Ponds.

Storm runoff is transported via surface runoff, protected or earthen ditches, and through a system of catch basins, grated storm drain inlets, storm drain manholes, and culverts.

1.2.3 Historical and Current Land Uses

The Kuwaaohe Military Reservation was established in 1918 on the east side of Mokapu Peninsula. Following a period of inactivity, it was re-established as Kaneohe Naval Air Station on February 15, 1941. The facility consisted of a 5,800-foot airstrip, seaplane runways, hangars, fuel storage facilities, waterfront facilities, and support and administrative buildings. In 1949, the Station was deactivated and placed on caretaker status. In 1952, the facility was re-activated and renamed Kaneohe Marine Corps Air Station. Following its reactivation, a 7,800-foot long runway, motor vehicle maintenance facilities, exchange, and the majority of bachelor and family housing units were constructed. With the departure of all fixed-wing aircraft squadrons at Kaneohe, the Base was again renamed to Marine Corps Base Hawaii, or MCB Hawaii, Kaneohe Bay.

The mission of MCB Hawaii, Kaneohe Bay is to maintain and operate facilities that provide services and material support for air and ground units, and its tenant organization.

Industrial Facility Descriptions: Industrial facilities currently operating at MCB Hawaii, are grouped under the following list of industrial facility categories that have been provided by MCB Hawaii:

- Operational Buildings;
- Maintenance Buildings;
- Various Utility Facilities;
- Storage Buildings;
- Recycling Facility;
- Water Reclamation Facility/Wastewater Treatment Plant(WWTP); and
- Sanitary Landfill.

Each of the industrial facilities at MCB Hawaii are described in more detail in Chapter 11, Industrial Facilities.

1.2.4 SARA Title III, Section 313 Facilities

In accordance with the NPDES Storm Water Permit, the SWMP shall incorporate special provisions at facilities which are subject to the reporting requirements of Superfund Amendment and Reauthorization Act (SARA), Section 313, pages 1 through 20, for water priority chemicals. This is also known as the Emergency Planning and Community Right-to-Know Act (EPCRA).

MCB Hawaii facilities that have been identified by onsite EPCRA personnel, to produce or store chemicals in quantities that meet thresholds subject to regulation under Section 313 of SARA Title III are listed below. The corresponding regulated chemical(s) have been listed with each facility.

- WWTP (Nitrates)
- Firing Range (Lead/Copper)
- 90-Day Base Hazardous Waste Accumulation Site (BHWAS) (Antifreeze)

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, 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 United States (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.

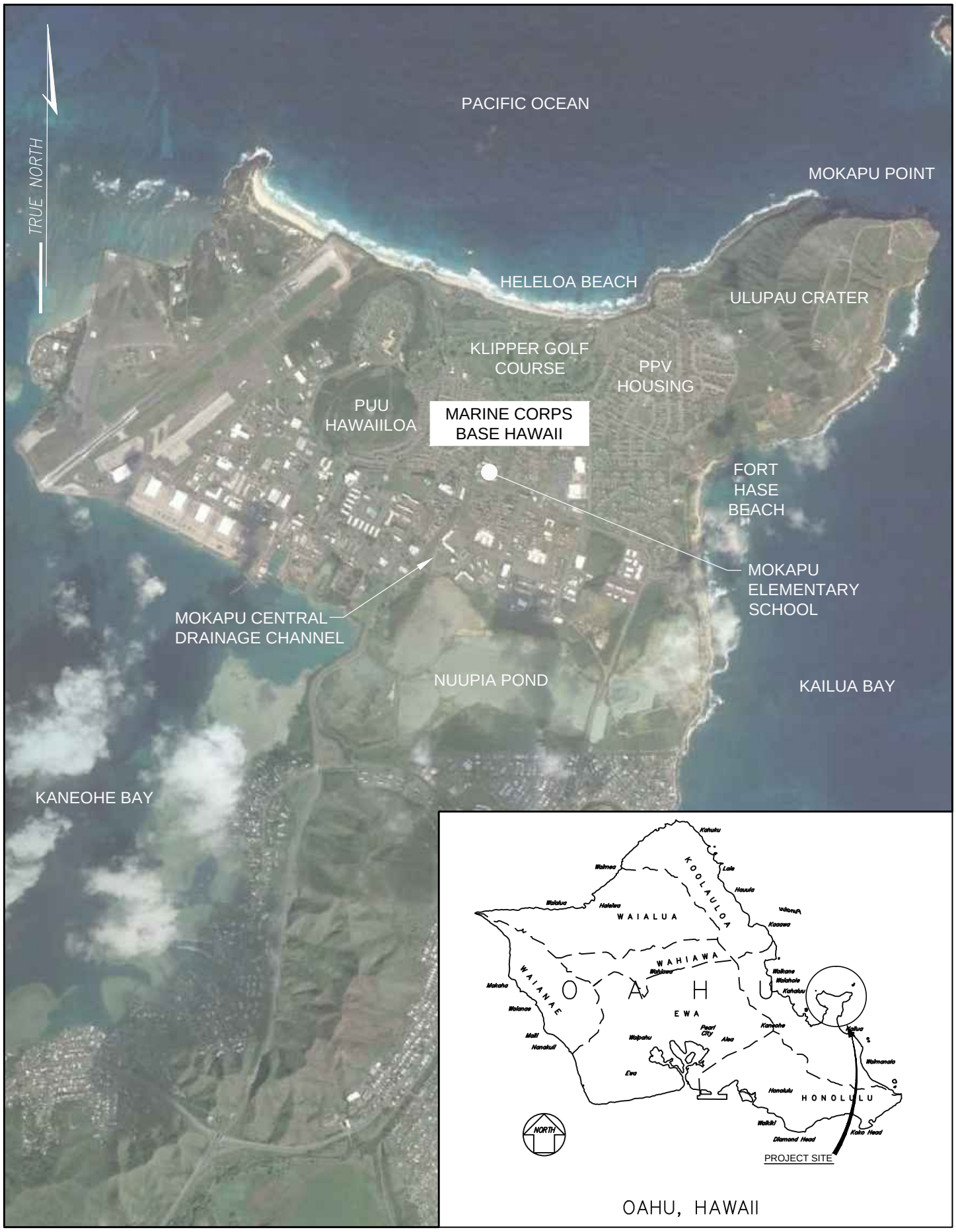
The EPA only requires permits for the discharge of storm water for specific types of industrial activities, in accordance with 40 CFR § 122.26(b)(14). Those industries requiring storm water permits are described in one of two ways: by a narrative description or by a Standard Identification Classification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

MCB Hawaii, Kaneohe Bay has facilities that engage in EPA defined industrial activities and therefore storm water discharges from Marine Corps properties are subject to regulation under the Clean Water Act. These will be described in further detail in Chapters 10 and 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. Effective December 6, 2013, the DOH revised regulations implementing the storm water program in the Hawaii Administrative Rules (HAR) Title 11; Chapter 54, Water Quality Standards (Chapter 11-54); and Chapter 55, Water Pollution Control (Chapter 11-55). At this time DOH also readopted the NPDES General Permits in HAR 11-55, Appendices B through L.

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). The IPs address design and water quality standards specific to an individual facility, whereas the GP is used to authorize a category of discharges within a specific geographic area. In the case of a GP, the applicant must meet the requirements of the GP such as common storm point sources, operations, wastes generated, disposal practices, etc. The permit requires information



VICINITY & LOCATION MAP

NOT TO SCALE

FIGURE 1-1

regarding existing programs, the means available to the municipality to control pollutants, and a filed 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 the DOH. Since MCB Hawaii owns all of the industrial facilities within its property, the industrial storm water discharges have been incorporated into Part E of its MS4 Permit.

1.3.2 Marine Corps Base Hawaii Storm Water Permit Requirements

The previous permit No. HI 1121423 was originally an industrial storm water permit issued by the DOH to the Commanding General, MCB Hawaii, Kaneohe Bay on December 2, 1996. It was reissued on December 31, 2002 to include the MCB Hawaii MS4. The reissued permit no. HI 1121423 became effective on January 30, 2003, with an expiration date of January 31, 2007.

MCB Hawaii submitted the NPDES permit renewal application on July 26, 2006, which prompted the permit no. to be changed to HI S000007. The DOH had not reissued the permit, so an Administrative Extension of the permit was granted to MCB Hawaii, Kaneohe Bay on January 26, 2007. This extended MCB Hawaii's coverage, pending the reapplication processing, until the new Permit No. HI S000007 was issued and came into effect on October 15, 2014. This SWMP is written to comply with the current MS4 Permit No. HI S000007.

The MS4 Permit specifies the conditions and requirements that authorize MCB Hawaii to discharge storm water associated with industrial activities. These provisions require MCB Hawaii to:

- Effectively prohibit non-storm water discharges through its separate storm sewer system into State waters and from its facilities discharging directly to State Waters or through a non-MCB Hawaii-owned MS4. NPDES permitted discharges and non-storm water discharges, in Section 1.3.2.1, have been identified in the permit and are exempt from the prohibition.
- Reduce the discharge of pollutants from its MS4 to the MEP.
- Reduce the discharge of pollutants, classified as industrial in accordance with 40 CFR §122.26(b)(14), to the applicable limitations subject to the Best Available Technology currently available (BAT)/Best Conventional Pollutant Control Technology (BCT) discharge requirement and other federal/state requirements for such facilities. At MCB Hawaii, these are encompassed within the industrial facilities required to have NPDES permit coverage and listed in the Permit.

In the event that the MS4 Permit requirements conflict with any other regulations, MCB Hawaii is to comply the more stringent requirement.

1.3.2.1 Allowable Non-Storm Water Discharges

The following non-storm water discharges may be discharged into the MCB Hawaii MS4 provided that the discharge is identified below, and meets all conditions when specified by MCB Hawaii. These conditions can be found in Appendix 3-1, BMPs for Allowable Non-storm Discharge. In the event that any of the non-storm water discharges listed below is determined to be a source of pollution by MCB Hawaii, the discharge will no longer be allowed.

- Water line flushing;
- Landscape irrigation;
- Diverted stream flows;
- Rising ground waters;
- Uncontaminated groundwater infiltration (as defined in 40 CFR §35.2005(20));
- Uncontaminated pumped ground water, not including construction related dewatering activities;
- Discharges from potable water sources and foundation drains;
- Air conditioning condensate;
- Irrigation water;
- Springs;
- Water from crawl space pumps, uncontaminated water from utility manholes or boxes, and footing drains;
- Lawn watering runoff;
- Water from individual residential car washing;
- Water from charity car washes;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Exterior building wash water (water only);
- 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.

MCB Hawaii may also develop a list of other similar occasional incidental non-storm water discharges that will not be addressed as illicit discharges, provided that these discharges are not reasonably expected to be a significant source of pollutants to the MS4. This can be based on either the nature of the discharge or the conditions/controls (such as BMPs) that MCB Hawaii has established for allowing it.

MCB Hawaii has outlined specific criteria for two additional, conditionally allowable, non-storm water discharges; Boat rinse water and dive gear rinse water. See Section 3.1.1 for detailed information.

1.4 Marines Corps Environmental Policy

The following excerpt is from the Marine Corps' manual on environmental policy, "Marine Corps Order P5090.2A, Environmental Compliance and Protection Manual", dated August 26, 2013.

Permit Requirements (Chapter 1, Section 2 Marine Corps Policy):

> *"**1201. GENERAL**. The Marine Corps recognizes the importance of sustaining a clean, healthy environment to train and work that directly supports mission readiness and promotes community confidence in environmental stewardship efforts. By respecting and maintaining the natural resources entrusted to the Marine Corps, the training opportunities enjoyed by today's Marines will be available to future Marines. Complete and successful implementation of the policies herein will optimize the Marine Corps' ability to provide and maintain the natural resources, facilities, and training areas necessary to ensure mission sustainability. All Marine Corps installations and activities will ensure that this policy is implemented and communicated to all military and civilian employees and supporting contractors.*

***1202. COMPLIANCE**. All Marine Corps' civilian and military personnel, installation tenants, and contractors shall comply with applicable Federal, state, and local environmental laws, regulations, and ["Executive Orders"] E.O.s; ["Department of Defense"] DOD and Marine Corps' environmental policies; and where applicable, overseas environmental requirements (see appendix A).*

***1203. POLLUTION PREVENTION (P2)**. The Marine Corps will minimize resource consumption and eliminate waste generation, where practical, when planning, designing, manufacturing or constructing, maintaining, sustaining, and disposing of facilities, weapon systems, and equipment. Marine Corps facilities shall also eliminate or minimize the use of hazardous materials (HM) and the generation of hazardous waste (HW), where practicable. When assessing environmental compliance alternatives, installations and commands shall employ the ["Environmental Management Hierarchy"] EMH, as established by reference (f) in the following order of preference:*

1. *Source reduction.*
2. *Reuse.*
3. *Recycling.*
4. *Treatment.*
5. *Disposal"*

1.5 Marine Corps Base Hawaii Storm Water Program

MCB Hawaii obtained State of Hawaii Permit No. HI S000007 for individual NPDES Storm Water Permit coverage of specified storm water and non-storm water discharges from the MCB Hawaii MS4.

In accordance with the requirements of NPDES Permit HI S000007, 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;
- HAR, Title 11, Chapter 54, Water Quality Standards; 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 in place to meet MS4 Permit requirements, and furthermore to protect and improve the water quality to the MEP of receiving waters surrounding MCB Hawaii. It has been broken down into the components described in Figure 1-2. The primary intent of this document is to assist all parties responsible for managing and implementing MCB Hawaii's Storm Water Management Program in doing so. 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 the DOH. As a Base-wide program, the policies outlined in this SWMP are applicable to all tenants located and operating on the MCB Hawaii. A more detailed list of these "target groups" is included in Section 2.2.

If the regulations of the MS4 Permit conflict with any other federal, state, or local regulations, the more stringent alternative will apply.

1.5.2 Program Organization & Responsibilities

The MS4 Permit No. HI S000007 and this updated SWMP supersede all previous versions. MCB Hawaii is responsible to ensure compliance with the MS4 Permit No. HI S000007 and the conditions established within this SWMP. All tenants on Base are subject to the rules and regulations of these documents. Primary components of MCB Hawaii's SWMP are summarized in Figure 1-2.

Generally, oversight of the policies and development of the Base-wide SWMP is managed by the MCB Hawaii Environmental Department (ENV). 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. MCB Hawaii also provides funding for a majority of work completed on Base.

There are several different tenants on Base, however, MCB Hawaii is structured such that the Base Commanding Officer (CO) has ultimate authority to enforce Base-wide compliance with the requirements of the MS4 Permit. In addition to the ENV, there are various levels of authority between the CO and each tenant on Base, through which day-to-day practices are monitored and managed. Some of the primary entities responsible for specific groups of tenants are listed below:

- Base Inspector – Overall management of all tenants on base to ensure compliances of all established rules and regulations.
- Forest City – Management of the Public-Private Venture (PPV) Housing
- Marine Corps Community Services (MCCS) – Management of commercial facilities
- Department of Education (DOE) –Management of Mokapu Elementary School
- Facilities Engineering Maintenance Control Division (MCD) – Scopes and plans in-house work
- Facilities Engineering Maintenance Repair Operations (MRO) – Conducts work scoped by MCD
- Facilities Engineering and Acquisition Department (FEAD) – Formerly called the "Resident Officer in Charge of Construction (ROICC)", responsible for managing Naval Facilities Engineering Command (NAVFAC) construction projects.

As appropriate, MCB Hawaii, Kaneohe Bay will conduct enforcement type action and the necessary corrective action for any "non-compliant" issue. Enforcement procedures have been outlined, as needed, for each storm water program set forth in this document. Typically all non-compliance issues are handled through escalation of the level of authority, with the CO being the last resort, for issues that have gone unaddressed. This has been found to be an effective mechanism for ensuring rules and regulations are followed. To date there have been no issues that have required escalation to the level of the CO.

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 MS4 Permit requirements, are listed below that task.

MCB 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 goals and implementation of the base-wide Storm Water Management Plan.

Illicit Discharge Detection and Elimination Program (Chapter 3)

Objective: Detect and eliminate all illicit discharges to the MS4, through a program of field screening, compliant investigation, monitoring, tracking of illicit discharges discovered, and approved connections to the MS4.

Construction Site Runoff Control (Chapter 4)

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

Post-construction Storm Water Management (Chapter 5)

Objective: Implement permanent controls, in all new development and redevelopment projects, to prevent or minimize water quality impacts to the MEP, using revised construction design and plan review standards, and a BMP Database to inventory BMPs, schedule and track routine maintenance.

Pollution 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)

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

Industrial and Commercial Activities (Chapter 10 & 11)

Objective: Reduce the discharge of pollutants from all industrial and commercial facilities basewide, through requirements to implement BMPs, inventory, inspections, and tracking of these facilities.

Monitoring Program (Chapter 12)

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

Reporting (Chapter 13)

Objective: To conduct annual evaluations and monitor the progress of MCB Hawaii'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.

Figure 1-2 Storm Water Management Program Summary

STORM WATER MANAGEMENT PROGRAM MANAGER

ENV

Public Education & Outreach
- ENV
- Public Affairs Office (PAO)

Construction

In-house:
- ENV
- MCD
- MRO

Contract:
- MCD
- FEAD
- DOE
- Forest City
- MCCS

Military Construction:
- ENV

Post-construction

In-house:
- ENV
- MCD
- MRO

Contract:
- MCD
- FEAD
- DOE
- Forest City/ NAVFAC Pacific
- MCCS

Military Construction:
- ENV

Pollution Prevention/ Good Housekeeping
- ENV
- FEM
- Landscaping
- MCD
- MRO
- Forest City
- DOE
- MCCS

Industrial & Commercial Activities
- ENV
- Industrial Facility Manager

Maintenance
- MCD
- MRO
- Landscaping

Inspections
- ENV
- Base Inspector
- MCD
- MRO
- Landscaping
- Forest City/ NAVFAC Pacific
- DOE
- MCCS

Tracking
- ENV
- MCD
- MRO
- Landscaping
- Forest City/ NAVFAC Pacific
- DOE
- MCCS

Monitoring Program
-ENV

Compliance
- CO
- Base Inspector
- ENV
- NAVFAC
- Forest City
- DOE
- MCCS

Figure 1-3 Storm Water Management Program Organizational Chart

1.5.3 Pollution Prevention Team

The Pollution Prevention Team member general roles and responsibilities are summarized below. A current record of the assignments of each role and contact information is included in Appendix 1-2.

- Team Leader – Responsible for the overall implementation and management of all components of the SWMP. All other team members report to the Team Leader.
- Facilities Maintenance – Responsible for conducting and tracking routine maintenance of MCB Hawaii's storm drain system facilities.
- Mapping – Responsible for maintaining MCB Hawaii's Geographic Information System (GIS) database and updating it with new facilities, specifically storm drain or Low Impact Development (LID) features that are constructed on Base.
- Personnel Trainer – Responsible for the Personnel Training Program, including preparing training documents and materials, as well as scheduling, coordinating, and conducting training sessions.
- Site Inspector – Responsible for conducting site inspections, dry weather visual inspections and preparing site inspection documentation.
- Storm Water Sampling Coordinator – Responsible for collection and analysis of storm water samples and submittal of monitoring and sampling results to the Team Leader.
- Recordkeeper – Responsible for archiving all documents associated with the SWMP, including the site map, inspection reports, maintenance records, and annual reports.

The Pollution Prevention Team roles pertain to the general oversight and management of the Base-wide Storm Water Management Program, and do not reflect the roles and responsibilities covered by each specific SWMP component.

1.6 Revisions and Updates

To promote the continued improvement and efficacy of MCB Hawaii's Storm Water Management Program, this SWMP is intended to be a "living document."

Per the following excerpt from the MS4 Permit, modifications to the SWMP are triggered by the following criteria.

Permit Requirement (Part D.2):

> *"The Permittee shall modify the SWMP as required when any of the following occur:*
>
> - *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.*
> - *Change in conditions and incorporation of more effective approaches to pollutant control.*
> - *System modifications, including any planned physical alterations or additions to the permitted MS4 and any existing outfalls newly identified over the term of the permit."*

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

- Changes in program organization, operation, maintenance, or construction of new facilities at MCB Hawaii that affect the MS4 and/or storm water pollution control.

- Additional or removal of industrial facilities covered by this MS4 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 MS4 Permit.
- Program improvements, and justification for the change.

MCB Hawaii 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.

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

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

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

1.6.1 Permit Renewal

Renewal of the MCB Hawaii NPDES Storm Water Permit is required after five years from the date of issuance (on September 14, 2019). The Annual Report for the fiscal year prior to the expiration date of the permit will serve as the renewal application and should be submitted with a $1,000 filing fee, as specified in *permit requirements (Part G.1.a)*.

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 Outreach

In accordance with the MS4 permit, Parts D.1.a and Parts D.1.b, MCB Hawaii 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 MS4 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 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 MS4 Permit describes the requirements for the Public Education and Involvement Program as follows:

"Part D.1.a. Public Education and Outreach:

The Permittee shall further develop and implement a comprehensive education and involvement program to distribute educational materials to the community or conduct equivalent outreach activities about the 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 should create: positive changes in attitude, knowledge, and awareness; BMP implementation; pollutant load reduction; and an improvement 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 the permit requirements described below. The Permittee may fulfill portions of this requirement by cooperating with other MS4 storm water public education programs.

***Part D.1.a.(1) Targeted Groups** - The Permittee shall address the following targeted groups in the Base-wide Awareness Plan with appropriate messages, and describe outreach activities and anticipated frequencies that each activity will be conducted over the permit term:*

- *Military personnel and dependents that work or live on base;*
- *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 NPDES permit program;*

- *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.g.(4);*
- *Schools, recreational facilities;*
- *Any other source that the Permittee determines may contribute a significant pollutant load to its Small MS4.*

***Part D.1.a.(2) 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:*

- *Publicize the telephone numbers for facilities and on-base personnel to report illegal discharges;*
- *Distribution of brochures to the residential community and industrial/commercial facilities;*
- *Participation in special events (e.g., Earth Day Educational Events) and exhibits;*
- *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;*
- *Pesticides, herbicides, and fertilizer use program;*
- *The promotion of water conservation;*
- *Storm drain stenciling or marker installation;*
- *Proper disposal of grass clippings, leaves, and other green waste;*
- *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*
- *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.

***Part D.1.a.(3) Evaluation Methods** - The Permittee shall evaluate the progress of the public education program based on the following:*

- *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.

- *Number of brochures distributed.*
- *Participation in events.*
- *Volunteer hours.*
- *Any other methods that the Permittee determines to be effective.*

The results of the evaluation shall be summarized in the Annual Report.

Part D.1.b Public Involvement/Participation

The Permittee shall include the public in developing, reviewing, and implementing the SWMP. The draft and final SWMP shall be made available to the public (e.g., on Permittee's website) and at local offices. An informational meeting shall be scheduled and announced prior to finalizing the SWMP to solicit comments and 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 clean-up events to educate the public about impacts of storm water."

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 implementations of the Storm Water Management Program. Greater knowledge of the program will garner greater public support for the program, as well as a more willingness to comply with the 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.

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 MS4 Permit identifies the following groups as targeted audiences:

- Military personnel and dependents that work or live on base;
- 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 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 - based on the relative risk of contamination of storm water runoff; and
- Schools, recreational facilities.

Additionally, MCB Hawaii may identify any other source that they determine to be a potential pollutant concern to its Small MS4. 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 Hawaii Marine Newspaper

The Hawaii Marine Newspaper, which is available free of charge throughout the base, includes an "Environmental Corner" article twice a year. The topics of these articles include a wide range of environmental issues, including:

- *Water quality;*
- *Pollution prevention;*
- *Pesticides, herbicides, and fertilizer use;*
- *The promotion of water conservation;*
- *Proper disposal of green waste; and*
- *Hazardous materials/waste awareness and disposal.*

2.3.2 Orientation for New Arrivals to MCB Hawaii

MCB Hawaii holds a mandatory monthly orientation brief at the MCB Hawaii Kaneohe Bay Theatre for all new arrivals (military and civilian) on the Base. This event is also open to military dependents. Attendees receive information regarding Base environmental policies, including storm water pollution prevention, green waste disposal, and hazardous waste disposal and handling. New residents and workers are also provided the contact information for the Base Inspector Complaint Hotline [(808) 257-8852] to report any illegal storm water activity and the website address where information about the Storm Water Management Program can be reviewed.

2.3.3 Household Hazardous Materials

ENV produces a Household Hazardous Waste Disposal pamphlet for distribution to all housing units at MCB Hawaii Kaneohe Bay. These pamphlets are also available at the New Arrivals brief.

The MCB Hawaii housing department provides residents with information regarding the base household hazardous material reuse center. The reuse center accepts residents' excess household hazardous materials and reissues the items as needed.

2.3.4 Staff Training

MCB Hawaii has an existing "Environmental Standard Operating Procedures" class that occurs bimonthly. Students are instructed in hazardous materials/waste handling and disposal, recycling/reuse, solid waste disposal, spill response, cultural/natural resource conservation, and storm water pollution prevention. Printed handouts for these topics are distributed to attendees. The ENV Storm Water Program Manager is responsible for the information provided at the SOP class. The list of attendees or a general headcount will be included in the annual report.

2.3.5 Good Housekeeping Training

Good Housekeeping Training occurs at the bimonthly SOP training, and also at the monthly Environmental Compliance Coordinators (ECC) Training.

2.3.6 MCB Hawaii Main Entrance Marquee

An informational marquee at the main entrance to the base displays information about upcoming base activities and other programs. ENV will work with the Base Public Affairs Office to include storm water pollution prevention tips in the semi-annual rotation. The hotline for the base security, which includes reporting of illicit discharges, will also be included in this rotation.

2.3.7 Web based Educational Materials

The Base has an existing website (www.mcbhawaii.marines.mil) that is available to the general public as well as staff. Several types of information related to storm water pollution prevention, storm water pollutant controls, BMPs, and applicable storm water rules and regulations are posted on the website 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:

  http://www.mcbhawaii.marines.mil/Departments/Installations,EnvironmentLogistics/Environmental/PollutionPrevention.aspx

  http://www.mcbhawaii.marines.mil/Departments/Installations,EnvironmentLogistics/Environmental/HouseholdChemicals.aspx

- Links to storm water related documents including, the SWMP, the MS4 Permit, the most recent Storm Water Annual Report;
- Procedures for reporting illicit discharges; and
- Public meeting notices regarding storm water policies, regulations, and/or the SWMP, including locations and time.

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 including a broader base of expertise and allow for shorter implementation schedules due to fewer obstacles in the form of public challenges.

2.4.1 Development, Review, and Implementation of the SWMP

In accordance with the MS4 Permit, all plans related to the development of the draft and final SWMP shall be made available to the public for review and comment. The plans shall be posted on the MCB Hawaii website (http://www.mcbhawaii.marines.mil/UnitHome/FeaturedInformation/StormWaterPlans.aspx) during the review period. The public review period is a minimum of 30 calendar days, and all comments/responses will be submitted to the DOH along with the submittal of each document.

An informational meeting shall be scheduled and announced prior to finalizing the SWMP to solicit further comments. The final SWMP shall incorporate any questions from the public.

Following the completion of the final SWMP, MCB Hawaii will make the document available on its website and, upon request, at the ENV office.

2.4.2 Community Clean-up Events

MCB Hawaii conducts annual clean-up events, including trash pick-up or beach clean-ups, to help to raise public awareness about the impacts of trash and illicit discharges on storm water runoff quality.

ENV is responsible for organizing these community events, including documentation of participation numbers, amount of trash collected, and any observed trends or correlations to the other SWMP activities.

MCB Hawaii also distributes information about Base activities via Facebook. ENV may consider promoting volunteer opportunities through this social media outlet.

https://www.facebook.com/MarineCorpsBaseHawaii/

2.4.3 Storm Drain Placards

In 2012, MCB Hawaii implemented a Storm Drain Stenciling Program on the base to increase public awareness about storm water pollution and discourage illicit discharges to the MS4. Per Section D.1.f.(1)(ii) of the current MS4 Permit, MCB Hawaii is required to install a minimum of 50 new storm drain placards per year. ENV may solicit volunteers to assist with this program. Additional information about the placard requirements is included in SWMP Chapter 6.

2.4.4 Partnerships

MCB Hawaii will investigate the possibility of partnering with other MS4 permit holders (i.e., Department of Education and the City and County of Honolulu), nonprofit organizations, and other interested community organizations to raise awareness, implement BMPs, reduce pollutant loads, and improve storm water runoff quality.

2.4.5 Promoting Public Participation

There are a variety of other methods to involve the public in MCB Hawaii's Storm Water Management Program, however, success of such programs is largely dependent on community interest. MCB Hawaii will continue to offer ideas, guidance, and/or opportunities to public groups that have shown interest in participating in SWMP-related programs.

Additional activities that will be considered include organizing a citizen advisory group to solicit comments from the public on changes to the SWMP or SWMP-related programs, or volunteer projects to improve water quality and educate the public on the impacts of storm water.

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, Written Strategy for Determining the Effectiveness of the SWMP, for additional information.

2.6 Summary of Public Education, Outreach and Participation

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

Outreach Activity	Targeted Group							Frequency/ Measureable Goals
	Military residents and dependents	Military and Civilian workers	Construction and maintenance contractors	Landscaping personnel and contractors;	Industrial facilities	Commercial businesses	Schools, recreational facilities.	
Hawaii Marine Newspaper articles	X	X	X	X	X	X	X	Environmental articles published semi-annually
New Arrival Orientation	X	X						Monthly brief for new arrivals
Household Hazardous Materials Brochure	X							New arrivals, SOP training
Staff SOP Training		X			X	X		Annual requirement, classes held bi-monthly
Good Housekeeping Training at SOP training, ECC Training			X	X	X	X	X	SOP (bi-monthly) and ECC (monthly)
Main Entrance Marquee	X	X	X	X	X	X	X	Semi-annually
MCB Hawaii Website	X	X	X	X	X	X	X	Post all MS4 documents as they are developed
Community Cleanups	X	X	X	X	X	X	X	Annually
Storm Drain Placard	X	X	X	X	X	X	X	Minimum 50/year
Partnerships	X					X	X	TBD
ECC Meetings		X			X	X	X	Monthly
Earth Day	X	X	X	X	X	X	X	Annually

3 Illicit Discharge Detection and Elimination

In accordance with the MS4 permit and this SWMP, MCB Hawaii is required to detect and eliminate illicit connections and illegal discharges into its MS4. The upgraded Illicit Discharge Detection and Elimination (IDDE) program will include:

1. Review and approval process for drain connections,
2. Outfall inspections,
3. Data tracking,
4. Complaint investigation,
5. Enforcement,
6. Spill prevention and response,
7. Hazardous materials/waste handling and disposal, and
8. Training.

The MS4 Permit describes the requirements for Illicit Discharge Detection and Elimination as follows:

Part D.1.c. Illicit Discharge Detection and Elimination (IDDE)

"The Permittee shall implement the ongoing SWMP to detect and eliminate illicit connections and illegal discharges into its MS4 and shall include an improved program in the revised SWMP Plan. The program shall include:

Part D.1.c.(1) Connection Permits for private drain connections *- Within one (1) year after the effective date of this permit the Permittee shall establish requirements for issuing connection permits and require obtaining the permit prior to allowing the drain connections. A database shall be maintained of all permitted connections to its MS4. Prior to issuing a connection permit, the Permittee shall ensure the following are met:*

- *the project has provided proof of filing a Notice of Intent (NOI) or NPDES application, if applicable; and*
- *control measures comply with its requirements to minimize pollutant discharge into its MS4.*

Part D.1.c.(2) Field Screening *- The Permittee shall implement an Outfall Field Screening Plan for observing major and minor outfalls to screen for improper discharges. The plan shall designate priority areas for screening, specify the frequency for screening, and identify the procedures to be followed if a discharge is observed. If any outfall locations are submerged 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. At a minimum, outfalls in priority areas shall be screened once per permit term.*

Part D.1.c.(3) Tracking *- The Permittee shall maintain a database of complaints, illicit connections, illegal discharges, and spills which tracks the location of the discharge by Tax Map Key (TMK), type of discharge, responsible party, the Permittee's investigation and response of the discharge, follow-up activities, and the resolution of each discharge to the MS4.*

Part D.1.c.(4) Complaint Investigation *- The Permittee shall promptly investigate observed, suspected, or reported illicit flows and pursue enforcement actions, as appropriate. Complaints made to the CWB, which discharge to the Permittee's MS4 will be forwarded to the Permittee for action. The Permittee shall:*

(i) Develop and implement a database to identify illicit discharge activities by TMK. The database shall include information about each suspected improper discharge, the Permittee's investigation of that discharge, follow-up activities, and the resolution of each discharge as required in Part D.1.c.(3) above;

(ii) Implement a program to facilitate public reporting of illicit discharges (i.e., environmental hotline and/or website for reporting), including providing at least one (1) contact that the public can reach (including phone number and/or email address). This contact information shall be clearly posted on its website; and

(iii) Develop and implement a response plan for the investigation of illicit discharges to be consistent with the requirements in this permit.

Part D.1.c.(5) Enforcement *- Within one (1) year after the effective date of this permit, the Permittee shall:*

(i) Establish policies for enforcement and penalties for entities found to be in noncompliance with requirements developed in accordance with Part D.1.c.(1), including for persons illegally discharging pollutants to its MS4, and

(ii) Pursue enforcement actions against entities in non-compliance with its requirements, with illegal drain connections, and illegally discharging pollutants to its MS4 without direct connections.

Part D.1.c.(6) Spill Prevention and Response *- The Permittee shall implement its ongoing SWMP to prevent, respond to, contain, and clean up all wastewater and other spills that may enter its MS4 from any source (including private laterals and failing cesspools). This program shall be included in the SWMP. Spill response teams, which may consist of local, state, and/or federal agencies, shall prevent entry of spills into the Permittee's MS4 and contamination of surface water, ground water, and soil to the MEP.*

The Permittee shall coordinate spill prevention, containment, and response activities throughout all appropriate departments, programs, and agencies to ensure maximum water quality protection at all times.

The Permittee shall notify DOH 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.

Part D.1.c.(7) Used Oil and Toxic Materials Disposal *- The Permittee shall implement its ongoing SWMP to 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.

***Part D.1.c.(8) Training** - The Permittee shall provide annual training to staff on identifying and eliminating illicit connections, illegal discharges, and spills to its MS4. This training shall be specific to the Permittee's activities, policies, rules, and procedures."*

3.1 Illicit Discharges

The 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 an NPDES Permit.

3.1.1 Conditionally Allowable Non-storm Water Discharge

Permit Specified Discharge Limitations

Part B.2. of the MS4 Permit includes a list of conditionally allowable non-storm water discharges, provided the discharge is not determined to be a source of pollution by MCB Hawaii. 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.

- Water line flushing
  (including steamline 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, not including construction related dewatering activities;
- Discharges from potable water sources and foundation drains
  (including emergency eye wash basins and showers, and drinking fountains on piers);
- Air conditioning condensate;
- Irrigation water;
- Springs;
- Water from crawl space pumps, uncontaminated water from utility manholes or boxes, 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);
- Lawn watering runoff;
- Water from individual residential car washing;
- Water from charity car washes;
- Flows from riparian habitats and wetlands;
- Dechlorinated swimming pool discharges;
- Exterior building wash water (water only)
  (including piers and wharves – water only without detergent);
- 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
  (including fire hydrant testing, fire sprinkler testing, and firefighter training activities).

Additional Allowable Non-storm Water Discharges

Part B.2. of the MS4 Permit also authorizes MCB Hawaii 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 MCB Hawaii) to be significant sources of pollutants to the MS4, because of either the nature of the discharges or conditions they have established for allowing these discharges to the MS4. The controls or conditions placed on these discharges must be documented in the SWMP. 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.

Therefore, in addition to the list of non-storm water discharges specified in the MS4 Permit and listed above, MCB Hawaii has determined that the following may be considered an allowable non-storm water discharge under the specified conditions:

- Boat Rinsing
  - The intent of the rinsing activity is salt removal.
  - Washing must be limited to water only.
  - No detergents are allowed.
  - Engine maintenance/degreasing activities must be conducted at designated locations featuring an oil-water separator and cannot be discharged directly to the MS4.
  - No discharge of bilge water to the MS4.
- Dive Gear Rinsing
  - The intent of the rinsing activity is salt removal.
  - Washing must be limited to water only.
  - No detergents are allowed.

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

3.2 Review and Approval Process for Drain Connections

In lieu of a separate connection permit form for private drainage connections to the MS4, ENV is in the process of revising and updating the existing dig permit application for construction projects to contain language regarding connection to the MS4. Dig permits are routed for approval through multiple offices on base, including ENV and MCD. A dig permit cannot be issued unless environmental aspects have been reviewed and accepted through the NEPA process. Dig permits are kept on file at MCD, which will enable the tracking of permitted connections. The revision of an existing form was the preferred option over the creation of a new, separate form, to help streamline the review process. The revised dig permit will be submitted to DOH and added to Appendix 3-2 upon final approval.

3.3 Outfall Field Screening Plan

Routine illicit connection inspections are performed to identify storm water discharges that are not identified as allowable in the NPDES Permit. Priority Areas, as discussed in Chapter 10, are inspected after every major storm event, or at least once per year. If any outfall location is submerged at the time

of inspection, the monitoring personnel inspect the closest upstream storm drain structure or contributing tributary line outside of tidal influence.

Outfall inspections include a visual survey of the physical conditions at each site. Observations are documented, including photographs. 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, ENV personnel will expand the survey to track the flow upstream and determine the location of the discharge to initiate corrective actions, as described in the Enforcement Plan.

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.

Table 3-1
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
Cloudy appearance	Erosion
Copper	Pesticides, plating, paint shops, or spills
Discolored sediments	Metal fabrication
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

Indicators	Possible Sources
Pungent/burning odor	Chemical industry
Sediment deposits	Construction site
Soapy film, detergents	Laundries
Unusual colors/odors	Various
Volatile chemical odor	Painting, vehicle/equipment repair, metal plating

In-depth investigations shall occur at each priority area outfall at least once per permit term. If illicit discharges are observed at the outfall, ENV is responsible for the investigation of the contributing drainage basin, including industrial inventory and activities within the area. ENV 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.

According to Waterfront Operations personnel, all ocean outfalls from the Airfield are equipped with permanent containment booms to prevent illicit discharges from entering State waters.

Refer to the Appendix 3-3, Action Plan to Address Erosion at Storm Drain System Outlets (October 2015), for additional information.

3.4 Tracking Database

ENV currently maintains a hard copy record of spills. A spreadsheet-format tracking database will be developed and maintained by ENV to track all illicit discharges, illicit connections, spills, and associated information, including geographic location, type of discharge, responsible party, response(s) taken by MCB Hawaii to address the discharge, follow-up activities, and the ultimate resolution of each event. Although noted in the MS4 permit as a tracking criteria, The Tax Map Key (TMK) for each record will not be tracked because the entire MCB Hawaii property and MS4 system are located within two TMK parcels; the site address or description of the area should suffice for tracking purposes.

The Base Inspectors Office retains a record of all received complaints, including all storm water quality concerns. ENV will coordinate with the Base Inspectors Office to ensure that minor observed discharges that do not require escalated enforcement actions are transferred into the tracking database. ENV will be directly involved in significant discharges and spills, and those incidents requiring escalated enforcement actions.

The Facilities Department currently maintains the GIS database, which includes the MS4 drainage structures (including inlets and outfalls) and receiving bodies of water. This database may be upgraded to include an additional layer for locations of spills and illegal discharges based on the ENV records, pending manpower availability for this task.

3.5 Complaint Investigation

The Base Inspectors Office is responsible for daily sweeps and inspections throughout the base. Base inspectors also respond to complaints received via phone or email, as noted below:

Complaint Hotline: (808) 257-8852

http://www.mcbhawaii.marines.mil/Departments/BaseInspector/FormalComplaint.aspx

If base inspectors observe a minor illicit discharge, they will work with the responsible party to correct the violation as soon as possible. If a major violation is observed, or if the enforcement must be escalated to the next level, ENV is notified to help address the issue. All violations are tracked through the database described in Section 3.4, above, and enforced as described in the "Final Enforcement Response Plan (October 2015)" (Appendix 3-4)

3.6 Enforcement

To ensure compliance with the MS4 Permit requirements, MCB Hawaii has developed enforcement procedures in its "Final Enforcement Response Plan (October 2015)," (Appendix 3-4). Refer to the Enforcement Response Plan (ERP) for more detailed information of enforcement procedures.

MCB Hawaii 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 MCB Hawaii, the most effective means for enforcement is escalation of unaddressed violations to the next higher authority.

If an observed deficiency is not addressed within the allotted mitigation period, the issue will be brought to the attention of the ENV 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.

Regardless of the type of project or violation, the ultimate penalty for non-compliance of the MS4 Permit regulations, is eviction or discharge of the responsible party from MCB Hawaii. This is placed at the discretion of the Base Commanding Officer (CO). Although unaddressed violations can be escalated as high as the Base Commander, this has not been an issue in the past due to the inherent threat of discharge or eviction from MCB Hawaii.

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

In the event that MCB Hawaii encounters a situation where continued failure to resolve an observed deficiency has resulted in the CO's determination that the contractor or tenant be evicted, the ENV will notify DOH within one (1) week of the decision. A written notification from the ENV, including all relevant information (such as inspection checklists, photographs, notes, and correspondence) is to follow within two (2) weeks of the CO's determination.

All written notifications submitted via email will be directed to:

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

3.7 Spill Prevention and Response

MCB Hawaii has completed a Spill Prevention and Control and Countermeasures (SPCC) Plan and a Spill Contingency Plan. These plans help to ensure that oil storage facilities are equipped with proper spill prevention and spill response tools.

The Spill Response Program is run by ENV to prevent and respond to releases of oil or hazardous substances originating from any MCB Hawaii facility. This Program ensures compliance with all federal,

state, and local laws and regulations pertaining to Oil Pollution Act of 1990 (OPA 90) Facility Response Planning, Spill Contingency Planning, Resource Conservation and Recovery Act (RCRA) Contingency Planning, and Risk Management Planning.

The Spill Response Program has combined planning, equipment, training, partnering with federal/state/local emergency planning agencies and participation in multi-agency drills to produce a more capable and responsive spill team which is recognized as one of the best in DoD and the primary spill response team on the windward side of Oahu.

The Spill Response Program:

- Manages an Integrated Contingency Plan (ICP) that combines Oil/Hazardous Substance Spill Contingency Planning, RCRA Contingency Planning, OPA 90 Facility Response Planning, and Risk Management Planning.
- Conducts annual Facility Response Team Training and Hazardous Substance Incident Response Training with spill teams utilizing a mobile decontamination unit, a mobile command trailer, command vessel, utility and boom platform boats, rapid response skimmers, vacuum truck, and a spill equipment van.
- Provides bimonthly spill response training during the ENV SOP class.
- Conducts annual Spill Management Team exercises using Incident Command System principles and establishing a Unified Command.
- Provides the Marine Corps 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.
- In a joint partnership with NOAA HAZMAT and PCCI Inc., the Spill Response Program developed the Trajectory Analysis II computer-based spill planning tool specific to Kaneohe and Kailua Bay.
- In a joint partnership with the State of Hawaii, and the Clean Islands Council, MCB Hawaii houses the State's Mobile Bird Rescue and Rehabilitation.

In regards to wastewater spills, the Wastewater Division at MCB Hawaii is responsible for spill prevention and response. The Wastewater Division has developed a Spill Prevention and Response Manual, which is maintained on-site at the base wastewater reclamation facility. Wastewater Division personnel are responsible for spill response and executing notifications and reporting in accordance with the Wastewater Spill Response Reporting Guidelines (Appendix 3-5).

3.8 Used Oil and Toxic Materials Disposal

3.8.1 Household Hazardous Materials/Waste

ENV produces a Household Hazardous Waste Disposal pamphlet for distribution to all housing units at MCB Hawaii Kaneohe Bay. These pamphlets are also available at the New Arrivals brief and on the Base website. The pamphlet identifies the various types of household hazardous materials that require

proper disposal as household hazardous waste and provides locations where residents may drop these materials off for proper disposal.

The MCB Hawaii housing department provides residents with information regarding the base household hazardous material reuse center. The reuse center accepts residents' excess household hazardous materials and reissues the items as needed. Household hazardous materials that are not reissued are turned into the 90-day Hazardous Waste Accumulation site for disposal.

3.8.2 Privately Owned Vehicle (POV) Maintenance

Due to environmental and safety concerns, automobile/vehicle maintenance is not permitted in residential areas, including garages, carports, parking spaces, or streets. Vehicle repairs, engine cleaning, and oil changes must be conducted at an approved location, 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 Forest City to all residents in the Community Handbook. Residents in the bachelors' quarters receive similar information and guidance through their housing office.

3.8.3 Industrial Vehicle Maintenance

Maintenance occurs at most of the industrial facilities on Base, including boats, automobiles/vehicles, and aircraft. Refer to the various facilities' SWPCPs (Chapter 11 of this SWMP) for additional information about specific hazardous materials and BMPs associated with vehicle maintenance.

3.8.4 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 the Unit Environmental Compliance Coordinator, Command Level Coordinator, and Shop Level Coordinator. Hazardous waste accumulation points have been established at industrial and commercial locations throughout MCB Hawaii. Hazardous wastes/materials are picked up from these accumulation points as needed by the Hazmin Center for disposal.

3.9 Training

3.9.1 Hazardous Waste Accumulation Point Management

The MCB Hawaii Environmental Training Center conducts a hazardous waste accumulation point management course for all personnel (military, civilian, and contractors) who generate, package, handle, store, transport, manage and/or supervise those who manage hazardous waste in the performance of their duties at MCB Hawaii. This 8-hour course and annual refresher are mandatory for designated personnel assigned as Unit Environmental Compliance Coordinator, Command Level Coordinator, Shop Level Coordinator (SLC), and or Alternate SLC.

Topics covered are: Hazardous Waste (HW) management; Hazardous Material (HM) Minimization (HAZMIN) Center services; HM/HW Training requirements; First Responder Awareness level for emergency spill response; and Oil Water Separators.

3.9.2 SOP Training

MCB Hawaii has an existing "Environmental Standard Operating Procedures" class that occurs every other month. Storm water pollution prevention is part of this class and includes a training on applicable

BMPs. The ENV Storm Water Program Manager is responsible for the information provided at the SOP class. The list of attendees or a general headcount will be included in the annual report.

3.9.3 Base Inspectors

The MCB Hawaii Base Inspectors ensure that all personnel on base comply with established rules and regulations, including those related to environmental protection and pollution prevention. Base inspectors also refer individual cases of misconduct to the Base Magistrate, oversee the Base Community Service program for minor misconduct and violations, and inspect and enforce regulations regarding Family and Unaccompanied Housing Areas. MCB Hawaii Base Inspectors report to the Inspector General of the Marine Corps, who's stated mission is to promote Marine Corps combat readiness, institutional integrity, effectiveness, discipline, and credibility through impartial and independent inspections, assessments, inquiries, investigations, teaching, and training. The Inspector General's office administers the Commanding Officer's Inspection Program, Request Mast, and Equal Opportunity Programs to include the assembly and training of the Inspection Teams. These teams investigate hotline complaints and provide appropriate responses to complaints.

3.9.4 Waterfront Operations

As part of the SOP Training, those personnel that work on Waterfront Operations are trained on the SPCC Plan and the Spill Contingency Plan so that they can promptly respond to any spills.

4 Construction Site Runoff Control

Per the MS4 Permit, Part D.1.d, MCB Hawaii is required to implement a Construction Site Runoff Control Program (Construction Program) as part of its construction site management.

MCB Hawaii's Construction Program primary goal is to protect and restore water quality of the surrounding surface waters, by reducing, to the MEP, the discharge of pollutants from construction sites to the MS4. Due to the nature of MCB Hawaii, as a military installation that owns all of the property on Base, encroachment-type construction projects are not applicable. This Construction Plan applies to all MCB Hawaii construction sites, which include both in-house and contract, maintenance and construction projects. The objectives of this plan are to:

1. Standardize BMP implementation, and maintenance in the field.
2. Maintain an inventory of construction sites to facilitate tracking efforts.
3. Standardize the plan review and approval process -to promote the incorporation of BMPs as part of the early stages of design and planning, and to ensure that BMP measures are implemented to the MEP prior to start of construction.
4. Require written approvals from MCB Hawaii for all construction related storm water discharge to MCB Hawaii's MS4.
5. Enforce Construction Program policies through routine inspection procedures, tracking, and standard corrective actions, per MCB Hawaii's Final Enforcement Response Plan (Appendix 3-4).
6. Promote awareness of MCB Hawaii's SWMP among all parties involved in any component of the Construction Program through annual training, and education programs.
7. Develop a Construction Program that will most efficiently utilize available resources at MCB Hawaii.

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

"Part D.1.d. Construction Site Runoff Control

> *The Permittee shall implement a construction site management program to reduce to the MEP the discharge of pollutants from both private and public construction projects (i.e., contract, in-house, maintenance, and encroachment). The construction site management program shall include the following minimum elements:*
>
> ***Part D.1.d.(1) Requirement to develop BMPs Manuals** - Within two (2) years from the effective date of this permit, the Permittee shall develop and submit to the DOH, the following types of manuals for construction projects:*
>
> - *Construction Best Management Practices Field Manual.*
> - *Maintenance Activities Best Management Practices Field Manual.*
> - *Storm Water Permanent Best Management Practices Manual.*
>
> *The Permittee shall review these standards annually and, as necessary, revise to include descriptions of new or modified BMPs, including permanent BMPs and LID practices. All revisions made during a calendar year shall be discussed in its corresponding Annual Reports and all*

documents included in the SWMP Plan. All documents shall be made available to the Permittee's staff, contractors, and consultants, as appropriate.

Part D.1.d.(2) Requirement to implement BMPs *- Within three (3) years from the effective date of this permit, the Permittee shall establish policies to require proposed construction projects to implement BMPs and standards described in the following:*

- *Construction Best Management Practices Field Manual.*
- *Maintenance Activities Best Management Practices Field Manual.*
- *Storm Water Permanent Best Management Practices Manual.*

Part D.1.d.(3) Inventory of construction sites *- Within six (6) months from the effective date of this permit, the Permittee shall implement a system to track both private and public construction projects (i.e., contract, in-house, maintenance, and encroachment). This system shall track information on the project (including permit or file number, if available); status of 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).*

Part D.1.d.(4) Plan Review and Approval *- The Permittee shall:*

(i) Review the appropriate Storm Water Pollution Prevention Plan (SWPPP) and other pollution prevention measures (e.g., for Erosion and Sediment Control, Grading, Post-construction BMP and Landscaping) or similar plans/documents prior to approval of the construction plans and specifications. The Permittee shall verify that the SWPPP meets the following requirements:

- *HAR, Chapter 11-55, Appendix C, and any other requirements under the NPDES permit program, as applicable;*
- *Construction Best Management Practices Field Manual (after developed);*
- *Maintenance Activities Best Management Practices Field Manual (after developed);*
- *Storm Water Permanent Best Management Practices Manual (after developed); and*
- *Implementation of measures to ensure that the discharge of pollutants from the site will be reduced to the appropriate discharge limitations subject to the BAT/BCT discharge requirement, consistent with the Act and other respective federal and state requirements for such facilities and will not cause or contribute to an exceedance of water quality standards.*

(ii) Require a permit or written equivalent approval for drainage connections to its MS4, discharge of surface storm water runoff of storm water associated with construction (i.e., from both private and public projects) or discharge permit (i.e., hydrotesting and dewatering effluent or other non-storm water, except those allowed under this permit) into their MS4 and maintain a database of the permits/approvals. Prior to issuing a

drainage connection, discharge of surface runoff permit/approval, discharge permit, or encroachment permit, the Permittee shall ensure that the following are met:

- *The project owner has provided proof of filing an NOI Form C or NPDES application for the discharge of storm water associated with construction activities that disturb one (1) acre or more;*
- *The project owner has provided proof of filing a NOI Form F and/or G or NPDES application for the discharge of hydrotesting effluent or construction dewatering effluent, respectively, if applicable; and*
- *A SWPPP or other documents (e.g., Erosion and Sediment Control, Grading, Post-construction BMP and Landscaping Plans, Dewatering Plan, and Hydrotesting Plan) relating to pollution prevention or similar document(s) have been reviewed and accepted by the Permittee;*

(iii) Prohibit the commencement of construction on any private or public construction project (i.e., contract, in-house, maintenance, and encroachment) unless and until it has verified that the project has received from DOH a Notice of General Permit Coverage(NGPC) under HAR, Chapter 11-55, Appendix C, NPDES General Permit Authorizing the Discharge of Storm Water Associated with Construction Activity (General Construction Activity Storm Water permit) (unless the project will disturb less than one (1) acre of land) and satisfied any other applicable requirements of the NPDES permit program (i.e., an individual NPDES permit);

(iv) Update and submit for review and acceptance to the DOH, 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 [i.e., Part D.1.d] within 90 calendar days from the effective date of this permit. Copies of this plan review checklist shall be provided to applicants for connection, discharge, and encroachment permits; and to consultants and contractors for their use in developing the Plans or other similar document(s) for Permittee-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.

***Part D.1.d.(5) Inspections** – The Permittee shall:*

(i) Prior to the initiation of ground-disturbing activities at any site, except for activities associated with the installation of BMPs at a site, an engineer or qualified inspector employed or retained by the Permittee who reviews and becomes familiar with the project's SWPPP and/or other equivalent document(s), 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. Inspections shall include a review of site Erosion and Sediment Controls, good housekeeping practices, and compliance with Permittee-accepted erosion and sediment control plans, construction BMPs Plans, or other similar documents and Permittee-

approved permits. The inspector shall also identify and remedy 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.

(ii) In addition to inspections required by the NPDES permit program, all contract, in-house and maintenance construction projects shall be inspected at least monthly 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 (1) qualified construction inspector for these inspections. The reporting procedures shall include, at a minimum, notification of any critical deficiencies to the DOH. Upon three (3) successive monthly inspections that indicate, in total, no critical or major deficiencies or less than six (6) minor deficiencies with no more than three (3) minor deficiencies in one (1) month in a project's BMPs or other storm water management activities, the Permittee may decrease the inspection frequency for such project to quarterly. However, if while under a quarterly inspection frequency, an inspection of a project conducted pursuant to this paragraph indicates at least one (1) critical or major deficiency or a total of three (3) or more minor deficiencies in the project's BMPs or other storm water management activities, the inspections frequency shall immediately return to no less than monthly. This reduced inspection frequencies option is contingent upon the Permittee having defined each type (i.e., critical, major, or minor) of deficiency. The Permittee shall further develop and implement written procedures for appropriate corrective actions and follow-up inspections when deficiencies had been identified at an inspected project. The corrective action procedures shall, at a minimum, require that 1) any critical deficiencies shall be corrected or addressed before the close of business on the day of the inspection at which the deficiency is identified, and 2) any major deficiencies shall be corrected or addressed as soon as possible, but in no event later than five (5) calendar days after the inspection at which the deficiency is identified or before the next forecasted precipitation, whichever is sooner.

(iii) All construction projects with a connection permit, encroachment permit, or discharge of surface runoff permit/approval shall be inspected at least once annually or once during the life of the project, whichever comes first, 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 (1) qualified construction inspector for these inspections. If the project has a SWPPP or other equivalent document(s), the inspection shall also verify that the BMPs were properly installed and at the locations specified in the Plan. The reporting procedures shall include, at a minimum, notification of any critical deficiencies to the DOH.

(iv) The Permittee shall develop and implement a standard inspection form(s); reporting and corrective procedures for inspections, including use of an inspection checklist, or equivalent; and a database or equivalent system to track inspection results. The inspection checklist shall include at a minimum, but not be limited to, identifying any deficiencies and the date of the corrective actions. Photos shall accompany the

inspection checklist to document the deficiencies. The inspection form(s), inspection checklist, and reporting and corrective procedures shall be submitted to the DOH for review and acceptance within 90 calendar days of the effective date of this permit.

***Part D.1.d.(6) Enforcement** – Within one (1) year from the effective date of this permit, the Permittee shall:*

(i) Establish policies for enforcement and penalties for those in non-compliance with Part D.1.d.(2) requiring the implementation of standards, and (ii) Develop and 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.

***Part D.1.d.(7) Process to refer noncompliance and non-filers to the 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 poses an immediate and significant threat to water quality, the Permittee shall provide an e-mail notification to cleanwaterbranch@doh.hawaii.gov, Attn: Enforcement Section Supervisor within one (1) week of such determination. E-mail notifications shall be followed by written notification in accordance with Part A.6. 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 the NPDES permit program, the Permittee shall provide written notification in accordance with Part A.6 to the DOH within two (2) weeks of the discovery.*

***Part D.1.d.(8) Training** - The Permittee shall provide annual training on the Construction BMPs Program Plan to all staff with construction storm water responsibilities, including construction engineers, construction and maintenance inspectors, and plan reviewers. This training shall be specific to the Permittee's activities (including the proper installation and maintenance of accepted BMPs), policies, rules and procedures.*

***Part D.1.d.(9) Education** - The Permittee shall implement an education program as part of its ongoing SWMP to ensure that project applicants, contractors, developers, property owners, and other responsible parties have an understanding of the storm water requirements they need to implement."*

4.1 Program Organization

As a military installation, MCB Hawaii has several different types of construction projects and an agency to handle the oversight of each one. The overseeing agency has the most immediate authority over the day-to-day activities at each construction site. As such, the Construction Program is structured to place responsibility for implementation and enforcement of MCB Hawaii's SWMP policies at construction sites on each of these corresponding agencies.

The ENV is responsible for managing the overall Construction Program, and updating policies as deemed necessary to improve the effectiveness of the program. Although it is typical for any issues observed with regard to SWMP implementation or non-compliance with the MS4 Permit to be resolved at a lower

level of authority, the Base Commanding Officer (CO) has the ultimate authority to adjust policies or direct enforcement actions for tenants/agencies subject to the Construction Program. This is described in more detail in Section 4.6, Enforcement, and in Appendix 3-4, the Final Enforcement Response Plan.

To address the MS4 Permit requirements for construction site runoff of the various types of construction that occur on base at MCB Hawaii, the organizational structure displayed in Figure 4-1 has been outlined. In Figure 4-1, the grey boxes indicate the agency responsible for oversight of the project. Typically construction projects at MCB Hawaii are categorized as either:

(i) *In-house Maintenance and Construction* – projects are scoped and planned by MCD, and the construction work is completed by MRO. Typically these projects are less than 5,000 sf and/or related to emergency repair work.

(ii) *Military Construction* – These are projects that would typically be handled as in-house construction, but due to limited manpower have been contracted out. These projects are managed by Logistics Facilities Public Works Engineering (LFPE), with all storm water management managed by ENV.

(iii) *Contract Maintenance and Construction* – These projects are conducted by an outside contractor, but are managed as follows:

- *NAVFAC Construction Projects* are managed by the FEAD.
- *Mokapu Elementary School Projects* are managed by the DOE.
- *PPV Housing Projects* are managed by Forest City.
- *Commercial Tenant Projects* are managed by MCCS.
- *Various other contract maintenance and construction projects* are managed by MCD.

In-house Maintenance and Construction, Military Construction, and MCD Maintenance and Construction fall into two subcategories, (1) Maintenance 1 Repair 1 (M1R1), or (2) Maintenance 2 Repair 2 (M2R2). M1R1 projects are typically minor in-house construction projects, whereas M2R2 designates major construction projects.

Due to the nature of certain in-house maintenance and construction projects, where the potential risk of storm water pollution is minimal or would compromise public health and safety to uphold, certain projects may be exempt from selected plan review and inspection requirements of the Construction Program. These exceptions will be decided on a case-by-case basis, at the discretion of MCD. Projects that may qualify for exemption include those that involve:

- Routine maintenance to maintain the original hydraulic capacity, or the original purpose of the facility;
- Emergency repair 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 MCD and ENV, 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.

4.2 Best Management Practices (BMP) Manuals

Best Management Practices (BMP) Manuals are used by MCB Hawaii to provide guidance and consistency within the Construction Program. To meet the MS4 Permit requirements, MCB Hawaii is required to develop the following types of BMP Manuals for all construction projects within two (2) years of the effective date of the permit (EDOP), October 15, 2016:

- *Construction Best Management Practices Field Manual* – The Construction BMP Field Manual is intended to provide guidance on BMP installation and maintenance procedures for construction activities and approved construction related non-storm water discharges, including site management, erosion control, and sediment control.
- *Maintenance Activities Best Management Practices Field Manual* – The Maintenance Activities BMP Field Manual is designed to provide guidance on how to prevent storm water pollutants from entering the MS4 via non-storm water management practices, and through proper maintenance of storm drain structures. Some of the related activities include painting, paving, landscaping, street sweeping, and storm drain cleaning.
- *Storm Water Permanent Best Management Practices Manual* – The Storm Water Permanent BMP Manual is directed at incorporating BMPs into all phases of construction, including planning, design, construction, and maintenance. A large focus of this manual is Low Impact Development (LID) and designing projects that leave a minimal impact on the pre-development hydrology of the area.

MCB Hawaii plans to adopt the existing approved BMP manuals prepared by the Hawaii Department of Transportation (HDOT), and City and County of Honolulu (CCH) to meet this requirement. These manuals are not all-inclusive lists of BMPs, but provide a broad foundation for the concepts that this Construction Program is intended to promote.

Each BMP field manual is to be reviewed by MCB Hawaii annually for completeness, and accuracy, and revisions will be made as necessary. This will include descriptions of all new/modified BMPs, including permanent BMPs and LID practices. The ENV is responsible for ensuring that necessary revisions are made, these documents are kept up-to-date, and available for all applicable parties involved in the Construction Program.

4.2.1 BMP Implementation Policy

MCB Hawaii is required to implement policies for requiring BMPs for all proposed construction projects within three (3) years of the EDOP, October 15, 2017. This will include all *non-exempt* in-house maintenance and construction, military construction, and contract construction projects. The BMP requirements will be based on the guidance of the three (3) aforementioned BMP Field Manuals.

Prior to the development of these policies, all proposed construction projects are to implement BMPs to the MEP as required by this SWMP. MCB Hawaii staff, contractors, and consultants, are to use the BMP field manuals as guidance for these practices.

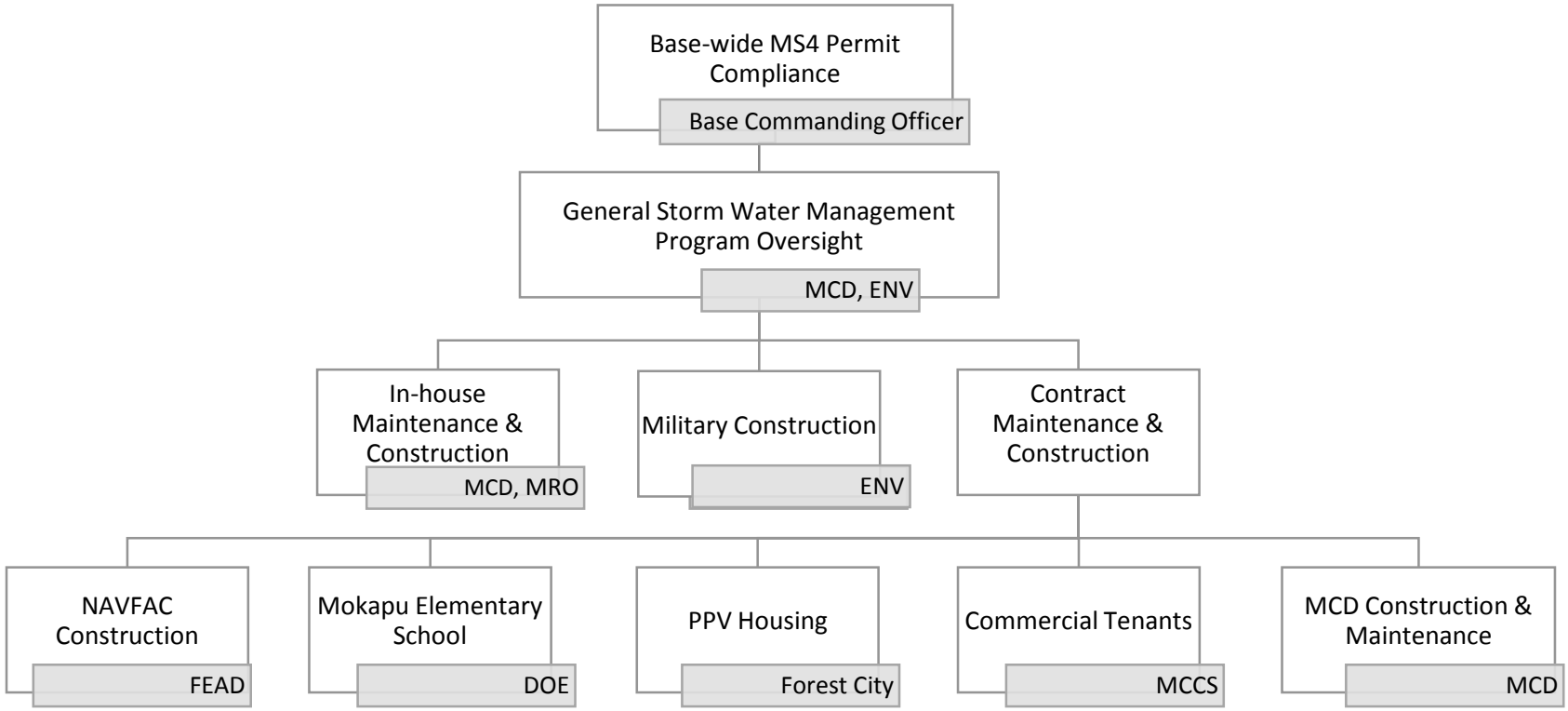


Figure 4-1 Construction Program Organizational Chart

4.3 Inventory of Construction Sites

There are three general categories of construction projects at MCB Hawaii, (1) In-house Maintenance and Construction, (2) Military Construction, and (3) Contract Maintenance and Construction. The goals of an inventory of construction sites include:

- Tracking where pollutants may discharge into system;
- Ensuring that plans have been reviewed, and associated permit(s) obtained;
- Recordkeeping to show that applicable inspections are being conducted, as well as any necessary enforcement actions; and
- Easily attainable points of contact to obtain more information on a project, or to address a problem.

Effectively managing this information will enable MCB Hawaii to be able to easily identify and correct compliance issues, and recognize recurring issues within the Construction Program or repeat offenders of its MS4 Permit requirements. The ability to easily identify and address problems will further promote the continual improvement of the Construction Program and facilitate its effectiveness in reducing storm water pollution from construction sites.

The inventory of construction sites will be made up of project records that contain the following information, as applicable:

- Project title, and permit or file number (*if applicable).*
- Status of plan review and approval process.
- Inspection dates and enforcement action *(if applicable)*. If enforcement action is noted, the record shall include reference information for the associated "Construction Oversight Field Inspection Checklist" forms, and any follow-up documentation (*if applicable*) as tracked in the ENV database.
- If the project has filed a Notice of Intent (NOI) for, or received a Notice of General Permit Coverage (NGPC) for any General Permits under HAR, Chapter 11-55, including, but not limited to:
    - Appendices C and A - NPDES General Permit Authorizing the Discharge of Storm Water Associated with Construction Activity *(for projects disturbing an area of one (1) acre or more);*
    - Appendices F and A - NPDES General Permit Authorizing Discharge of Hydrotesting Waters; or
    - Appendices G and A - NPDES General Permit Authorizing Discharges Associated with Construction Activity Dewatering

or If the project has applied for, or received an individual NPDES permit, or satisfied any other requirement of the NPDES permit program.

To prevent overburdening the tracking systems and procedures in place, MCB Hawaii is in the process of developing a list of criteria for routine in-house maintenance and construction projects (*exempt* or *non-exempt*) that follow MCB Hawaii's standard BMP procedures, and can be reasonably considered to pose a negligible risk for discharging pollutants, via storm water, to its MS4. These criteria will be compiled into a Routine Project Exemption Form (Exemption Form), which will be incorporated into Appendix 4-1

of this SWMP once developed. ENV is also collaborating with MCD to develop a guidance sheet/booklet to be used by project managers, and staff to further explain required BMP implementation, procedures for meeting exemption criteria, and the importance of this process. For projects that meet these criteria, this Exemption Form will be filled out and signed by the MCB Hawaii project manager (PM). By signing the Exemption Form, the PM is certifying that the project will meet all exemption criteria until completion. This means that all applicable BMP measures will be implemented and that there is no reasonably foreseeable risk to storm water quality. For tracking purposes, the signed form will be submitted to and kept on file at MCD. To distinguish between the aforementioned "*exempt*" maintenance/construction projects (i.e. emergency repair projects, interior remodeling, etc.), projects that meet the Exemption Form criteria will be referred to as "*routine exempt*" maintenance/construction.

Routine exempt projects will not require any further Construction Program tracking or inspection. It will be the responsibility of the signing PM to ensure that the exemption criteria are met until the project is completed. Should any general inspection come across a routine exempt project in noncompliance with any exemption criteria, ENV and MCD will immediately be notified for further corrective action. If the project scope changes at any time throughout the duration of construction activities, to fall out of the exemption criteria, the PM will immediately notify MCD. The remainder of the project will be subject to the plan review, inspection and tracking requirements of all other MCB Hawaii in-house maintenance and construction projects.

Exempt projects (such as emergency repair projects) will still be considered for tracking if the exemption criteria are not met, because tracking can be instrumental in identifying recurring or resultant issues in the future. By eliminating the tracking efforts required by these small and often mundane tasks, conducted for routine exempt maintenance/construction, MCB Hawaii will be able to direct more of its resources toward management of projects that pose a greater a potential to impact on storm water quality.

An inventory of applicable construction sites is maintained by the responsible agencies displayed in Table 4-1. All records are kept at the associated agency's office and will be made available, when necessary, upon request by the ENV or DOH.

Table 4-1
Location of Inventory of Construction Sites

Type of Construction Project	Agency Responsible for Site Management	Location of Records (Address, Phone/Email)
In-house Maintenance and Construction	MCD	Bldg. 242, MCD - Marc Hirano, 257-6896/ marc.hirano@usmc.mil
	MRO	MRO - Lee Stebbins, 257-5846/ lee.stebbins@usmc.mil
Military Construction	ENV	Bldg. 1360, Richard Mestan, 257-3694/ richard.mestan@usmc.mil
Contract Construction:	MCD	Bldg. 242, Marc Hirano, 257-6896/ marc.hirano@usmc.mil
▪ NAVFAC	FEAD	Bldg. 566, FEAD/Deputy FEAD, 257-4033/ 257-1506
▪ Mokapu Elementary School	DOE	1193 Mokapu Road, Ms. Amy Solomon, School Liaison Officer, 257-2019/ amy.solomon@usmc.mil
▪ PPV Housing	Forest City	5173 Nimitz Road, Honolulu 96818 Irwin Tamura, 620-4451/ irwintamura@forestcity.net
	NAVFAC Pacific	PPV Program, 258 Makalapa Drive, Suite 100, Pearl Harbor 96860, POC Grant Yasanaga, 473-0586
▪ Commercial Tenant	MCCS	Logistics Office, Bldg. 140, Grant Tolentino, 254-7688x230
▪ MCD Construction and Maintenance	MCD	Bldg. 242, Marc Hirano, 257-6896/ marc.hirano@usmc.mil

4.4 Plan Review and Approval

MCB Hawaii conducts plan review of all proposed, non-exempt, construction projects as required by the MS4 Permit. All applicable plans, including but not limited to, the Storm Water Pollution Prevent Plans (SWPPP), Erosion and Sediment Control, Grading, Post-construction BMPs, and Landscaping Plans, are reviewed in accordance with the requirements of the following:

- HAR, Chapter 11-55, Appendix C, and any other requirements under the NPDES permit program, as applicable;
- Construction Best Management Practices Field Manual (after developed);

- Maintenance Activities Best Management Practices Field Manual (after developed);
- Storm Water Permanent Best Management Practices Manual (after developed); and
- Implementation of measures to ensure that the discharge of pollutants from the site will be reduced to the appropriate discharge limitations subject to the Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology (BAT/BCT) discharge requirement, consistent with the Clean Water Act and other respective federal and state requirements for such facilities and will not cause or contribute to an exceedance of water quality standards.

Review of all SWPPP and supporting documents will be conducted by the agency responsible for overseeing the project, as outlined in Table 4-1. MCB Hawaii's "Storm Water Pollution Prevention Plan Content Review Checklist (Plan Review Checklist)" (see Section 4.4.1) will be used to guide the plan review process. Plan review is conducted similarly for in-house maintenance and construction, military construction, and contract maintenance and construction projects.

- *For In-house Maintenance and Construction projects* - The Plan Review Checklist, as well as the BMP field manuals (after developed) or similar documents, are readily available to all MCB Hawaii staff for incorporation into in-house maintenance and construction projects.
- *For Military Construction, and Contract Maintenance and Construction Projects* - MCB Hawaii provides copies of the Plan Review Checklist and supporting documents to all contractors and/or consultants hired for any contract construction projects.

Upon completion and acceptance of a SWPPP review, the reviewing agency will issue a notification to the MCB Hawaii PM and contractor. A database of all approvals will be maintained by each respective agency.

If a plan submittal does not meet the requirements outlined by the plan review process, all deficiencies are 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 reviewing agency will keep a record of deficiencies/comments noted, and the date in which revisions were made to the satisfaction of the reviewer. Other relevant information may be tracked at the discretion of the agency.

Prior to commencement of construction, the MCB Hawaii PM or contractor is responsible for ensuring that necessary approvals, including documentation of any revisions made to satisfy reviewer 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 agency for review. As necessary, the ENV will oversee or provide assistance during the plan review process.

4.4.1 Plan Review Checklist

MCB Hawaii has submitted a copy of its current "Storm Water Pollution Prevention Plan Content Review Checklist (Plan Review Checklist)" (last revised 05/22/15) to DOH (see Appendix 4-1). This checklist is intended to outline all minimum requirements of a project SWPPP and supporting documents. It is the responsibility of the ENV to revise this plan review checklist, as needed, and to ensure that the updated form is provided to MCB Hawaii staff and applicants, including reviewers, MCB Hawaii PMs, contractors, and consultants.

4.4.2 Connection Permits

Following the review of the project SWPPP and all other pertinent documents, any project requiring a drainage connection to the MS4, discharge of surface storm water runoff associated with construction activities (private or public), or discharge permit into the MS4 (i.e. hydrotesting, dewatering, etc.) is required to obtain additional approval from MCB Hawaii.

In lieu of a separate connection permit approval form, ENV has revised and updated the existing dig permit application for construction projects (Appendix 3-2). The revision of an existing form was the preferred option over the creation of a new, separate form, to help streamline the review process. This is described in detail in section 3.2.

All dig permits are issued by LFPE, and are routed for approval through multiple offices on base, including ENV and MCD. Prior to construction, all project owners must submit a completed Plan Review Checklist, with all other pertinent documents, for review to LFPE. To receive approval in the dig permit process, all documents must demonstrate the following, as applicable:

- All required components of the SWPPP and other planning documents related to pollution prevention, such as Erosion and Sediment Control, Grading, Post-construction BMP and Landscaping Plans, Dewatering Plan, and Hydrotesting Plans are completed.
- Proof of filing an NOI Form C or NPDES application for discharge of storm water associated with construction activities that disturb one (1) acre or more;
- Proof of filing a NOI Form F and/or/ G or NPDES application for the discharge of hydrotesting effluent or construction dewatering effluent; and
- Proof of filing for other NPDES permit coverages, as applicable, for any other non-storm water discharges.

All dig permits are kept on file at LFPE and reference information will be provided to the agency responsible for keeping inventory of the construction site (as listed in Table 4-1). The project owner is required to ensure that reference information for the approved dig permit has been provided to the overseeing agency to facilitate tracking efforts. The LFPE records will be made available to ENV, upon request, to facilitate additional annual inspections of construction sites with connection permits.

4.4.3 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 Notice of General Permit Coverage (NGPC) under HAR, Chapter 11-55, Appendix C, from the DOH, if applicable, and has satisfied all other requirements of the NPDES program.

4.5 Construction Site Inspections

MCB Hawaii has prepared standard inspection forms for all applicable maintenance and construction projects (Appendix 4-1), and inspection, reporting, and corrective action procedures (Appendix 4-2). These procedures and forms were submitted to DOH, January 13, 2015, to comply with Part D.1.d.(5)(iv) of the MS4 Permit.

To ensure the effectiveness of its Construction Program, the following inspection procedures are in place. These ensure that all non-exempt maintenance and construction sites adhere to the approved SWPPPs and supporting documents for that project, have these documents readily available onsite, and that BMPs are maintained throughout the duration of construction activities.

As described in the MS4 Permit, there are three (3) construction inspection requirements that must be met for all applicable maintenance and construction projects. A summary of these requirements is as follows:

- ***Initial Site Inspection****:*
  - *Purpose*: To ensure that BMPs are correctly installed, in the right locations, and in accordance with all MCB Hawaii approved SWPPP related documents. More detailed information is provided in Section 4.5.1.
  - *Inspector*: An engineer or qualified inspector that is familiar with the project and SWPPP related documents.
  - *Frequency*: One-time, prior to any ground disturbing activities (not including installation of BMPs)
- ***Monthly 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 a found to be deficient. These inspections will be conducted for all projects. More detailed information is provided in Section 4.5.2.
  - *Inspector*: A qualified, independent inspector, with no involvement in the day-to-day planning, design, or implementation of the project.
  - *Frequency*: Begins as monthly, however, the frequency can be reduced to quarterly in accordance with criteria detailed in Section 4.5.2.
- ***Dig Permit Inspection:***
  - *Purpose:* This applies to all projects that have been approved, via dig permit, for connections to the MS4, discharge of surface storm water runoff related to construction activities, or discharge of non-storm water to the MS4. The inspection is intended to ensure that any potential construction related discharges to the MS4 have been accurately reported in the dig permit, and any other applicable NPDES permit coverages, and that BMPs have been installed in accordance with the project SWPPP or related documents, as applicable. More detailed information is provided in Section 4.5.2.
  - *Inspector:* A qualified, independent inspector, with no involvement in the day-to-day planning, design, or implementation of the project.
  - *Frequency:* Annual or at least once during the life cycle of the project, whichever is comes first.

All inspections, reporting, and corrective procedures will be conducted in compliance with the MS4 Permit. Table 4-2 provides a general summary of the organization of oversight for MS4 Permit compliance with construction site inspections, corrective actions, and recordkeeping/tracking requirements.

Initial site inspections will be conducted by an engineer or qualified inspector contracted by the overseeing agency; familiar with the plans, the project SWPPP, and related documents. For in-house projects, all monthly inspections and dig permit inspections will be conducted by a qualified inspector designated or hired by MCD/ENV. The inspector will not be involved in the day-to-day activities/progress of the project. Any contracted maintenance or construction projects that require monthly inspections and/or dig permit inspections, will have these requirements included as a component within the contract. Contractors will be responsible for hiring a qualified, 3rd party inspector, that will report to the overseeing agency and to ENV, as necessary. This is noted, where applicable, in Table 4-2.

For consistency within the inspection process, MCB Hawaii has categorized reportable deficiencies as *(i) critical, (ii) major,* and *(iii) minor*. Each category has been defined, with specific examples, as follows:

Critical Deficiency: A deficiency that poses an immediate risk of discharge of pollutants to a storm drain MS4 system, surface waters or State waters. 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, surface waters, or State waters generated by construction activity;
- No SWPPP document or 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 that pose 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 to unprotected storm drain inlets, surface waters, or State waters.

***Major Deficiency*:** A deficiency that is a significant issue that could result in the discharge of pollutants to the storm drain system, surface waters or State waters. Major deficiencies include, but are not limited to, the following examples:

- Linear barriers and/or perimeter controls in areas tributary to a water body or drain inlet that are installed as required by the SWPPP document, but are not functional, such as silt fences that are not anchored properly, have collapsed, or are overwhelmed by accumulated sediment;
- Hazardous materials or waste stored within a project without containment or implementation of BMPs;
- Any fluid spills covering more than one square yard and/or are adjacent to protected storm drain inlets, surface waters, or State waters;
- Sediment tracking more than 50 feet from project entrance/exit location(s);
- Expansion of the active disturbed soil area limit without written approval;
- Soil stabilization and sediment controls are not installed in accordance with the current SWPPP document/ BMP site map;

- Sediment controls are installed in accordance with the SWPPP document, but there is a large unstabilized disturbed soil area with insufficient controls down gradient to prevent the discharge of untreated storm water to the storm drain system, surface waters, or State waters if a rain event generates runoff; and
- Dust from project site visibly blowing off the site and into storm drain conveyances or adjacent surface water bodies.

***Minor Deficiency*:** 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 are not in direct conformance with the SWPPP document. Minor deficiencies include, but are not limited to, the following examples:

- BMPs are not deficient, but are not consistent with the SWPPP plan;
- SWPPP does not reflect current operations and an amendment is recommended;
- Linear barriers and/ or perimeter controls are properly installed according to the SWPPP document, but require minor maintenance;
- Sediment controls are installed per the SWPPP plan, but not properly maintained;
- Site inspections by project staff are not being conducted at the required frequencies;
- Non-storm water or waste management BMPs that are improperly maintained;
- Any fluid spills covering less than one square yard and not adjacent to storm drain inlets, surface waters, or State waters;
- Evidence of active wind erosion on unstabilized slopes/stock piles;
- Minor tracking less than 50 feet from project entry/exit locations; and
- Major deficiencies which are corrected prior to the inspector leaving the site

Table 4-2
Organization of MS4 Compliance Oversight

Source of Storm Water Runoff	Required Permits/ Agreements	Responsible for Inspections	Responsible for Corrective Action	Recordkeeping and Tracking
General Base-wide Inspections	None	Base Inspector	Varies[1]	Varies[1]
In-house Maintenance & Construction	• Project-specific NPDES Permit or dig permit approval through dig permit process (if applicable) *None (If no NPDES permit coverage needed)*	MCD, ENV	MCD	ENV
Military Construction	• Project-specific NPDES Permit or connection/discharge approval through dig permit process (if applicable) *None (If no NPDES permit coverage needed)*	MCD[2]	MCD	MCD
NAVFAC Construction by Outside Contractor	• Contract documents, including plans & specifications • Project-specific NPDES Permit or connection/discharge approval through dig permit process (if applicable)	FEAD[2]	Contractor	FEAD
DOE – Mokapu Elementary School	• Lease Agreement • Project-specific NPDES Permit or connection/discharge permit (if applicable)	DOE[2], ENV	DOE (State)	DOE
PPV Housing	• Lease Agreement • Project-specific NPDES Permit or connection/discharge approval through dig permit process (if applicable)	Base Inspector, Forest City[2], ENV	Resident (Residential Lots) Forest City (Common Areas)	Forest City
MCCS - Commercial Areas	• Lease Agreement • Project-specific NPDES Permit or connection/discharge approval through dig permit process (if applicable)	MCCS[2], ENV	Commercial Tenant	MCCS
MCD Maintenance & Construction	• Project-specific NPDES Permit or connection/discharge approval through dig permit process (if applicable) *None (If no NPDES permit coverage needed)*	MCD[2]	MCD	MCD

[1] Varies depending on the agency responsible for oversight of the project, in accordance with Figure 4-1.

[2] Responsible to oversee that a qualified inspector or engineer, familiar with the project, conducts the Initial BMP Inspections, and that an independent qualified inspector conducts Monthly Site Inspections and Dig Permit Inspections (as applicable) in accordance with the MS4 Permit.

4.5.1 Initial Site Inspection

Prior to the start of any ground-disturbing activities, except for activities associated with the installation of BMPs at a site, an engineer or qualified inspector will inspect each site to verify BMPs have been installed in accordance with the approved SWPPP and supporting documents. The inspector will be checking that BMPs are installed correctly and in the correct locations, and will document any site conditions that pose a potential risk for erosion and sediment runoff, or any other pollutants, as a result of the project's construction activities. The inspector will use the "Draft Initial BMP Site Inspection Checklist" (Appendix 4-1) which has been submitted to DOH as part of the MS4 Permit requirements. Part of the inspection also involves ensuring that a copy of the SWPPP, and all other applicable documents, such as connection permits, NGPC, and other related documents, be readily available onsite at all times during construction activities.

It is the responsibility of the MCB Hawaii PM(s) or construction contractor to confirm that the construction site has satisfied all SWPPP requirements prior to construction. However, the agency responsible for recordkeeping will track all deficiencies, comments, and resultant corrective actions made during the initial inspection to ensure that all issues have been properly resolved prior to the commencement of construction.

4.5.2 Monthly Site Inspections & Dig Permit Inspections

In addition to Initial Site Inspections, MCB Hawaii will conduct Monthly Site Inspections and Dig Permit Inspections of all non-exempt in-house maintenance and construction, military construction, and contract construction projects. This will 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 throughout 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. The inspector(s) will use the "Construction Oversight Field Inspection Checklist" (Appendix 4-1) to document any BMP deficiencies and inconsistencies between the approved SWPPP and project site conditions. The inspection form includes the date, inspection observations (with a photographic log to document all minor, major and critical issues observed on site), potential noncompliance issue(s) and any necessary corrective actions that need to be addressed. All deficiencies will be classified as either critical, major, or minor, at the time of inspection. These terms are based on the definitions provided in Section 4.5.

4.5.2.1 Inspection Frequency

Initially all applicable construction projects will be inspected at least once monthly, by a qualified independent construction inspector(s), who is familiar with the project SWPPP.

These routine monthly inspections can be reduced to quarterly upon three (3) successive monthly inspections where each of the following criteria are met:

(i) No critical or major deficiencies reported;
(ii) Less than six (6) minor deficiencies, with no more than three (3) minor deficiencies reported in a single monthly inspection;

The project will immediately be returned to a minimum of monthly inspections, if during any future inspection:

(i) One (1) or more critical or major deficiencies are reported
(ii) Three (3) minor deficiencies are reported

MCB Hawaii is responsible for ensuring that a minimum of once annual inspections are conducted for all construction projects that have received approval, through the dig permit process, for a drainage connection to the MS4 or for surface runoff discharge. This requirement can be met in conjunction with the monthly required inspections, if these are applicable. These inspections are to continue at a minimum of annual frequency until the project is complete. For in-house projects these inspections will be conducted by an ENV qualified independent inspector, and will be tracked by ENV. For contracted projects these inspections will be conducted by a qualified independent 3rd party inspector hired by the contractor, and will be tracked internally by the overseeing agency for recordkeeping purposes.

Inspections will also be conducted upon complaints from citizens or concerned groups. Unannounced and follow-up inspections will be conducted as deemed necessary by ENV. The ENV will coordinate with the overseeing agency if violations are documented. All construction projects are also subject to routine general inspections by the Base Inspector. If violations are observed during general inspections, either the tenant or the ENV will be notified. The ENV will direct the issue accordingly. Adjustments to inspection frequency will be made at the discretion of the overseeing agency and the ENV, in accordance with the MS4 Permit requirements.

4.5.2.2 Reporting and Corrective Procedure

MCB Hawaii has developed procedures for reporting and corrective actions, based on the severity of any deficiencies observed onsite during any routine site inspection. This procedure is also documented in more detail in the "Final Enforcement Response Plan" (Appendix 3-4), and the "Reporting and Corrective Procedures for Construction Storm Water Inspections" (Appendix 4-2). Generally, outside of its own inspections, the ENV will be notified of MS4 Permit violations detected during routine inspections if:

1. The base inspector identifies a violation during general Base-wide inspections.
2. A MS4 Permit violation is not internally, and promptly resolved by processes in place through construction contracts with the FEAD, MCCS, Forest City, or DOE.

Once ENV has been notified, the following procedure will come into effect:

> *If any critical deficiency is observed*, the ENV will immediately notify DOH, verbally and in writing. ENV will verbally notify the responsible tenant/manager and ensure all critical deficiencies are addressed and adequately corrected before the close of business day on the day the deficiency is identified.
>
> *If any major deficiency is observed*, the ENV will immediately send a written notification with an attached inspection checklist containing photographs to the responsible tenant/manager and MCB Hawaii PM(s) explaining the site nonconformities. ENV will ensure all major deficiencies are addressed or corrected as soon as possible, but in no event later than five (5) calendar days after the deficiency is identified or before the next forecasted rain event, whichever is sooner.
>
> *If any minor deficiency is observed,* the ENV will document the issue using the approved inspection checklist, photograph log and internal project tracking system. The responsible tenant/manager and MCB Hawaii PM(s) will be notified verbally of any non-conformities at the

end of the inspection and provided an emailed copy of the inspection form (with attached photographs) within 48 hours of the inspection (two (2) business days). A response from the contractor documenting the corrective action taken to address the identified issues is expected within five (5) calendar days from receiving the verbal notification from ENV.

Per the permit, the independent qualified construction inspector(s) will conduct follow-up inspections as needed, at least monthly to ensure site deficiencies have been properly addressed and all storm water controls are in proper working order.

For recordkeeping purposes, the ENV will provide the responsible tenant/manager an emailed copy of the inspection form (with attached photographs) with 48 hours of the inspection (two (2) business days). The responsible tenant/manager or MCB Hawaii PM(s) is expected to provide a formal written response to ENV, documenting corrective actions (with photograph verification, maps, etc.), within five (5) calendar days of receiving the inspection form. The ENV will track all inspections using an internal public share drive.

4.6 Enforcement

To ensure compliance with the Construction Program and MS4 Permit requirements, MCB Hawaii has developed enforcement procedures for all maintenance and construction projects in its "Final Enforcement Response Plan (October 2015)," (Appendix 3-4). Refer to the Enforcement Response Plan (ERP) for more detailed information of enforcement procedures for this Construction Program.

MCB Hawaii 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 MCB Hawaii, the most effective means for enforcement is escalation of unaddressed violations to the next higher authority.

If an observed deficiency is not addressed by the contractor within the allotted mitigation period, the issue will be brought to the attention of the ENV 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.

Regardless of the type of project, the ultimate penalty for non-compliance of this Construction Program and MS4 Permit regulations, is eviction or discharge of the responsible party from MCB Hawaii. This is placed at the discretion of the Base Commanding Officer (CO). Although unaddressed violations can be escalated as high as the Base Commander, this has not been an issue in the past due to the inherent threat of discharge or eviction from MCB Hawaii.

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

In the event that MCB Hawaii encounters a situation where continued failure to resolve an observed deficiency has resulted in the CO's determination that the contractor or tenant be evicted, the ENV will notify DOH within one (1) week of the decision. A written notification from the ENV, including all relevant information (such as inspection checklists, photographs, notes, and correspondence) is to follow within two (2) weeks of the CO's determination.

In the event that an MCB Hawaii inspector identifies that a construction site has not applied for permit coverage under the NPDES permit program, the ENV 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 Training

The ENV will conduct annual training for all staff with Construction Program responsibilities. This includes its construction engineers, PMs, plan reviewers, construction and maintenance inspectors (responsible for routine site inspections), qualified inspectors (responsible for initial site inspections, monthly site inspections, and dig permit inspections), and any other staff responsible for managing the Construction Program.

Training sessions will relate specifically to MCB Hawaii construction activities, and include information on proper installation and maintenance of approved BMPs, Construction Program policies, rules, procedures, and resolution of any issues observed during the previous year.

The ENV will be responsible for ensuring that updated information regarding revisions to BMP field manuals, current inspection forms, and any other updates to the Construction Program policy, procedures, etc. are made available to MCB Hawaii staff.

4.8 Education

As part of the effective management of its Construction Program, MCB Hawaii will implement an ongoing education program directed at all parties subject to the requirements of the Construction Program, including project applicants, contractors, developers, and property owners.

The program will promote a general understanding of MCB Hawaii SWMP, and more specifically of the requirements that they must meet as participants of the Construction Program. Part of this education involves familiarity with MCB Hawaii's BMP field manuals, knowledge of the proper procedures/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 MS4 Permit, Part D.1.e, MCB Hawaii is required to implement a Post-construction Storm Water Management Program (Post-construction Program). The Post-construction Program applies to all new development and redevelopment projects that result in a disturbance of one (1) acre or more, or smaller projects that have the potential to discharge pollutants to MCB Hawaii's MS4.

MCB Hawaii's Post-construction Program is a critical part of Base-wide SWMP, because it defines the permanent measures that will be taken to protect nearby receiving waters from any potential storm water pollution that could be generated onsite in the future. As such, the Post-construction Program has the most lasting impact on the continued effectiveness of MCB Hawaii's SWMP. The primary goal of the Post-construction Program is to ensure that permanent controls are incorporated into all applicable construction projects to the MEP, to prevent or minimize water quality impacts. The objectives of this program are to:

1. Develop and implement revised standards, and feasibility criteria for requiring post-construction BMPs and LID measures that will effectively reduce pollutants, including foreseeable potential future pollutants, to MCB Hawaii's MS4.
2. Standardize the plan review process to ensure that post-construction BMPs and LID measures are incorporated into projects in the early stages of design and planning efforts.
3. Ensure the continued performance of permanent BMPs throughout construction and once ownership of a project has been turned over to MCB Hawaii, using a routinely updated BMP Database to track inventory, and inspections and maintenance activities.
4. Promote awareness of MCB Hawaii's SWMP among all parties involved in any component of the Post-construction Program through annual training, and education and outreach materials.

This Post-construction Program is outlined in accordance with the MS4 Permit requirements. The MS4 Permit states:

Part D.1.e. Post-construction Storm Water Management in New Development and Redevelopment

> *"The Permittee shall further develop, implement, and enforce a program to address storm water runoff from all (i.e., both private and public) 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 Permittee's MS4. The Permittee's program must ensure that permanent controls are in place to prevent or minimize water quality impacts to the MEP. The Permittee shall review and update, as necessary, the criteria defining when and the types of permanent post-construction BMPs, including, among other measures, LID techniques, that 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 approved Total Maximum Daily Loads (TMDLs), the pollutants of concern to be targeted shall include the parameters causing impairment. The Permittee shall consider trash reduction techniques to comply with short and long term plans as required in Part D.1.f.(1)(v). The program shall include, at a minimum, the following elements:*

Part D.1.e.(1) Standards Revision *– The Permittee shall revise its standards for addressing post-construction BMPs to LID requirements. Within six (6) months of the effective date of this permit, the Permittee shall submit to the DOH for review and acceptance, a plan for requiring LID in the standards to the MEP, including revisions to the plan review and inspection checklist to include LID. 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 ensure that the management practices are prioritized to favor infiltration, evapotranspiration, or harvesting/reuse of stormwater followed by other practices that treat and release stormwater. 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 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 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.*

A draft of the revised standards shall be submitted to the DOH in accordance with Part A.6 for review and acceptance within 12 months from the effective date of this permit and include, at a minimum, the above. Within 18 months after the effective date of this permit, subject to adoption by rulemaking or other equivalent process, the revised standards shall be submitted to the DOH in accordance with Part A.6. To the extent that the revised standards have not been adopted, the Permittee shall submit a compliance schedule for adoption, which shall not exceed 24 months after the effective date of this permit.

Part D.1.e.(2) Review of Plans for Post-Construction BMPs *– For design-bid-build projects, the Permittee shall not advertise any construction project nor award any construction contract until the project design has been reviewed and accepted to ensure that appropriate permanent post-construction BMPs, which include LID practices upon adoption into its standards, have been included in the project design and are included in the bid package to ensure compliance with this part of the permit. For design-build projects, the Permittee shall review and approve the project design the same as for design-bid-build projects 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 permanent post-construction BMPs shall also include appropriate requirements for their future continued maintenance.

***Part D.1.e.(3) BMP, Operation and Maintenance, and Inspection Database** – The Permittee shall implement its Asset Management System to track the frequency of inspections and maintenance of the Permanent BMPs. In addition to the standard information collected for all projects (e.g., project name, owner, location, start/end date, etc.), the database shall also include, at a minimum:*

- *Type and number of LID practices.*
- *Type and number of Source Control BMPs.*
- *Type and number of Treatment Control BMPs.*
- *Latitude/Longitude coordinates of controls using Global Positioning Systems and NAD83 or other Datum as long as the datum remains consistent.*
- *Photographs of controls.*
- *Operation and maintenance requirements.*
- *Frequency of inspections.*
- *Frequency of maintenance.*

All stormwater treatment and LID BMPs shall be inspected at least once a calendar year for proper operation; maintenance shall be performed as necessary to ensure proper operation.

Part D.1.e.(4) Education and Training

(i) Project Proponents - The Permittee shall provide education and outreach material for those parties who apply for permits (i.e., developers, engineers, architects, consultants, construction contractors, excavators, and property owners) 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 permits and requirements, a list of required permits, implementing agencies, fees, overviews, timelines and a brief discussion of potential environmental impacts associated with storm water runoff.

(ii) Inspectors - All Permittee staff and contractors responsible for inspecting permanent post-construction BMPs and LID practices shall receive annual training."

5.1 Program Organization

The program organization for the Post-construction Program, is similar to that described in the Construction Program, Chapter 4. Figure 5-1 shows the agencies responsible for overseeing that all Post-construction Program requirements are met, for various types of MCB Hawaii construction projects, in accordance with the MS4 Permit. The main differences, are that Post-construction Program begins in the planning stages and includes a long-term maintenance component which is coordinated by the ENV and Facilities Engineering Maintenance Control Division / Maintenance Repair Operations (MCD/MRO). As part of this component there is a required management of the maintenance and associated tracking for each construction project.

Figure 5-1 outlines the organization of the Post-construction Program. The grey boxes indicate the agency responsible for general oversight of the project. Typically construction projects at MCB Hawaii are categorized as either:

(i) *In-house Maintenance and Construction* – projects are scoped and planned by MCD, and the construction work is completed by MRO. Typically these projects are less than 5,000 sf and/or related to emergency repair work.

(ii) *Military Construction* – These are projects that would typically be handled as in-house construction, but due to limited manpower have been contracted out. These projects are managed by Logistics Facilities Public Works Engineering (LFPE), with all storm water management managed by ENV.

(iii) *Contract Maintenance and Construction* – These projects are conducted by an outside contractor, but are managed as follows:

- *NAVFAC Construction Projects* are managed by the FEAD.
- *Mokapu Elementary School Projects* are managed by the DOE.
- *PPV Housing Projects* are managed by Forest City.
- *Commercial Tenant Projects* are managed by MCCS.
- *Various other contract maintenance and construction projects* are managed by MCD.

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

For the purpose of this SWMP and the Post-construction 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, of the same surfacing material, related only to utility work;
- Resurfacing or replacement of damaged pavement, with the same surfacing material;
- Construction of sidewalks, ramps, or related pedestrian/bicyclist features on existing paved roadways;
- 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 renovation that does not disturb ground or increase the footprint of impermeable surfaces.

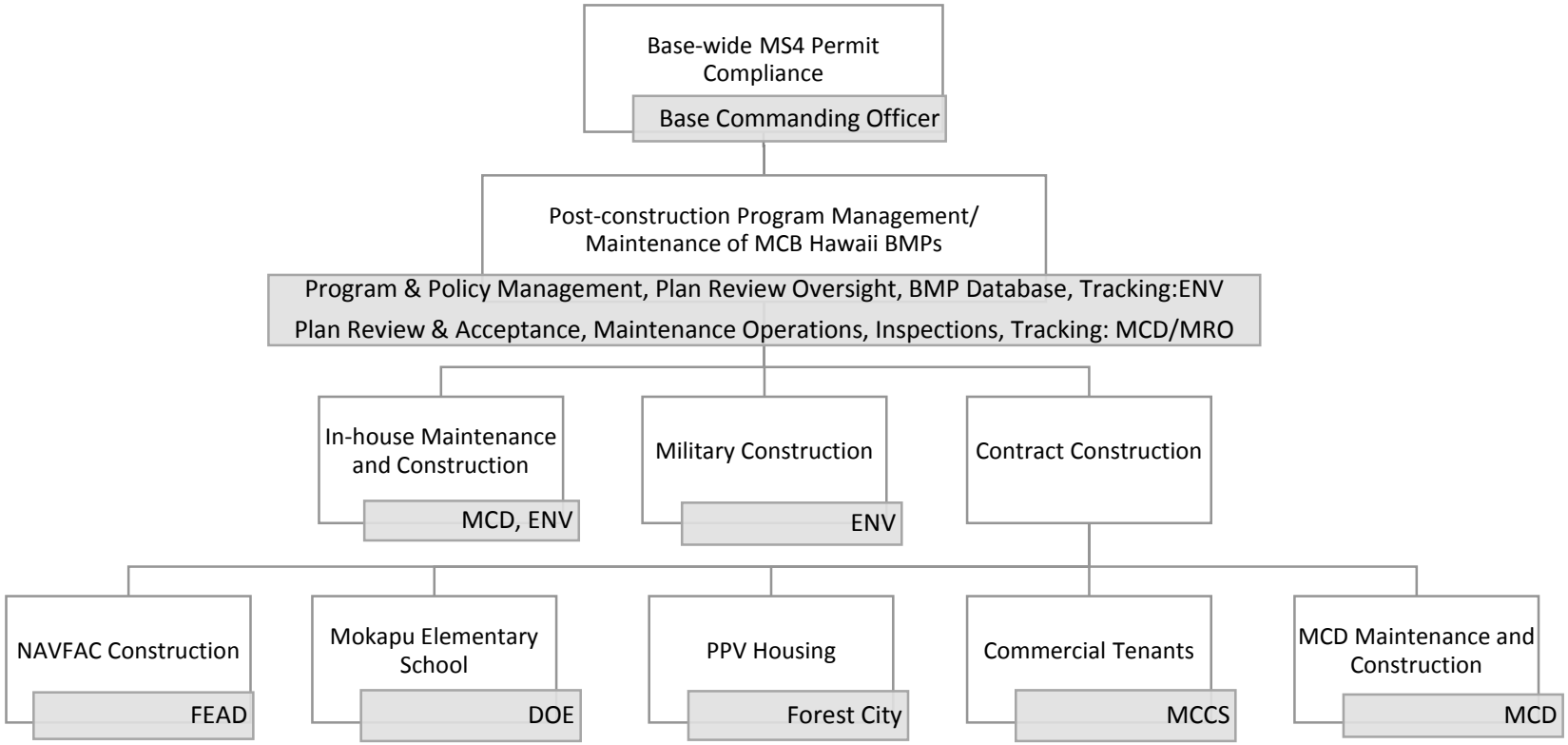


Figure 5-1 Post-construction Program Organizational Chart

In projects listed above, where trenching or resurfacing of pavement is needed, the pavement must be replaced with the same ground covering materials (e.g. permeable pavement cannot be replaced with impermeable pavement) so as to not increase the amount of storm water runoff generated onsite. Those projects classified as *exempt* projects are subject to the discretion of the overseeing agency and the ENV.

5.2 Standards Revision

In accordance with the MS4 Permit, Part D.1.e(1), MCB Hawaii has revised its "Plan for Requiring Low Impact Development in the Standards(Plan for Requiring LID)" (refer to Appendix 5-1) and submitted the plan to DOH on April 29, 2015. Low impact development (LID) aims at preserving or mimicking the sites predevelopment hydrology. This is achieved by minimizing ground disturbance and use of impervious cover, and infiltrating, storing, detaining, evapotranspiration, and/or biotreating storm water runoff close to its source. Ideally LID measures are based on the concept of using storm water to preserve the natural landscape, and treating storm water as a resource rather than a waste product. MCB Hawaii's LID design standards are intended to prioritize management practices that favor infiltration, evapotranspiration, or harvesting/reuse of storm water, followed by other practices to treat and release storm water.

The revised Plan for Requiring LID describes in detail:

- Criteria for requiring implementation of LID;
- Quantitative criteria for a specific design storm to be managed by LID techniques;
- Infeasibility criteria for circumstances in which a waiver could be granted for the LID requirements;
- List of alternatives that may be implemented when an LID waiver is granted;
- Draft LID planning and design example checklist; and
- Draft LID and permanent post-construction Best Management Practice (BMP) inspection example checklists.

As described in its Plan for Requiring LID, MCB Hawaii has already implemented the required LID standards for all of its projects in accordance with updated LID Standards received in January 2010. 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. A reference to these standards were submitted to DOH in the Plan for Requiring LID. Should there be any future changes to these policies, these will be directed through base instruction.

5.3 Review of Plans for Post-construction BMPs

A primary goal of the Post-construction Program is to ensure that no construction project will proceed without the inclusion of the appropriate permanent post-construction BMPs and documentation outlining future BMP maintenance requirements. To achieve this goal, all projects, design-bid-build and design-build alike, must be reviewed and accepted for suitable use of permanent BMPs. This review and acceptance process will be conducted by the overseeing agency shown in Figure 5-1, and will incorporate all LID standards that have been developed for the MS4 Permit.

All project owners have access to the criteria for requiring LID, and the "Low Impact Development Planning and Design Checklist," (LID Design Checklist) as provided in the Plan for Requiring LID.

Requiring applicants to submit this completed checklist will facilitate the incorporation of BMPs into the initial stages of design development, and will help in early identification of design conflicts, and preferred alternatives.

The completed LID Design Checklist will be used during Post-construction Program to simplify the review 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 MCD/MRO.

To guarantee the implementation of adequate permanent BMPs, no construction shall begin or be awarded until the plans have been appropriately reviewed and accepted by the overseeing agency. If it is determined that it is infeasible for a construction project to meet all of the post-construction permanent BMP requirements, the applicant must submit a completed "LID/EISA Constraints and Waiver Request" (Appendix 5-2). As part of the Plan for Requiring LID, the applicant must also submit a description of the alternative measures or non-LID BMPs that will be implemented should the LID waiver be granted by MCB Hawaii due to technical constraint(s).

MCB Hawaii encourages the collaboration of applicants, reviewers, ENV, and MCD/MRO, as necessary to meet program requirements, and develop successful solutions for permanent BMP implementation.

The ENV is responsible for general oversight of the Post-construction Program. This includes revising design checklists/criteria or policies, as needed, to meet program requirements and to facilitate program implementation within the various types of construction projects at MCB Hawaii.

5.4 BMP Database

An important factor in maintaining the long-term effectiveness of permanent BMPs, is adequate maintenance. A successful maintenance program relies on routine inspection and accurate tracking/recordkeeping.

There is a stabilization period over which the contractor is responsible for maintenance of vegetated BMPs. This stabilization period can be helpful in identifying design problems, or oversights during installation. Unvegetated, structural BMPs are to be clean when ready to turnover to the base. To facilitate the turnover of BMP ownership to MCB Hawaii, the contractor may document any observed maintenance baseline or other information that may be useful to MCD/MRO. The process for a contractor to turn a new or redeveloped facility over to ownership of MCB Hawaii includes submittal of:

- As-built plans, with clear distinction of all permanent BMPs (supplemental written documentation may be submitted for additional clarification of any details);
- All relevant documentation outlining permanent BMP/LID specifications and required future maintenance; and
- Proof of BMP stabilization (photos, prior maintenance records, etc.), if applicable.

These documents are to be submitted to MCD/MRO and LFPE. Once MCD/MRO has accepted the proof of stabilization, the maintenance of applicable BMPs will fall under the responsibility of MCD/MRO. It is up to the project owner/contractor to ensure that all relevant information is provided to MCB Hawaii.

A copy of the as-built plans will also be provided to LFPE to be used to update MCB Hawaii's existing Geographic Information System (GIS) file and its existing overall storm drain system database, MAXIMO, which is used primarily for tracking and scheduling of maintenance work. LFPE will incorporate all structural BMP components into GIS, such as inlets, pipes, vaults, etc., within 150 days of the beneficial occupancy date (BOD). Notification of MCD/MRO BMP acceptance, along with applicable plans and relevant documentation, showing permanent BMPs, LID features, and required maintenance, will be directed to the ENV for incorporation into an inventory of permanent BMPs (BMP Database). To supplement the BMP database, ENV is working with LFPE to develop a new layer in the MCB Hawaii's GIS file which will map vegetated BMPs. When available, this layer will be maintained by ENV. At a minimum, the BMP Databases will include:

- General Information: Project name, owner, general location, start/end date of construction, date of acceptance by MCB Hawaii (MCD/MRO).
- Type and number of LID practices.
- Type and number of Source Control BMPs.
- Type and number of Treatment Control BMPs.
- Latitude/Longitude coordinates of controls using Global Positioning Systems and NAD83 or other Datum as long as the datum remains consistent.
- Photographs of controls.
- Operation and maintenance requirements.
- Frequency of inspections, (or contact information for inspection records).
- Frequency of maintenance, (or contact information for maintenance records).

MCB Hawaii's maintenance program will allocate its resources to prioritize the operation and maintenance of facilities with the maximum potential to affect storm water quality. The BMP Database will be used by the ENV to collaborate with MCD/MRO, to ensure that annual inspection requirements of all permanent BMPs, and LID features are met. At a minimum, this requires at least one inspection be conducted annually for each permanent BMP, with maintenance performed as necessary to retain its function. Inspections will be conducted using the guidance of the LID and Permanent Post-construction BMP Inspection Checklists as provided in the Plan for Requiring LID.

Routine maintenance activities will also be conducted to the MEP, but priority will be given to BMPs that have been identified by inspection, or public notification, as malfunctioning. Inspection and maintenance records will be tracked via work orders generated by MCB Hawaii's current asset management system (AMS), MAXIMO, and by field notes documented by maintenance personnel. All inspection/maintenance records will be maintained by MCD/MRO, and made available to the ENV upon request.

5.5 Education and Training

5.5.1 Project Proponents

As part of its Post-construction Program, MCB Hawaii will implement an ongoing education program directed at all project proponents, including developers, engineers, architects, consultants, contractors, excavators, and property owners. Education of all participating parties will promote consistency, and efficiency within the Post-construction Program.

The program will also provide outreach materials intended to promote a general understanding of MCB Hawaii SWMP, and of specific requirements of the Post-construction Program. This includes information on the selection, design, installation, operation and maintenance of storm water BMPs, structural controls, post construction BMPs and LID practices. MCB Hawaii will use its Post-construction BMP Manual and may develop other materials, as needed, to facilitate learning on:

- Criteria to determine required permits for construction;
- Organizational charts for the permitting and compliance (including local, state, and federal agencies, as well as MCB Hawaii's internal management programs);
- Fees or scheduling for permitting;
- Submittal and plan review requirements; and
- New program requirements as MCB Hawaii's Storm Water Program evolves.

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

5.5.2 Inspectors

MCB Hawaii will conduct, at a minimum, annual training for all staff and contractors tasked with Post-construction BMP inspections. Training sessions may be combined with other training material, but will cover material related specifically to MCB Hawaii Post-construction Program. Information will be based on proper installation and maintenance of approved BMPs, Post-construction Program policies, procedures, and resolution of any issues observed during the previous year.

The ENV will be responsible for updating and ensuring that current resources are available to MCB Hawaii staff and contractors tasked with managing any portion of the Post-construction Program. This will include current and updated BMP field manuals, inspection forms, LID Design Checklists, Post-construction Program policies, and any other related material.

6 Pollution Prevention/Good Housekeeping - Debris Control BMPs Program Plan

A crucial component of MCB Hawaii's SWMP is its Base-wide Pollution Prevention and Good Housekeeping Program (Pollution Prevention Program). Generally this is a multi-faceted maintenance program aimed at reducing discharge of pollutants from all MCB Hawaii-owned property to the MEP. MCB Hawaii-owned property includes facilities, roads, parking lots, maintenance facilities, and its MS4. MCB Hawaii's Pollution Prevention Program is separated into four main components including:

1. Debris Control BMPs Program Plan (Chapter 6) ;
2. Chemical Applications BMP Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8); and
4. Maintenance Activities BMPs Program Plan (Chapter 9).

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

Per the MS4 Permit, Part D.1.f.(1), MCB Hawaii is required to implement a Debris Control Program. The Debris Control Program applies to all of MCB Hawaii's MS4, including structural and vegetated BMPs, and related appurtenances. The main objective of the Debris Control Program is to develop MCB Hawaii's existing MS4 operations and maintenance program to minimize the discharge of pollutants, specifically sediment and trash (as defined in the *Trash Reduction Plan,* Appendix 6-1), primarily through efforts to prevent debris from entering the MS4, and how to address the minimized fraction that is captured within the MS4. This includes, but is not limited to, good housekeeping, street sweeping, catch basin cleaning, green waste and accumulated soil removal. The objectives of the Debris Control Program are to:

1. Use an asset management system (AMS) to schedule and track inspection and maintenance efforts with established priorities in areas where there is the most significant potential to impact storm water quality. This also involves updating system mapping to include identification numbers for all facilities, and developing an inventory of any related appurtenances, including maintenance equipment.
2. Schedule preliminary inspections to prioritize where maintenance efforts are required.
3. Install storm drain placards at drainage inlets and evaluate the effectiveness of doing so, by tracking locations and frequency of required maintenance activities.
4. Develop a Base-wide *Action Plan for Retrofitting Structural BMPs.*
5. Develop a Base-wide *Trash Reduction Plan.*

This Debris Control Program is outlined in accordance with the MS4 Permit requirements. The MS4 Permit states:

Part D.1.f. Pollution Prevention/Good Housekeeping

> *"The Permittee shall further develop and implement a system maintenance program to reduce to the MEP the discharge of pollutants from all Permittee-owned facilities, roads, parking lots, maintenance facilities, and the Permittee's MS4. The program shall include:*

Part D.1.f.(1) Debris Control BMPs Program Plan

(i) Asset Management System and Mapping - The Permittee shall implement a comprehensive asset management system and map of its MS4, including structural and vegetative BMPs and an 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. 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 SWMP shall include justification of its priorities applied to the asset management system on the basis of potential impacts to water quality.

(ii) Inspection/Maintenance Schedule - The Permittee shall include in its SWMP procedures, a schedule for inspections of:

a) All roadways for the purpose of identifying if sweeping of roadways, shoulders, and/or medians is needed; and
b) All storm drainage system catch basins, gutters and open ditches, trenches, and BMPs for the purpose of identifying if maintenance/cleaning of such structures are needed.

In both cases, 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 roadway 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). The adopted procedures shall provide for the identification of roadway segments and their associated storm drainage features and BMPs that may require more frequent sweeping and/or structure cleaning based upon material accumulation rates and potential threat of discharge to State waters that may have an effect on water quality. The procedures shall establish debris accumulation thresholds above which sweeping and/or structure cleaning must occur. 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.

(iii) Storm Drain Placards - The Permittee shall install placards on its drainage inlets; evaluate the effectiveness of the placards; and revise as necessary to meet its purpose. The purpose of the placards shall be discussed within the SWMP. A minimum of 50 new placards shall be installed per year. Priority shall be given to the Permittee's industrial and commercial areas and areas with pedestrian traffic. The Permittee shall implement its system to track placement of placards and procedures for maintenance staff to inspect and replace, as necessary, placards during routine maintenance activities.

(iv) Action Plan for Retrofitting Structural BMPs – The Permittee shall provide the DOH with an Action Plan for Retrofitting Structural BMPs within one (1) year from the effective date of this permit, which shall identify retrofits to be implemented, and include an explanation of the basis for their selection and an implementation schedule. The implementation schedule shall cover a five (5) year period and be updated annually to include additional retrofit projects with water quality protection measures. The annual updates to the implementation schedule shall be included in the Annual Report with a description of the projects status. The Action Plan may include, but not be limited to projects in compliance with any TMDL implementation and monitoring plan.

(v) Trash Reduction Plan - Within three (3) years from the effective date of this permit, the Permittee shall develop and submit to the DOH for review and acceptance, a trash reduction plan which assesses the issue, identifies and implements control measures, and monitors the control measures to reduce trash loads from the MS4. The plan shall include, at a minimum and be formatted consistent with the following:

- *Quantitative estimate of the debris currently being discharged (baseline load) from the MS4, including methodology used to determine the load.*
- *Description of control measures currently being implemented as well as those needed to reduce debris discharges from the MS4 consistent with short-term and long-term reduction targets.*
- *A short-term plan and proposed compliance deadline for reducing debris discharges from the MS4 by 50% from the baseline load.*
- *A long-term plan and proposed compliance deadline for reducing debris discharges from the MS4 to zero.*
- *Geographical targets for trash reduction activities with priority on waterbodies listed as impaired for trash on the State's CWA Section 303(d) list.*
- *Trash reduction-related education activities as a component of Part D.1.a.*
- *Integration of control measures, education and monitoring to measure progress toward reducing trash discharges.*
- *An implementation schedule.*
- *Monitoring plan to aid with source identification and loading patterns as well as measuring progress in reducing the debris discharges from the MS4.*
- *The Annual Report shall include a summary of its trash load reduction actions (control measures and best management practices) including the types of actions and levels of implementation, the total trash loads and dominant types of trash removed by its actions, and the total trash loads and dominant types of trash for each type of action.*

The plan shall provide for compliance with the above short-term and long-term discharge limits in the shortest practicable timeframe.

6.1 Program Organization

Implementation of the Debris Control Program will result in the collaboration of efforts from ENV and MCD/MRO. The responsibility falls largely upon MCD/MRO with regard to managing the completion of physical maintenance, however, ENV will provide additional program oversight and scheduling assistance. The organizational structure is shown in Figure 6-1. Maintenance of all MCB Hawaii-owned MS4 system facilities is overseen by MCD regardless of the tenant. . As with all other Base-wide programs, the ultimate authority for policy changes and enforcing compliance with the MS4 Permit, is the Base Commanding Officer.

To address the MS4 Permit requirements, the Debris Control Program applies Base-wide to all MCB Hawaii-owned facilities, including those occupied by its tenants.

6.2 Asset Management System and Mapping

As part of its Debris Control Program, MCB Hawaii is required to develop an AMS to track and manage the inspections and maintenance of its entire MS4 system, including permanent BMPs. MCB Hawaii has an existing AMS (i.e., MAXIMO) that is managed by MCD/MRO and used to schedule maintenance activities. Facilities including components of the MS4 are mapped by LFPE in GIS, which is used in conjunction with the AMS. The ENV will continue to work with LFPE to update the GIS coverages to include identification numbers of each storm drain inlet, outfall, or permanent BMP.

The ENV will work with MCD/MRO to develop a priority based schedule for maintenance and debris removal activities, such as street sweeping, catch basin cleaning, and green waste and accumulated soil removal. The ENV and MCD/MRO will conduct an initial assessment, to determine the locations in which the MS4 is more prone to collection of sediment. This information will be used to delineate and prioritize sections of the MS4 system for routine scheduled maintenance. The factors that will be used to determine areas prioritized for maintenance efforts will be:

1. Potential to impact water quality of receiving waters, and proximity to receiving waters.
2. Sediment and debris loading observed during the initial assessment.
3. Cost effectiveness. Maintenance and inspections will be grouped into areas that will most effectively utilize available resources at MCB Hawaii.
4. Need-based. Priority will be given to address concerns or notifications brought to the attention of the ENV or MCD/MRO from the public or through any other general inspections.

Once the prioritization areas have been delineated, ENV will collaborate with MCD/MRO to highlight any adjustments that should be made to the prioritization schedule or any maintenance issues that have been observed. The quarterly Standard Operating Procedure (SOP) meetings may be an appropriate venue for this collaboration, but communication should occur as often as needed and is not restricted to quarterly discussions. The ENV will also use its BMP database to bring to light any permanent BMPs requiring inspection or maintenance efforts to comply with at least the minimum annual inspection requirement.

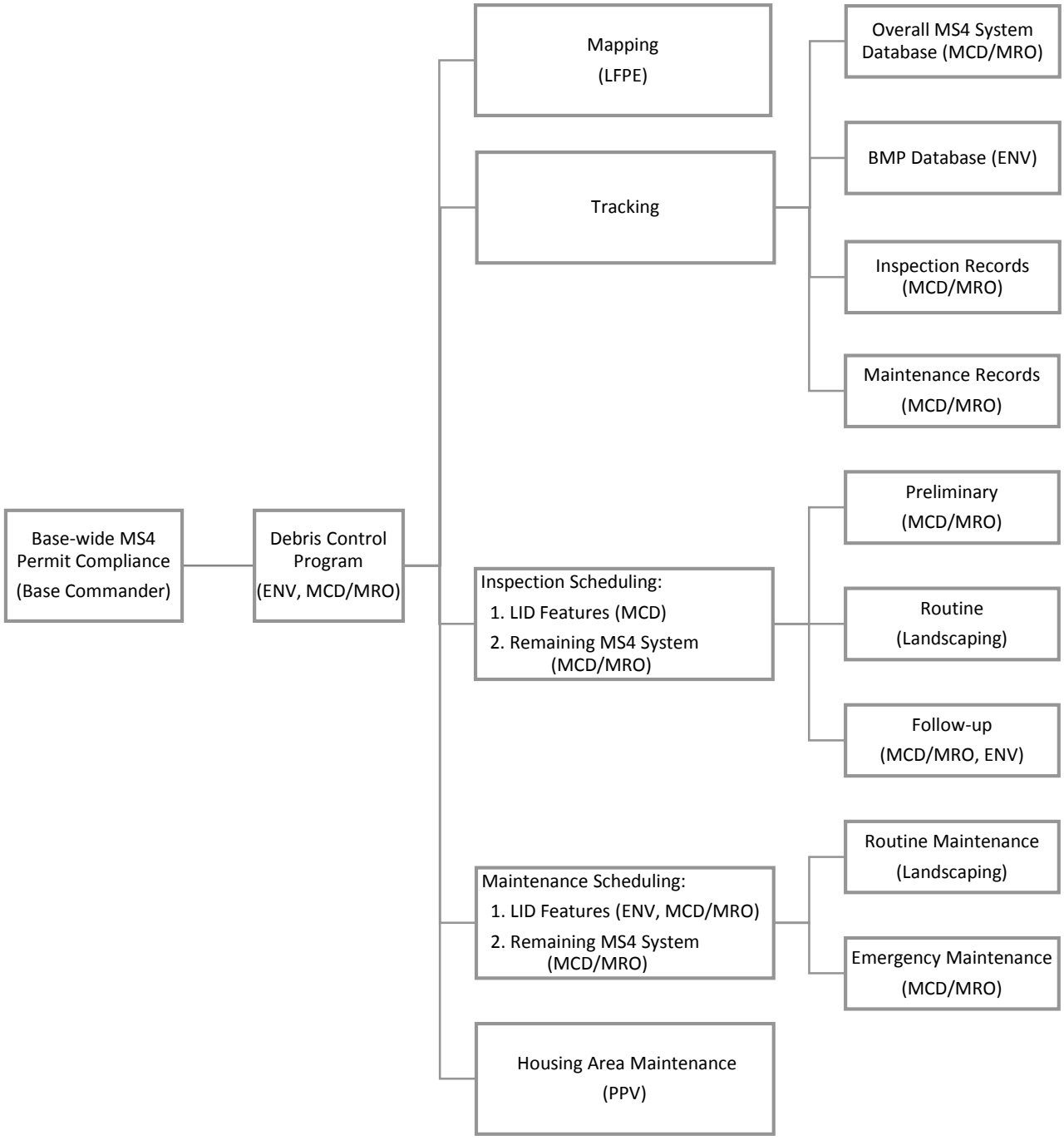


Figure 6-1 Debris Control Program Organizational Chart

6.3 Inspection/Maintenance Schedule

As part of the development of its MS4 Inspections/Maintenance Program, the ENV and MCD/MRO will complete an initial assessment to determine the existing condition of its facilities. The initial assessment will inspect:

1. All roadways to identify if sweeping of roadways, shoulders, and/or medians is needed to prevent storm water pollution from debris and sediment.
2. All MS4 system features, such as catch basins, storm drain inlets, gutters, open ditches, trenches, and BMPs, to identify if maintenance and cleaning of these structures is needed.

The inspections will also be used to approximate the rate of sediment and debris accumulation, which will be factored into long term routine maintenance. Based on observed trends, MCB Hawaii will develop a threshold corresponding to each feature inspected, such as depth of sediment within a storm drain inlet or BMP, or amounts of debris observed on a mile of roadway. These thresholds will be used to categorize each feature into a maintenance priority group. The groups will be outlined similar to the following:

HIGH PRIORITY – Features that exceed the sediment and debris threshold limits.

MEDIUM PRIORITY –Features that have not yet exceeded threshold limits for sediment and debris, but can be reasonably expected to reach or exceed the threshold by the time of the next inspection.

LOW PRIORITY – Features where it can be reasonably expected that the effect of observed sediment and debris accumulation has had a negligible impact on its function.

To meet MS4 Permit requirements, MCB Hawaii will inspect each roadway mile, storm drain feature or BMP at least once during the term of this permit, while concurrently inspecting each of its permanent BMPs at least once annually. MCB Hawaii may perform maintenance in lieu of these inspections, to most effectively meet these requirements.

Currently MCB Hawaii conducts routine Base-wide street sweeping. Although this is typically need-based, industrial and commercial facilities are generally swept at least twice a month. Detailed information about maintenance activities related to trash removal are outlined in the *Trash Reduction Plan* (Appendix 6-1). Routine storm drain maintenance and repair has been performed annually before the rainy season to ensure function of the system and that accumulated debris will not be washed into receiving waters. These efforts will be reviewed and redistributed as necessary to comply with the MS4 Permit requirements.

The implementation schedule for the Inspection/Maintenance Program is outlined in Table 6-1. This schedule is subject to change, at the discretion of the ENV and MCD/MRO, depending on the outcome of the initial assessment, and as the Debris Control Program develops. The schedule is also subject to the requirements of any observed deficiencies of the MS4 system or complaints received by the ENV or MCD/MRO. These issues will continue to be addressed and given priority of available maintenance resources, as needed.

Table 6-1
Inspections/Maintenance Program Implementation Schedule

Task	*Year 1*	*Year 2*	*Year 3*	*Year 4*	*Year 5*
• Conduct Required Inspections/Maintenance of Permanent BMPs Tracked by ENV	X	X	X	X	X
• Establish and Update Internal Asset Management System and Mapping, as needed	X	X	X	X	X
• Conduct Preliminary Inspections/Maintenance of all Roadways and Storm Drain System Features	X	X			
• Determine Prioritization Ranking System		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

• Evaluation and Updates of the Priority-based Scheduling, and Overall Debris Control Program, as needed (in the Annual Report)	X	X	X	X	X

6.4 Storm Drain Placards

The installation of informational storm drain placards is intended to create public awareness of the connection of the storm drain system to the ocean and other waterbodies. Creating a direct connection in the mind of the public, establishing the notion that what goes into the storm drain ends up in the ocean and other waterbodies, is aimed to discourage intentional or negligible behaviors that result in dumping into or near storm drain inlets. Storm drain placards have already been installed on all inlets in the housing areas.

As part of it Debris Control Program, MCB Hawaii will install a minimum of 50 new placards annually, on storm drain inlets located around the Base. Due to the nature of the Base, there are several restricted areas, or regions that are not exposed to frequent or high pedestrian traffic. At the discretion of MCD/MRO and ENV, the number of installed storm drain placards may be revised to reflect a smaller number if:

(i) There are not enough sites that could be identified where the impact of placards was perceived to produce a significant potential benefit; and
(ii) Where resources could be directed to another component of MCB Hawaii's Public Awareness and Outreach program and reasonably expected to create a more positive impact on preserving storm water quality.

MCD/MRO and the ENV will collaborate to determine and justify the most suitable locations for these placards. 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.

To facilitate the replacement of damaged placards, MCD/MRO will track the locations of placards. If needed, placards will be replaced during routine scheduled maintenance. An evaluation of effectiveness and justification for future placement of placards will be described in the Annual Report.

6.5 Action Plan for Retrofitting Structural BMPs

In accordance with the MS4 Permit, MCB Hawaii submitted the *Action Plan for Retrofitting Structural BMPs* to DOH on October 21, 2015 (see attached plan, Appendix 6-2). This plan is intended to reduce storm water pollution by designing and constructing or installing appropriate and cost-effective structural BMPs (retrofits) in strategic locations and structures within the existing MS4.

Key elements of the *Action Plan for Retrofitting Structural BMPs* include:

- Outlining a process by which potential locations for BMP retrofits can be identified;
- Identifying areas concern, where retrofit BMPs should be implemented;
- Retrofit projects that have been implemented by MCB Hawaii; and
- Proposed program actions and implementation schedule.

The ENV is responsible for annual review of the implementation schedule and project status, as well as providing all relevant information on program/policy updates and revisions in the Annual Report. Updates should also include any additional retrofit projects with water quality protection measures and a description of project status to provide more detail on what is expected. The ENV is also responsible for ensuring that copies of the updated plans are made available to the affected parties.

6.6 Trash Reduction Plan

In accordance with the MS4 Permit, MCB Hawaii submitted a *Trash Reduction Plan* to DOH on October 21, 2015 (see attached plan, Appendix 6-1). MCB Hawaii's short term goal for trash reduction is to reduce its overall debris discharges, as defined in the Plan, from its MS4 to receiving waters by 50% from the baseline load. The long term goal is to reduce its debris discharges to zero.

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

- Define the current trash load baseline;
- Identify source and problem areas;
- Pinpoint corresponding preventative measures and corrective actions; and
- Develop an implementation plan and schedule.

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

- A definition of "trash" for MCB Hawaii;
- Existing MCB Hawaii solid waste programs and policies;
- Existing control measures and BMPs;
- A proposed process for estimating the baseline discharge load;
- A plan to reach MCB Hawaii's short term and long term goals;
- Prioritized target areas;
- Related educational activities;
- Methods for measuring program success; and
- Implementation schedule.

Implementation of MCB Hawaii's debris discharge reduction goals were set with timelines based on a reflection of what is anticipated to be the shortest practicable timeframe for the actions required. As with the rest of the SWMP, the *Trash Reduction Plan* is subject to annual review and revision, as necessary, to address program developments and changing Base-wide conditions. The ENV is responsible for making these changes and ensuring that the updated versions of the plan are available to the residents of MCB Hawaii, and other affected parties.

With respect to trash reduction, the Annual Report shall include a summary of its trash load reduction actions (control measures and best management practices) including the types of actions and levels of implementation, the total trash loads and dominant types of trash removed by its actions, and the total trash loads and dominant types of trash for each type of action.

6.7 BMPs for Disposal of Waste Materials

Appendix 6-3 presents options for disposal of waste material and/or contaminated water that can be used by all facilities and contractors during maintenance and construction activities. The guidelines presented in Appendix 6-3 do not represent all options for disposal of waste materials or contaminated water, but are included for guidance in the event that waste material or contaminated water is found. Alternatives are listed the table in order of priority.

7 Pollution Prevention/Good Housekeeping – Chemical Applications BMPs Program Plan

A crucial component of MCB Hawaii's SWMP is its Base-wide Pollution Prevention and Good Housekeeping Program (Pollution Prevention Program). Generally this is a multi-faceted maintenance program aimed at reducing pollutants from all MCB Hawaii-owned property to the MEP. MCB Hawaii-owned property includes facilities, roads, parking lots, maintenance facilities, and its MS4. MCB Hawaii's Pollution Prevention Program is separated into four main components including:

1. Debris Control BMPs Program Plan (Chapter 6) ;
2. Chemical Applications BMPs Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8); and
4. Maintenance Activities BMPs Program Plan (Chapter 9).

Each of these components is described in detail in individual chapters as noted above. This chapter focuses on MCB Hawaii's Chemical Applications BMPs Program Plan (Chemical Applications Program), most of which has already been implemented as a component of the *MCB Hawaii Kaneohe Bay Pest Management Plan* (PMP), dated January 2007 (Appendix 7-1).

Per the MS4 Permit, Part D.1.f.(2), MCB Hawaii is required to implement a Chemical Applications Program. The Chemical Applications Program applies to all of MCB Hawaii's MS4, including structural and vegetated BMPs, and related appurtenances. The primary goal of the Chemical Applications Program is to reduce the contribution of pollutants associated with application, storage, and disposal of pesticides, herbicides, and fertilizers to the MS4. The potential areas of chemical application include facilities, right-of-ways, and landscaped areas, including areas leased to tenants.

The main elements of the Chemical Applications Program are :

1. Training requirements for all appliers of chemicals;
2. Development of an Authorized Use List (AUL) of chemicals; and
3. Implementation of appropriate requirements for chemical applications (i.e., BMPs).

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

Part D.1.f. Pollution Prevention/Good Housekeeping

> *"The Permittee shall further develop and implement a system maintenance program to reduce to the MEP the discharge of pollutants from all Permittee-owned facilities, roads, parking lots, maintenance facilities, and the Permittee's MS4. The program shall include:*
>
> ***Part D.1.f.(2) Chemical Applications BMPs Program Plan***
>
> *(i) Training - The Permittee shall develop an Authorized Use List of chemicals used and implement a specific training program for all potential appliers (bulk and hand-held) of the chemicals (e.g., fertilizers, pesticides, and herbicides) on the proper application of the*

chemicals. The Permittee shall not permit the application of fertilizers, pesticides, or herbicides unless the applier has first received this training.

(ii) 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 Permittee-owned areas and activities to its MS4. Permittee-owned areas and activities include, at a minimum, federal facilities, right-of-ways, and landscaped areas.

Such BMPs shall include, at a minimum: 1) educational activities, permits, certifications and other measures for 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 their employees or contractors or employees of contractors applying registered pesticides, herbicides, and fertilizers work under the direction of a certified applicator, follow the pesticide label, and comply with any other State, City, or Federal regulations for pesticides, herbicides, and fertilizers. All Permittee employees or contractors applying pesticides, herbicides or fertilizers shall receive training on the BMPs annually."

7.1 Program Organization

Implementation of the Chemical Applications Program is predominantly the responsibility of MCD/MRO and the MCCS Klipper Golf Course Maintenance, as these departments are the main applicators of chemicals on Base. ENV is responsible for general oversight and program management, led by the Installation Pest Management Coordinator. Similar to all other programs in this SWMP, the CO has the ultimate authority to change policies or direct enforcement actions for non-compliance. This organizational structure is outlined in Figure 7-1. For additional roles and responsibilities, refer to Appendix 7-1, PMP Section 2.

To address the MS4 Permit requirements, the Chemical Applications 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. Tenants themselves are not permitted to apply chemicals, in accordance with their tenant agreements, and must contact MCD/MRO with pest control-related requests. The PPV Housing Forest City hires licensed contractors for chemical applications within the housing areas.

7.2 Training

The Permit requires that any MCB Hawaii employee, contractor or employees of contractors applying registered pesticides, herbicides, and fertilizers, (i) work under the direction of a certified applicator, (ii) follow the pesticide label information, (iii) comply with all other State, City, or Federal regulations for corresponding chemicals.

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 4150.7.

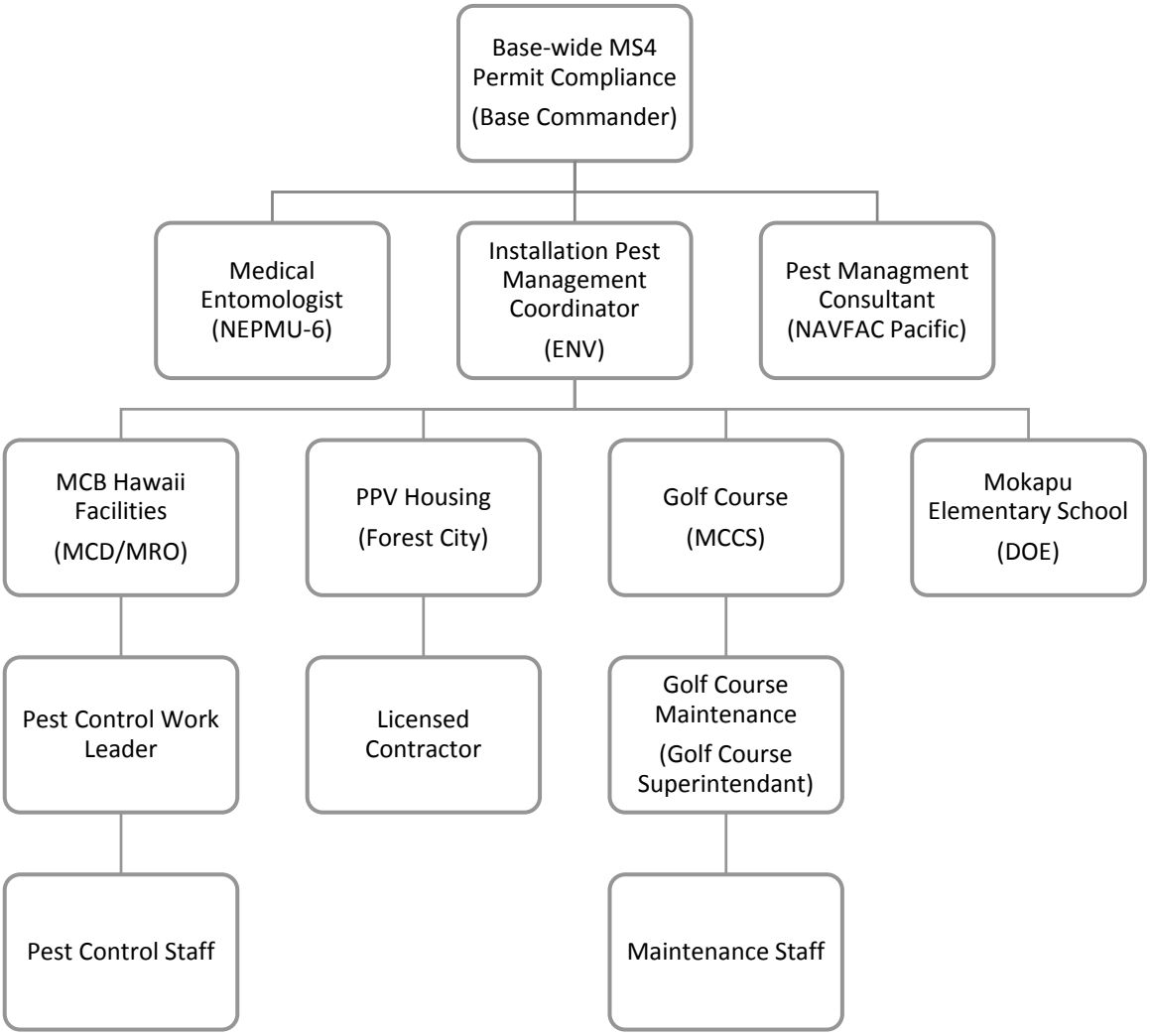


Figure 7-1 Chemical Applications Program Organizational Chart

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 (OJT) 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 (second) 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 OJT. 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 chemicals on base at MCB Hawaii prior to completion of the applicable training requirements. Pest Management and BMPs related to chemical application are discussed in the annual SOP training conducted by ENV. Forest City hires licensed contractors for chemical applications within the housing areas. Tenants are not permitted to apply chemicals and must contact MCD/MRO for assistance, in accordance with their tenant agreements.

Additional information regarding training and certification can be found in Appendix 7-1, PMP Section 7.7.

7.3 Authorized Use List

The existing PMP contains the following lists that satisfy the requirement for the Authorized Use List described in Permit Section D.1.f.(2)(i):

- Pesticide Inventory: MCB Hawaii Facilities Pest Control Shop (Appendix 7-1, PMP Appendix G)
- Pesticide Inventory: MCB Hawaii Klipper Golf Course (Appendix 7-1, PMP Appendix H)
- List of Standard Pesticides Available to DOD Components (Appendix 7-1, PMP Appendix I)
- Recently Cancelled Pesticides (Appendix 7-1, PMP Appendix J).

The PMP is reviewed and updated annually, and any modifications to the plan should be included in the MS4 Annual Report.

7.4 Implement Appropriate Requirements for Pesticide, Herbicide, and Fertilizer Applications (Chemical Application BMPs)

BMPs associated with chemical application are discussed during the various aspects of the training program discussed in Section 7.2, above, which will help to reduce the contribution of pollutants to the MS4. The PMP (Appendix 7-1) contains detailed information regarding various BMPs specific to the application, storage and disposal of pesticides, herbicides, and fertilizer. These topics include:

- Pesticide Control Equipment and Vehicles (PMP Section 5.6; Inventory List in PMP Appendix F)
- Pesticide Storage (PMP Section 5.4)
- Pesticide Spill and Remediation (PMP Section 6.5)

- Pollution Prevention (PMP Section 6.7)
- Inspections (PMP Section 7.8; Inspection Checklist in PMP Appendix O)
- Contracts (PMP Section 7.9)
  Sale, Distribution and Disposal of Household Pesticides (PMP Section 8)
  Behavior/Control Modification and Pesticide-reducing IPM alternatives (PMP Section 4.2.5 and PMP Section 13)

7.5 Reports and Records

7.5.1 Records

Daily records of pest management operations are required. These records are kept with the organization responsible for applying pesticides or involved in oversight management of pesticide application.

- Facilities and golf course shops shall report pesticides applied by their applicators.
- The FEAD shall report pesticides applied by persons on all MCB Hawaii construction projects for which they provide oversight management.
- Family housing will report pesticides applied by persons under housing contracts.

Monthly summaries shall be submitted to the Base Facilities Pest Control Work Leader, who will compile the reports for submittal to the NAVFAC Natural Resources Division.

Additional information regarding record keeping forms and procedures can be found in Appendix 7-1, PMP Section 7.6.

Data from pest control operations should be used to assess the efficacy of the installation's pest control methods.

7.5.2 Environmental Documentation

The PMP states that the pest management program at MCB Hawaii Kaneohe Bay falls under a categorical exclusion listed in MCO 50902A, but an Environmental Assessment (EA) or Environmental Impact Statement (EIS) may be required for non-routine pest management operations that are not described in the PMP.

8 Pollution Prevention/Good Housekeeping – Erosion Control BMPs Program Plan

A crucial component of MCB Hawaii's SWMP is its Base-wide Pollution Prevention and Good Housekeeping Program (Pollution Prevention Program). Generally this is a multi-faceted maintenance program aimed at reducing pollutants from all MCB Hawaii-owned property to the MEP. MCB Hawaii-owned property includes facilities, roads, parking lots, maintenance facilities, and its MS4. MCB Hawaii's Pollution Prevention Program is separated into four main components including:

1. Debris Control BMPs Program Plan (Chapter 6) ;
2. Chemical Applications BMPs Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8); and
4. Maintenance Activities BMPs Program Plan (Chapter 9).

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

Per the MS4 Permit, Part D.1.f.(3), MCB Hawaii is required to implement an Erosion Control Program. The Erosion Control Program applies Base-wide, and focusses on erosion-prone areas, vegetated portions of the storm drain system, and LID features. The primary goal of the Erosion Control Program is to reduce the impact of erosion and sediment on the quality of storm water generated at MCB Hawaii. The objectives of the Erosion Control Program are to:

1. Implement procedures to identify and construct permanent erosion control improvements, at prioritized erosion-prone areas observed on base.
2. Implement temporary erosion control measures, for erosion-prone areas with significant potential to affect water quality of receiving waters where a permanent solution is not immediately available, within 18 months of the EDOP.
3. Develop a maintenance plan for vegetated features of the storm drain system.
4. Develop an *Action Plan to Address Erosion at Storm Drain System Outlets* within one (1) year of the EDOP.
5. Submit a list and implementation schedule for permanent erosion control projects identified by the procedures developed above.

This Erosion Control Program is outlined in accordance with the MS4 Permit requirements. The MS4 Permit states:

Part D.1.f. Pollution Prevention/Good Housekeeping

> *"The Permittee shall further develop and implement a system maintenance program to reduce to the MEP the discharge of pollutants from all Permittee-owned facilities, roads, parking lots, maintenance facilities, and the Permittee's MS4. The program shall include:*
>
> ***Part D.1.f.(3) Erosion Control BMPs Program Plan - The Permittee shall:***
>
> *(i) Implement permanent erosion control improvements, ensuring that erosion-prone areas with the potential for significant water quality impact, but with limited public safety*

concerns, are also considered a high priority for remediation. Identification of erosion-prone 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. The Permittee shall include procedures to identify and implement erosion control projects based on water quality concerns while continuing to address high profile public safety projects.

(ii) 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 erosion-prone 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 within 18 months from the effective date of this permit. For projects which require a CWA Section 401 Water Quality Certification (WQC), the WQC application shall be submitted to the DOH within one (1) year from the effective date of this permit and be implemented with six (6) months of the WQC or other regulatory permit(s) issuance date.

(iii) Develop 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.

(iv) Provide the DOH with an Action Plan to address erosion at its storm drain system outlets with significant potential for water quality impacts to be completed within one (1) year from the effective date of this permit, which shall identify outfalls to be addressed, explanation on the basis of their selection and an implementation schedule. The implementation schedule shall cover a five (5) year period. A status report on implementation of the plan shall be included in the Annual Report. The Permittee shall install velocity dissipators or other BMPs to reduce erosion at locations identified by periodic required inspections.

(v) Submit a list of projects and an implementation schedule for permanent erosion control improvements as described in Part D.1.f.(3)(i) of this permit to the DOH within one (1) year from the effective date of this permit.

8.1 Program Organization

The program organization for the Erosion Control Program, is shown on Figure 8-1. The ENV is responsible for identifying and prioritizing areas of erosional concern, based on inspections, or complaints/notifications from the base inspector or the public. Different components of the program are also outline in Figure 8-1, along with the agencies responsible for each component.

The ENV is responsible for general oversight of the Erosion Control Program. This includes revising erosion control BMPs or policies, as needed, to meet program requirements and to facilitate program implementation. The ENV is also responsible for including a status report of any such revisions and program updates in each Annual Report.

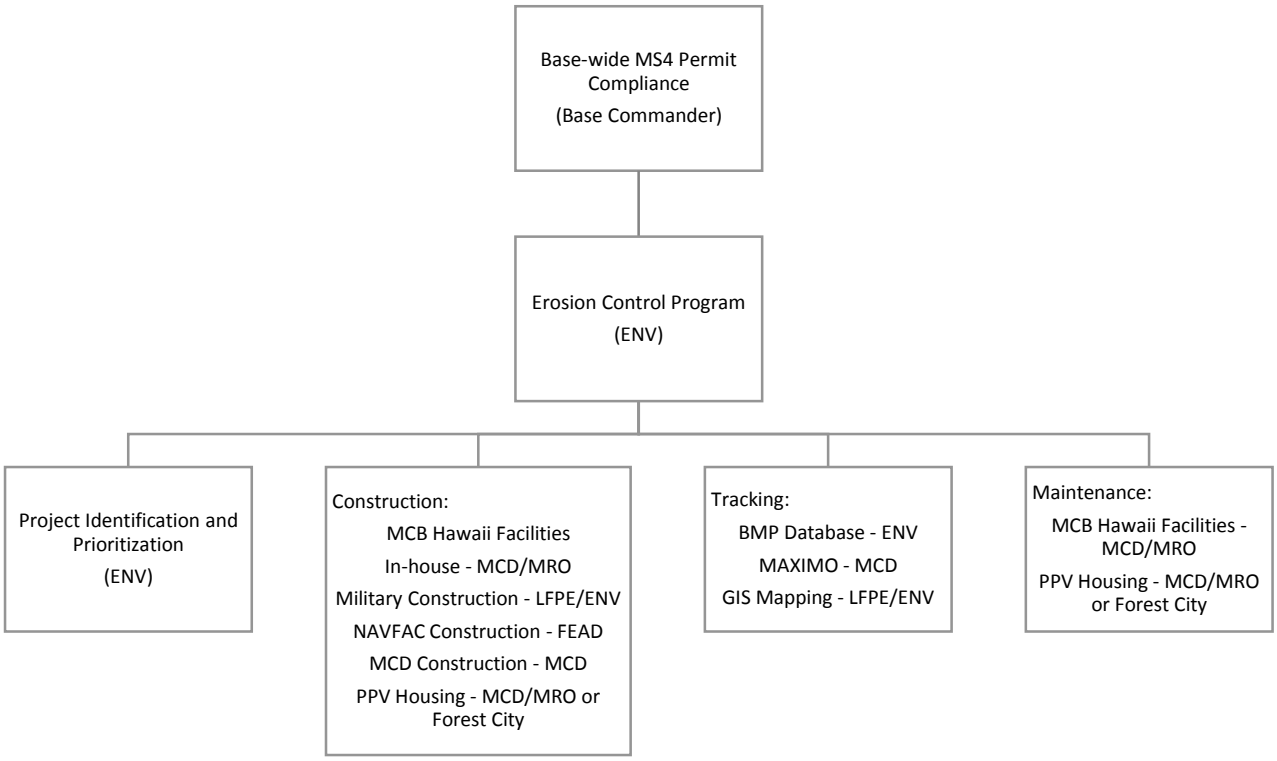


Figure 8-1 Erosion Control Program Organizational Chart

Construction and maintenance of erosion-related projects identified on base will be evaluated on a case-by-case basis, and will fall under MCB Hawaii responsibility or Forest City. This will depend on the location of work and the specifications lease agreement. MCB Hawaii maintenance and construction projects will fall under the responsibility of agencies listed in Chapter 4, excluding the DOE and MCCS tenant categories. Erosion control projects located on properties leased to DOE and MCCS will be considered Base responsibility.

8.2 Implement Permanent Erosion Control Improvements

As part of the permit requirements, MCB Hawaii has developed a procedure for identifying and implementing construction of permanent erosion control improvements. The process for identifying and prioritizing erosional areas of concern is described in detail in the *Action Plan to Address Erosion at Storm Drain System Outlets* (see Appendix 3-3), and also in the *Action Plan for Retrofitting Structural BMPs* (see Appendix 6-2). Both of these documents were submitted to DOH on October 22, 2015. MCB Hawaii has already made efforts to identify and address erosional areas (also described in the aforementioned plans), however ENV plans to carry out inspections to assess past efforts and follow-up on potential areas of concern. Although public health and safety will take highest precedent when ranking erosional sites identified for remediation efforts, MCB Hawaii is committed to exercising a sense of urgency to secure resources that will be used to permanently address erosional areas posing a significant threat to the water quality of surrounding receiving waters.

The plans referenced above also outline efforts that ENV has made to identify erosional areas of concern, and projects that have already been completed.

8.3 Implementation of 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. During the utilization of temporary BMPs, the ENV will be responsible for ensuring that adequate maintenance is performed to maintain the function of these BMPs and protect the receiving waters, until permanent measures can be constructed.

There are currently no projects that have been identified by MCB Hawaii that require a Water Quality Certification (WQC). The ENV will evaluate any newly identified maintenance and/or construction projects to ensure that, through its Construction Program, a WQC and any other NPDES requirements are submitted to DOH when applicable.

Although temporary erosion control measures will be in place, MCB Hawaii will continue to work toward constructing a permanent erosion control to address the situation as soon as possible.

8.4 Maintenance for Vegetated Best Management Practices

MCB Hawaii is currently in the process of developing its field manual with BMPs for maintenance activities. It will be completed and submitted to DOH within three (3) years of the effective date of the permit (EDOP). The field manual will provide direction, guidance, and procedures for maintenance activities performed by MCD/MRO personnel to reduce to the MEP, pollutants from being discharged to the MS4 or receiving waters.

One component of the *Maintenance Activities BMPs Field Manual* is maintenance of vegetated MS4 features and LID features. This component will cover BMPs for maintenance activities of erosion and

sediment control measures, such as discouraging practices of excessive clearing/removal/cutting of vegetation, limiting the use of herbicide, and using native plant species.

8.5 Action Plan to Address Erosion at Storm Drain System Outlets

MCB Hawaii submitted its *Action Plan to Address Erosion at Storm Drain System Outlets* (Appendix 3-3) to DOH on October 22, 2015.

The purpose of this plan was to identify erosional outfalls that pose a significant risk of impacting receiving water quality. The *Action Plan to Address Erosion at Storm Drain System Outlets* contains the following components:

- Overview of efforts that MCB Hawaii has already taken to mitigate storm water pollution caused by erosion and sediment;
- Inspection process for identifying areas of concern;
- Justification of the selection and prioritization process; and
- Five (5) year implementation schedule for action.

Per the MS4 Permit Part D.1.f.(1)(v), an annual update will be provided on progress and changes made to the implementation schedule in each Annual Report. See Appendix 3-3 for detailed information on each of these components.

8.6 List of Projects and Implementation Schedule for Permanent Erosion Control Improvements

As described in Section 8.1, MCB Hawaii has consistently made efforts to address erosional areas of concern. There were no erosional hot spots observed to pose a significant risk to the quality of receiving waters at this time. However, MCB Hawaii has a list of potential erosional areas based on previous studies that it plans to investigate and remediate as part of the implementation of its Erosion Control Program. Per the MS4 Permit requirements, these lists and implementation schedules have been submitted to DOH as part of the aforementioned Action Plans for Retrofitting Structural BMPs and to Address Erosion at Storm Drain System Outlets. See Appendices 6-2 and 3-3, respectively, for detailed information.

9 Maintenance Activities BMPs Program Plan

A crucial component of MCB Hawaii's SWMP is its Base-wide Pollution Prevention and Good Housekeeping Program (Pollution Prevention Program). Generally this is a multi-faceted maintenance program aimed at reducing pollutants from all MCB Hawaii-owned property to the MEP. MCB Hawaii-owned property includes facilities, roads, parking lots, maintenance facilities, and its MS4. MCB Hawaii's Pollution Prevention Program is separated into four main components including:

1. Debris Control BMPs Program Plan (Chapter 6) ;
2. Chemical Applications BMPs Program Plan (Chapter 7);
3. Erosion Control BMPs Program Plan (Chapter 8); and
4. Maintenance Activities BMPs Program Plan (Chapter 9).

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

Per the MS4 Permit, Part D.1.f.(4), MCB Hawaii is required to implement a Maintenance Activities Program. The Maintenance Activities 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 *Maintenance Activities BMPs Field Manual*.
2. Implement and enforce the requirements of the SWPCP as presented in Chapter 11.
3. Train staff on proper BMP implementation and pollution prevention strategies.

This Maintenance Activities Program is outlined in accordance with the MS4 Permit requirements. The MS4 Permit states:

Part D.1.f.(4) Maintenance Activities BMPs Program Plan

> *"(i) Maintenance Activities Best Management Practices Field Manual - The Permittee shall develop and implement a BMPs Field Manual for Maintenance Activities for all Marine Corps Base Hawaii maintenance activities within three (3) years from the effective date of this permit. Examples of such activities include, but are not limited to: paving and road repairs, street cleaning, saw cutting, concrete work, curb and gutter replacement, buried utility repairs and installation, vegetation removal, painting and paving, debris and trash removal, spill cleanup, etc. The Field Manual shall be updated as necessary or at least once per permit term and include written procedures to minimize pollutant discharge for maintenance activities which have the potential to discharge pollutants to its MS4.*
>
> *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).*

(ii) Storm Water Pollution Control Plan (SWPCP). The Permittee shall implement and enforce the requirements of the SWPCP, as discussed in Part E.1. of this Permit.

(iii) Training - The Permittee shall further develop and provide annual training to staff on proper maintenance activities to prevent storm water pollution. The training shall cover the Field Manual, identify potential sources of pollution, general BMPs that can be used to reduce and/or eliminate such sources, and specific BMPs for their activities. The training shall incorporate components of the public education campaign and educate staff that they serve a role in protecting water quality. Staff shall be made aware of the NPDES permit, the overall SWMP, and the applicable BMPs Program(s)."

9.1 Program Organization

The program organization for the Maintenance Activities Program, is shown on Figure 9-1. MCD/MRO is responsible for the general maintenance projects for all facilities within MCB Hawaii with the exception of Mokapu Elementary School, Public-Private Venture (PPV) Housing, and commercial tenants managed by Marine Corps Community Services (MCCS). Figure 9-1 shows the agencies responsible for overseeing that all Maintenance Activities Program requirements are met. The grey boxes indicate the agency responsible for implementation of BMPs at the facilities.

The ENV is 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 will be developed within three (3) years of the effective date of the permit (EDOP). The field manual will be handbook that provides direction, guidance, and procedures for maintenance activities performed by MCD/MRO personnel to reduce to the MEP, pollutants from being discharged to the MS4 or receiving waters.

Routine maintenance projects are scheduled or cyclical projects performed to preserve the life of a system; to restore the original function or delay the deterioration of an existing asset without substantially increasing is structural capacity; or to maintain the original line and grade, hydraulic capacity or original purpose of a facility, system or asset, in which 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:

- Pavement maintenance and cleaning;
- Drainage system and utility maintenance;
- Landscape maintenance; and
- Exterior maintenance on buildings.

The procedures will ensure that appropriate BMPs are verifiable through field inspections. The field manual will be updated once during the permit term.

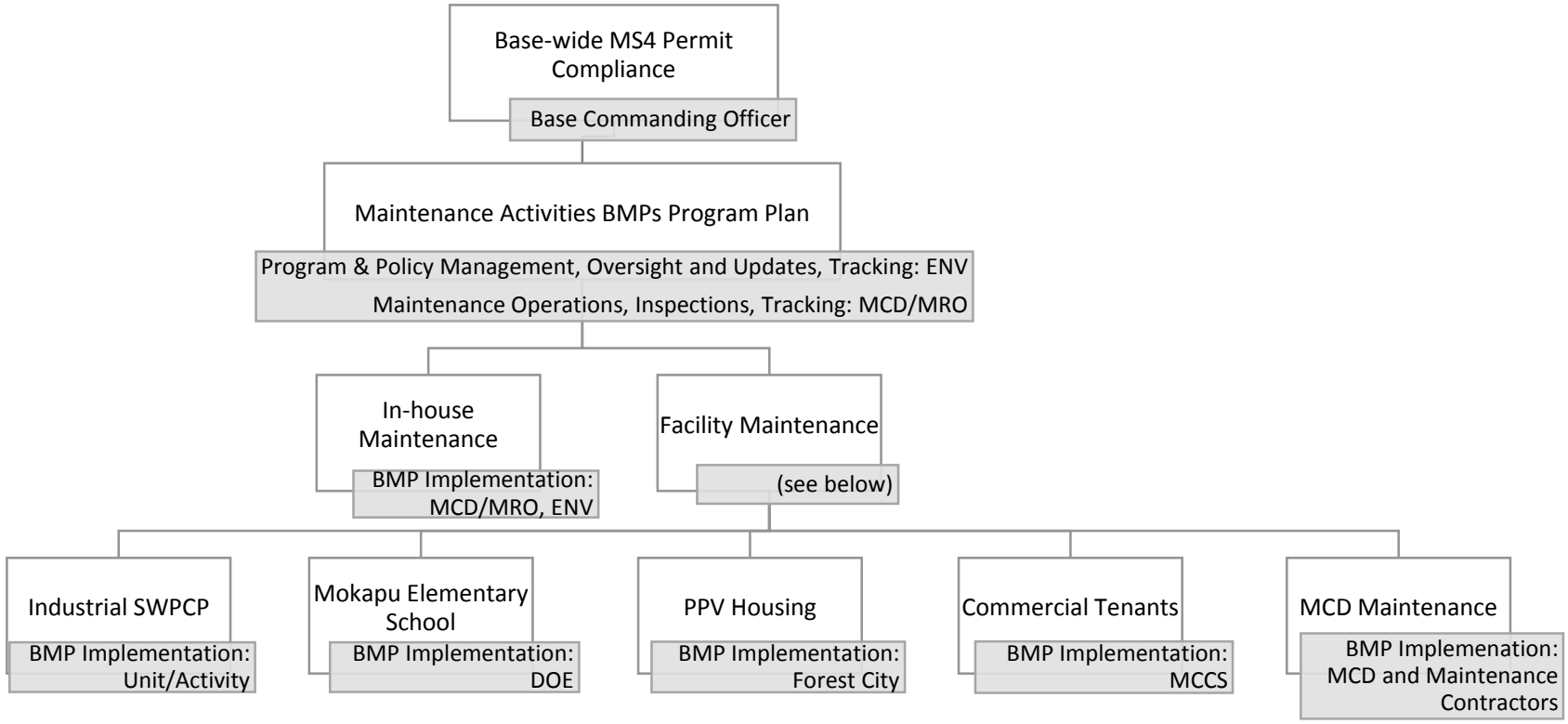


Figure 9-1 Maintenance Activities Program Organizational Chart

9.3 Storm Water Pollution Control Plan (SWPCP)

MCB Hawaii has developed SWPCPs for industrial activities identified in the permit. The SWPCPs components are described in detail in Chapter 11, and site-specific SWPCPs are contained in Appendix 11-2. Copies of the SWPCPs for each of the industrial facilities are available from ENV 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 currently available (BAT)/ best Conventional Pollution Control Technology (BCT).

To ensure that the requirements of the SWPCP are properly implemented and maintained, the ENV will conduct and document inspections of these facilities. The facility supervisor will conduct facility inspections on a monthly basis. The ENV will conduct facility inspections annually. The inspections will be documented on an "Annual Facility Inspection Checklist" (see Appendix 9-1). Updates to the BMPs and SWPCPs will be made as necessary.

9.4 Training

As part of its Maintenance Activities Program, the ENV will implement annual training for maintenance staff 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 specific BMPs for their activities.

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

10 Industrial and Commercial Activities

In accordance with the MS4 permit and this SWMP, MCB Hawaii is required to develop and implement an Industrial and Commercial Discharge Management Program (ICDM Program) to reduce to the MEP the discharge of pollutants from all industrial and commercial activities that discharge into the MS4.

The ICDM Program will administer the following activities:

1. Issue and track connection and discharge permits/approvals.
2. Maintain an inventory and map of industrial and commercial facilities and activities that initially discharge into the MS4.
3. Inspect industrial and commercial facilities and activities and identify potential sources of pollution to the MS4.
4. Designate priority areas for inspections.
5. Review SWPCPs for applicable industrial facilities.
6. Provide training for ICDM Program staff.
7. Establish and implement an enforcement policy for industrial and commercial facilities and activities.

The MS4 Permit describes the requirements for the ICDM Program as follows:

Part D.1.g. Industrial and Commercial Activities Discharge Management Program:

> *"The Permittee shall develop and implement an industrial and commercial discharge management program to reduce to the MEP the discharge of pollutants from all industrial and commercial facilities and activities which initially discharge into the Permittee's MS4. At a minimum, the program shall include:*
>
> ***Part D.1.g.(1) Requirement to Implement BMPs*** *- Require a permit or written equivalent approval for drainage connections and discharge of surface runoff into the MS4 and maintain a database of the permits/approvals. The permit/approval shall obligate the facility to implement BMPs.*
>
> ***Part D.1.g.(2) Inventory and Map of Industrial Facilities and Activities*** *- The Permittee shall update and submit to the DOH, in electronic portable document format (pdf - minimum 300 dpi), the industrial facilities and activities inventory (industrial inventory), sorted by TMK, and map of such facilities and activities discharging, directly or indirectly, to its MS4.*
>
> *The industrial inventory shall include the facility name, street address, TMK, nature of business or activity, Standard Industrial Classification (SIC) code(s) that best reflect the facility product or service, principal storm water contact, receiving State water, and whether an NGPC under HAR, Chapter 11-55, Appendix B, NPDES General Permit Authorizing the Discharge of Storm Water Associated with Industrial Activities (General Industrial Storm Water permit) or any other applicable NPDES permit has been obtained, including a permit or file number and issuance date.*
>
> *At a minimum, the industrial inventory shall include facilities and activities such as:*
>
> - *Municipal Landfills (open and closed).*

- *Hazardous waste recovery, treatment, storage and disposal facilities.*
- *Facilities subject to Section 313 of the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11023.*
- *Findings from follow-up investigations of the industrial facilities identified in the Questionnaire Survey.*
- *Facilities subject to NPDES permit coverage which are adjacent to the Permittee's facilities or discharge to the MS4.*
- *And any other industrial facility that either the Permittee or the DOH determines is contributing a substantial pollutant loading to the MS4.*

Part D.1.g.(3) Inventory and Map of Commercial Facilities and Activities *– The Permittee shall update and submit to the DOH, in pdf format (minimum 300 dpi), the commercial facilities and activities inventory (commercial inventory), sorted by priority areas, and map of such facilities and activities discharging, directly or indirectly, to its MS4 within its Annual Report. The commercial inventory update may be based on the collection of new information obtained during field activities or through other readily available intra-agency informational databases (e.g., business licenses, pretreatment permits, sanitary sewer hook-up permits).*

The commercial inventory shall include, by priority area, the facility name, street address, TMK, nature of business or activity, SIC code(s) that best reflect the facility product(s) or service(s), principal storm water contact, and receiving State water.

At a minimum, the commercial inventory shall include facilities and activities such as:

- *Findings from investigations of the commercial facilities identified in the Questionnaire Survey.*
- *Retail Gasoline Outlets.*
- *Retail Automotive Services, including Repair Facilities.*
- *Restaurants.*
- *Any other commercial facility that either the Permittee or the DOH determines is contributing pollutants to the MS4 that may cause or contribute to an exceedance of State water quality standards.*

Part D.1.g.(4) Prioritized Areas for Industrial and Commercial Facility and Activity Inspections *- The Permittee shall implement the Prioritized Areas for Industrial and Commercial Facility and Activity Plan. Under the Plan, the Permittee is to designate priority areas for industrial and commercial facility and activity inspections, based on the relative risk that any discharge might be contaminated with pollutants.*

Within 60 calendar days from the effective date of this permit, the Permittee shall submit a status report to the DOH. The status report shall identify the numbers of industrial and commercial facilities discharging into the Permittee's MS4 and the number of inspections that have been completed during the prior permit term. The status report shall be organized by priority area. On an annual basis, the Permittee shall modify the Plan based on updated information from its industrial and commercial inventory, findings from previous inspections, the number of industrial and commercial facilities in the area, the density of these facilities, previous storm water violations in the area, and water quality impairments in the area. The modified Plan

shall set a schedule that ensures inspections will be completed in accordance with the schedule in Part D.1.g.(5). This Plan shall be submitted with the Permittee's Annual Report.

Part D.1.g.(5) Inspection of Industrial and Commercial Facilities and Activities - *The industrial/commercial inspection program shall be implemented and updated as appropriate to reflect the outcomes of the investigations.*

The Permittee shall ensure industrial and commercial facilities and activities identified in the industrial and commercial inventories required under Parts D.1.g.(2) and D.1.g.(3) are inspected and re-inspected as often as necessary based on its findings to ensure corrective action was taken and the deficiency was resolved. At a minimum, the Permittee shall inspect each industrial facility that does not have NPDES permit coverage under the NPDES permit program at least twice every five (5) years, and each industrial facility that does have such NPDES permit coverage at least once every five (5) years. Any industrial facility discharging Industrial Storm Water (as defined by 40 C.F.R. Part 122.26(b)(14)) that does not have NPDES Permit coverage shall be reported to the DOH within 30 calendar days of the inspection. Commercial dischargers are to be ranked according to relative risk of discharge of contaminated runoff to the MS4. The highly ranked commercial facilities shall be inspected at least once every five (5) years.

All inspections shall be in accordance with the applicable portions (e.g., Chapter 11 – Storm Water) of the "NPDES Compliance Inspection Manual" (EPA 305-X-04-001), dated July 2004. Inspectors shall be trained to 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 MS4. The inspectors shall use an inspection checklist, or equivalent, and photographs 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.

The Permittee shall submit semi-annual inspection report(s) to the DOH by October 31st and April 30th for inspections done within the previous period.

Part D.1.g.(6) Storm Water Pollution Control Plan (SWPCP) Review and Acceptance for Industrial Facilities - *The Permittee shall:*

(i) Require Industrial Activities that initially discharge storm water into MCBH's Small MS4 to develop, implement, and update, as necessary, a SWPCP that meets MCBH's Standards and HAR Chapter 11-55, Appendix B, SWPCP requirements, which includes storm water monitoring;

(ii) Verify the facility owner has received NPDES permit coverage for the discharge of storm water associated with industrial activity or provided proof of filing a NOI, NPDES application, or NPDES "No Exposure;" and

(iii) Review for acceptance, the SWPCP and any revisions or updates or other plans relating to pollution prevention or similar document(s) to ensure the discharge of pollutants will be minimized to the maximum extent practicable.

Part D.1.g.(7) Enforcement Policy for Industrial and Commercial Facilities and Activities *- Within one (1) year of the effective date of this permit, the Permittee shall establish and implement its own polices for enforcement and penalties for industrial and commercial facilities*

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 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) in accordance with Part A.6 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 the DOH within one (1) week of such determination.

***Part D.1.g.(8) Training** - The Permittee shall provide training to staff on how to conduct industrial and commercial inspections, the types of facilities requiring NPDES permit coverage for storm water permit associated with industrial activity or any other applicable NPDES permit, components in a SWPCP for industrial facilities, BMPs and source control measures for industrial and commercial facilities, and inspection and enforcement techniques. This training shall be specific to the Permittee's activities, policies, rules, and procedures. Any updates to the training shall be submitted to the DOH for review and acceptance within 90 calendar days of the change. Permittee inspectors shall receive annual training.*

10.1 Requirement to Implement BMPs

In accordance with the HAR Chapter 11-55, all industrial facilities with Standard Industrial Classification (SIC) Codes regulated in 40 CFR §122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi) are required to obtain NPDES permit coverage for discharges of storm water runoff associated with an industrial activity(ies). Typically, two types of permits may be obtained, (1) an individual NPDES permit and (2) general NDPES permit coverage under HAR 11-55 Appendix B.

Since MCB Hawaii is the owner of the industrial facilities and MS4, storm water discharges are not covered under the State's general permit in accordance with HAR 11-55 Appendix B.2.(a).(4). Industrial facilities at MCB Hawaii are, therefore, covered under the MS4 Permit HI S000007.

In accordance with Section 3.2 of this SWMP, all drainage connections, including connections from industrial and commercial facilities, will require review and approval from ENV through the dig permit application. The drainage connection approval requires industrial and commercial facilities and activities to implement BMPs that will be subject to inspection and enforcement as described in the following sections.

10.2 Inventory and Map of Industrial Facilities and Activities

ENV has developed an inventory of industrial facilities and activities that is maintained in an industrial inventory database. The database is continually updated and is used to track the following information:

- Facility Name;
- Street Address;
- Nature of business or activity;
- SIC code(s); and
- Principal storm water contact and State receiving water.

Although noted in the MS4 permit as a tracking criteria, the TMK for each record will not be tracked because the entire MCB Hawaii property and MS4 are located within two TMK parcels; the site address or description of the area should suffice for tracking purposes.

In accordance with the permit, the industrial database includes as a minimum the following types of facilities and activities:

- Municipal landfills (open and closed);
- Hazardous waste recovery, treatment, storage and disposal facilities;
- Facilities subject to Section 313 of the Emergency Planning and Community Right-to-Know Act, 42 U.S. C 11023;
- Facilities subject to NPDES permit coverage which are adjacent to the Permittee's facilities or discharge to the MS4; and
- Any other industrial facility that either ENV or DOH determines is contributing a substantial pollutant loading to the MS4.

Rather than conducting a Questionnaire Survey, ENV conducted a comprehensive review of the facilities database to identify industrial activities for inclusion in the industrial inventory database.

ENV is responsible for maintaining and updating the database and associated maps. The inventory and maps will be submitted to DOH within the 4th Annual Report.

10.3 Inventory and Map of Commercial Facilities and Activities

ENV has developed an inventory of commercial facilities and activities that is maintained in a commercial inventory database. The database is continually updated and is used to track the following information:

- Facility Name;
- Street Address;
- Nature of business or activity;
- Standard Industrial Classification (SIC) code(s); and
- Principal storm water contact.

The inventory will be sorted by priority areas (see Section 10.4). Similar to industrial activities, TMKs are not useful in identifying commercial facility areas and are not tracked in the database.

In accordance with the permit, the commercial inventory database includes as a minimum the following types of facilities and activities:

- Retail Gasoline Outlets;
- Retail Automotive Services, including Repair Facilities;
- Restaurants; and
- Any other commercial facility that either ENV or DOH determines is contributing pollutants to the MS4 that may cause or contribute to an exceedance of State water quality standards.

Rather than conducting a Questionnaire Survey, ENV conducted a comprehensive review of the facilities database to identify commercial activities for inclusion in the commercial inventory database.

ENV is responsible for maintaining and updating the database and associated maps. The inventory and maps will be submitted to DOH within the 4th Annual Report.

10.4 Inspections for Industrial and Commercial Facilities and Activities

Inspections of industrial and commercial facilities and activities are conducted by ENV for the purpose of reducing to the MEP pollutants from entering the MS4.

The inspections will include:

- Assessment of the appropriateness and effectiveness of the BMPs implemented at a facility;
- Identification of illegal connections and illicit discharges into the MS4, potential sources of pollution, and deficiencies in BMP and/or SWPCP implementation;
- education of facility owners about storm water-related issues and proper source control measures; and
- Identification of required corrective actions when deficiencies are identified.

Inspectors are trained on a variety of topics, including sources of pollution, inspection and enforcement techniques, the types of industrial facilities requiring SWPCP implementation, and the general components of a SWPCP. Training is provided as necessary in support of the above and is discussed in Section 10.7 of this SWMP.

ICDM inspectors use the Industrial and Commercial Site Inspection Sheet (Appendix 10-1) to document findings during inspections. Inspection results are documented in the industrial and commercial database. Additionally, inspection reports, with accompanying photographs, are kept on ENV's share drive. Deficiencies are documented on an ICDM deficiency database. Records of inspections are maintained for a minimum of five years. MCB Hawaii submits semi-annual inspection reports to DOH for industrial and commercial inspections conducted during the previous term by October 31st and April 30th of each year. The inspection terms span from January 1st to June 30th and July 1st to December 31st, respectively. All inspections are conducted in accordance with the applicable portions of the NPDES Compliance Inspection Manual (USEPA 305-X-04-001), published in July, 2004.

If an ICDM Program inspector identifies a facility discharging Industrial Storm Water that qualifies under a qualifying SIC code as presented in Section 10.1 and is not included in the industrial facility list for SWPCP implementation as presented in Section 10.5, then ENV will provide e-mail notification to DOH

within 30 days of such determination. ENV will add this facility to the industrial facility list and develop a SWPCP in accordance with Section 11.

10.4.1 Prioritized Areas

ENV has designated priority areas for industrial and commercial facility and activity inspections, based on the relative risk that any discharge might be contaminated with pollutants. Specific priority areas and inspection schedules are designated under the Prioritized Area Plan for Industrial and Commercial Inspections (Prioritized Area Plan) (Appendix 10-2). On an annual basis, ENV modifies the Prioritized Area Plan based on updated information from its industrial and commercial inventory, findings from previous inspections, the number of industrial and commercial facilities in the area, the density of these facilities, previous storm water violations in the area, and water quality impairments in the area. The Prioritized Area Plan is submitted with the Annual Report.

Industrial and commercial facilities and activities identified in the industrial and commercial inventories are inspected and re-inspected as often as necessary based on previous findings to ensure corrective action was taken and the deficiency was resolved. At a minimum, each industrial facility that is not included in the industrial facility list presented in Section 10.5 is inspected at least twice every five (5) years, and each industrial facility that is included in the industrial facility list in Section 10.5 is inspected at least once every five (5) years. Any industrial facility discharging Industrial Storm Water (as defined by 40 C.F.R. Part 122.26(b)(14)) that is not included in the industrial facility list in Section 10.5 shall be reported to the DOH within 30 calendar days of the inspection. Commercial dischargers are ranked according to relative risk of discharge of contaminated runoff to the MS4. The highly ranked commercial facilities are inspected at least once every five (5) years.

An inspection status report will be submitted to DOH as part of the first Annual Report. The status report identifies the numbers of industrial and commercial facilities discharging into the MS4 and the number of inspections that have been completed during the prior permit term.

10.5 SWPCP Review and Acceptance for Industrial Facilities

As presented in Section 10.1 above, industrial facilities at MCB Hawaii are covered under the MS4 Permit HI S000007. Industrial facilities that fall under qualifying SIC codes have been identified and are included in the permit. The list of qualifying industrial facilities are presented in Table 10-1 below.

Table 10-1
Industrial Facilities Covered Under MS4 Permit HI S000007

Building No.	General Category	Description
101	Maintenance	Maintenance Hangar
102	Maintenance	Maintenance Hangar
103	Maintenance	Maintenance Hangar
104	Maintenance	Maintenance Hangar
105	Maintenance	Maintenance Hangar
		Recycle Center
129	Maintenance	Small Boat Repair Shop
351	Maintenance	Vehicle Maintenance Shop
373	Maintenance	Motor Vehicle Maintenance Shop
375	Maintenance	Aircraft Maintenance
1170, 1171	POL Storage	Aircraft Fuel Islands
1252, 1253	Storage	Fuel Division Supply Department
1304	Operations	Ordnance Operations
1388	Maintenance	Lab/Boat Shop
1619	Maintenance	Ground Support Equipment Shop
1631	Maintenance	Aircraft Wash & Rinse Facility
5069	Maintenance	Corrosion Control Facility
6025	Storage	Liquid Oxygen/Nitrogen Facility
6107	Maintenance	Aircraft Rinse Facility
6182	Storage	Fuel Delivery Branch and Refueler Truck Parking
6183	Maintenance	Engine Test Facility
6479	Storage	Aircraft Ready Fuel Storage
Sanitary Landfill	Sanitary Landfill	Sanitary Landfill
WWTP	Utility	Water Reclamation Facility
Parking Apron	Storage	Aircraft Parking Apron

SWPCPs for industrial facilities have been developed and are presented in Appendix 11-2. During the initial development, inspections of the facilities were conducted and the facility managers were interviewed regarding activities and existing BMPs. The initial draft SWPCPs were submitted for review by ENV and the facility managers. The final accepted SWPCPs are presented in Appendix 11-2.

SWPCPs will be developed for new qualifying industrial facilities as required by the Permit.

10.6 Enforcement

MCB Hawaii has an Enforcement Policy for industrial and commercial activities and facilities. The *Final Enforcement Response Plan* (October 2015) is presented in Appendix 3-4.

10.7 Training

Training on how to conduct industrial and commercial inspections is provided to ICDM Program staff on an as-needed basis or at least annually. The training includes a review of applicable sections of the "NPDES Compliance Inspection Manual" (EPA 305-X-04-001), dated July 2004. The content of the training includes:

- Inspection and enforcement techniques;
- Identifying deficiencies during inspections of industrial and commercial facilities and activities;
- Assessing potential impacts to receiving waters;
- BMPs and source control measures for industrial and commercial facilities to reduce storm water pollution;
- Evaluating the appropriateness and effectiveness of BMPs;
- Types of industrial facilities covered by the Permit or any other applicable NPDES Permit;
- Components of a SWPCP for industrial facilities; and
- Forms and/or processes for documenting inspections of industrial and commercial facilities and activities.

The training is specific to MCB Hawaii's activities, policies, rules, and procedures. Updates to the training program will be submitted to DOH for review and acceptance within 90 calendar days of the change.

11 Industrial Facilities

Per the MS4 Permit, Part E, MCB Hawaii is required to ensure that the industrial facilities covered under the MS4 Permit are in compliance with its requirements, and those in the HAR, Chapter 11-55, Appendix B. The overall objective of this Industrial Facilities Program is to reduce pollutants from MCB Hawaii facilities, classified as industrial in accordance with 40 CFR §122.26(b)(14), to the MEP. At a minimum pollutants are to be reduced to the appropriate discharge limitations subject to the BAT/BCT discharge requirement, consistent with the Act and other applicable federal and state requirements.

The specific objectives of the Industrial Facilities Program are to:

1. Ensure that the industrial facilities covered by the MS4 Permit, are in compliance with its requirements.
2. Provide a facility-specific SWPCP for each industrial facility covered by the MS4 Permit.
3. Designate an individual from each industrial facility to receive appropriate training and be accountable for ensuring implementation of the facility-specific SWPCP.
4. Inform DOH of any changes to the list of industrial facilities (i.e., either adding or removing a facility).

As previously described in Section 10.1 of this SWMP, 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 SIC code.

Requirement to obtain permit is based on 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.

Hawaii Administrative Rules (HAR) Chapter 11-55, Appendix B authorizes storm water discharges associated with industrial activities from the following facilities:

1. *Facilities Subject to Storm Water Effluent Limitations Guidelines*: Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR Subchapter N (except facilities with toxic pollutant effluent standards that are exempted under categories (i) to (ix) and (xi) of this definition). The categories of facilities specified in 40 CFR Subchapter N currently are: Cement Manufacturing (40 CFR 411), Feedlots (40 CFR 412), Fertilizer Manufacturing (40 CFR 418), Petroleum Refining (40 CFR 419), Phosphate Manufacturing (40 CFR 422), Steam Electric (40 CFR 423), Coal Mining (40 CFR 434), Mineral Mining and Processing (40 CFR 436), Ore Mining and Dressing (40 CFR 440), and Asphalt Emulation (40 CFR 443).

2. *Manufacturing Facilities*: Standard Industrial Classifications (SICs) 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, and 373.

3. *Oil and Gas/Mining Facilities:* SICs 10 through 14 including active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with any overburden, raw material, intermediate products, finished products, by-products or waste products.

4. *Hazardous Waste Treatment, Storage, or Disposal Facilities:* Includes those operating under interim status or a permit under Subtitle C of the Resource Conservation and Recovery Act (RCRA).

5. *Landfills, Land Application Sites, and Open Dumps*: Sites that receive or have received industrial waste from any of the facilities described in this subsection, sites subject to regulation under Subtitle D of RCRA.

6. *Recycling Facilities:* SICs 5015 and 5093. These codes include metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as:

   SIC 5015 - Motor Vehicle Parts, Used

   SIC 5093 - Scrap and Waste Materials

7. *Steam Electric Power Generating Facilities*: Includes coal handling sites.

8. *Transportation Facilities:* SICs 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only

those portions of the facility involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or other operations identified herein that are associated with industrial activity.

9. *Sewage or Wastewater Treatment Works:* Treatment works treating domestic sewage or any other sewage sludge; or wastewater treatment device or system used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of one million gallons per day or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens, or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with Section 405 of the CWA.

10. *Manufacturing Facilities Where Materials are Exposed to Storm Water:* SICs 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31, (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, and 4221-25.

A quick reference guide with the SIC codes for industrial facilities that require inclusion in the MS4 Permit in accordance with HAR Chapter 11-55, Appendix B and 40 CFR § 122.26(b)(14) is provided in Appendix 11-1.

The Industrial Facilities Program is outlined in accordance with the MS4 Permit requirements. The MS4 Permit states:

Part E. Industrial Facilities

> ***"Part E.1 -*** *The industrial facilities covered under this permit shall comply with the requirements in HAR, Chapter 11-55, Appendix B.*

Building No.	General Category	Description
101	Maintenance	Maintenance Hangar
102	Maintenance	Maintenance Hangar
103	Maintenance	Maintenance Hangar
104	Maintenance	Maintenance Hangar
105	Maintenance	Maintenance Hangar
		Recycle Center
129	Maintenance	Small Boat Repair Shop
351	Maintenance	Vehicle Maintenance Shop
373	Maintenance	Motor Vehicle Maintenance Shop
375	Maintenance	Aircraft Maintenance
1170, 1171	POL Storage	Aircraft Fuel Islands
1252, 1253	Storage	Fuel Division Supply Department
1304	Operations	Ordnance Operations
1388	Maintenance	Lab/Boat Shop

Building No.	General Category	Description
1619	Maintenance	Ground Support Equipment Shop
1631	Maintenance	Aircraft Wash & Rinse Facility
5069	Maintenance	Corrosion Control Facility
6025	Storage	Liquid Oxygen/Nitrogen Facility
6107	Maintenance	Aircraft Rinse Facility
6182	Storage	Fuel Delivery Branch and Refueler Truck Parking
6183	Maintenance	Engine Test Facility
6479	Storage	Aircraft Ready Fuel Storage
Sanitary Landfill	Sanitary Landfill	Sanitary Landfill
WWTP	Utility	Water Reclamation Facility
Parking Apron	Storage	Aircraft Parking Apron

Part E.2 - *An individual at each facility (e.g., yard foreman) shall be charged with ensuring implementation of the SWPCP. This individual shall be trained to implement the SWPCP, including but not limited to, collecting storm water samples and analyzing samples for temperature and pH, conducting inspections, identifying deficiencies and performing corrective actions.*

Part E.3 - *This permit may cover new or currently existing industrial facilities not currently identified in the Permittee's application upon submission of the "MS4 NPDES Individual Permit - Industrial Storm Water Discharge Notification Form" by the Permittee using the "CWB Compliance Submittal Form for Individual NPDES Permits and NGPCs" through the DOH's e-Permitting Portal. Along with the submission of the form, the Permittee shall submit a SWPCP for the industrial facility, and other attachments to the DOH for review and comment, including updating its SWMP Plan. Upon acceptance of the information, the DOH will acknowledge by letter NPDES permit coverage under this permit for the added facility. The SWPCP must be implemented upon the start-up of the facility or for an existing industrial facility; the SWPCP must be implemented upon submittal of the written request.*

To request coverage of a facility's industrial storm water discharges under this NPDES permit:

- *Open the e-Permitting Portal website at: https://eha-cloud.doh.hawaii.gov/epermit. Enter your login and password. If you do not have a login and password you will be asked to do a one-time registration.*
- *Click on the e-Permitting Application Finder tool and locate the "CWB Compliance Submittal Form for Individual NPDES Permits and NGPCs."*
- *Under Additional Links, download the "MS4 NPDES Individual Permit – Industrial Storm Water Discharge Notification Form."*
- *You are required to complete the "MS4 NPDES Individual Permit -Industrial Storm Water Discharge Notification Form" for each facility that discharges industrial storm water. All sections of this form MUST be completed for NPDES Permit compliance.*
- *Follow the instructions to complete and submit this form.*

- *Attach the completed "MS4 NPDES Individual Permit – Industrial Storm Water Discharge Notification Form" in Section 7 of the "CWB Compliance Submittal Form for Individual NPDES Permits and NGPCs."*

Part E.4 - *The SWPCP shall contain all information required under HAR, Chapter 11-55, Appendix B, Section 6.*

Part E.5 - *If the industrial facilities listed in Part E.1 above qualify for Conditional "No Exposure" Exclusion from NPDES Storm Water Associated with Industrial Activity permitting, the Permittee may submit the "MS4 NPDES Individual Permit – Industrial Storm Water No Exposure Notification Form," following the procedure listed in Part E.3 above.*

The Permittee will not be required to sample storm water runoff according to Part F.2 of this permit upon submittal of the "MS4 NPDES Individual Permit – Industrial Storm Water No Exposure Notification Form."

11.1 Program Organization

Implementation of facility-specific SWPCPs is primarily the responsibility of the facility manager. The ENV is responsible for general program oversight, and for identifying facilities that should be added or removed from MS4 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. The CO maintains ultimate authority to revise program policies or to direct enforcement actions.

11.2 Facility-specific Storm Water Pollution Control Plans

MCB Hawaii has conducted site visits of all industrial facilities covered by the MS4 Permit. SWPCPs have been updated accordingly to meet the requirements specified in HAR Chapter 11-55, Appendix B, Section 6. Figure 11-1-1 (Appendix 11-2) displays the locations of all facilities covered by the MS4 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 of the facility-specific SWPCP has been included in Appendix 11-2, in the order shown in Table 11-1.

Copies of the updated SWPCPs have been provided to each industrial facility, and a facility manager has reviewed and accepted the changes. The ENV has verified that facility managers have received the required training and have been given the responsibility of implementing all practices indicated within the SWPCP. Each updated SWPCP has been implemented upon submittal of this SWMP to DOH. The facility manager will ensure that a copy of the SWPCP is available onsite at all times. The permit requires that storm water samples be collected at each facility. Rather than placing the responsibility of storm water sample collection on the facility managers as presented in the Permit, the ENV will take the responsibility of collecting storm water samples as outlined in Section 12. The facility manager will be responsible for conducting inspections, identifying deficiencies, and performing corrective actions.

SWPCPs will be reviewed as needed, at a minimum of once annually, and will be updated accordingly by the ENV. Any changes will be provided to the corresponding facility manager for review and acceptance before it is submitted to DOH.

11.3 Changes to Industrial Facilities Covered by the MS4 Permit

At this time no additional, or existing, facilities have been identified by MCB Hawaii for additional coverage under the MS4 Permit. There have also been no facilities identified as qualifying for a Conditional "No Exposure" Exclusion from NPDES Storm Water Associated with Industrial Activity permitting.

If a change to the industrial facility coverage is observed in the future, the ENV will follow the applicable procedures outlined in the MS4 Permit, Part E.3 or E.5. In addition, if a listed facility changes use (i.e. SIC code change that does not require permit coverage) or is no longer in use, the ENV will notify DOH via the Annual Report that the facility be removed from the permit list.

Table 11-1
Industrial Facilities at MCB Hawaii

No.	Building No.	General Category	Description
1	101	Maintenance	Maintenance Hangar
2	102	Maintenance	Maintenance Hangar
3	103	Maintenance	Maintenance Hangar
4	104	Maintenance	Maintenance Hangar
5	105	Maintenance	Maintenance Hangar
6	132		Recycle Center
7	129	Maintenance	Small Boat Repair Shop
8	351	Maintenance	Vehicle Maintenance Shop
9	373	Maintenance	Motor Vehicle Maintenance Shop
10	375	Maintenance	Aircraft Maintenance
11	1170, 1171	POL Storage	Aircraft Fuel Islands
12	1252, 1253	Storage	Fuel Division Supply Department
13	1304	Operations	Ordnance Operations
14	1388	Maintenance	Lab/Boat Shop
15	1619	Maintenance	Ground Support Equipment Shop
16	1631	Maintenance	Aircraft Wash & Rinse Facility
17	5069	Maintenance	Corrosion Control Facility
18	6025	Storage	Liquid Oxygen/Nitrogen Facility
19	6107	Maintenance	Aircraft Rinse Facility
20	6182	Storage	Fuel Delivery Branch and Refueler Truck Parking
21	6183	Maintenance	Engine Test Facility
22	6479	Storage	Aircraft Ready Fuel Storage
23	Sanitary Landfill	Sanitary Landfill	Sanitary Landfill
24	WWTP	Utility	Water Reclamation Facility
25	Parking Apron	Storage	Aircraft Parking Apron

12 Monitoring Program

12.1 Introduction

In accordance with its MS4 Permit No. HI S00007, which covers all storm water discharges to its MS4 and specified discharges associated with industrial activities, MCB Hawaii is required to conduct annual monitoring. Annual monitoring will be used to evaluate the effectiveness of MCB Hawaii's SWMP and compliance with its MS4 Permit. As detailed further in this section, the MS4 Permit requires that MCB Hawaii submit an Annual Monitoring Plan (Monitoring Plan) to DOH, by June 1st of each year, and an Annual Monitoring Report, by December 31st of each year to describe events of the past fiscal year.

This Monitoring Program outlines the technical and management procedures that MCB Hawaii will implement to meet its annual monitoring requirements. All monitoring described in this program are required by the NPDES storm water permit and/or state and federal storm water regulations. The MS4 Permit requires regulated entities to monitor storm water discharges associated with industrial activities. DOH also requires that each effluent flow or pollutant that is required to be monitored be monitored annually to yield data that reasonably characterizes the nature of the discharge. The objective of this Monitoring Program is to guide the implementation of MCB Hawaii's annual monitoring requirements.

A brief summary of the types of information contained in this Monitoring Program includes:

- Representative Monitoring Locations and Outfall Selection Criteria;
- Storm Event Selection Criteria;
- Wet Weather Sampling and Analysis;
- Prioritized Monitoring Schedule;
- Methods and Procedures;
- Inspections and Observations;
- Quality Assurance/Quality Control Plan;
- Methods to Document BMP Effectiveness;
- Training MCB Hawaii Staff in Sampling;
- Monitoring Program Evaluation; and
- Annual Reporting and Recordkeeping.

MCB Hawaii's Monitoring Plans and Annual Monitoring Reports will be prepared in accordance with the MS4 Permit requirements. This Monitoring Program outlines how these documents will be used to meet these requirements. The MS4 Permit states:

"Part F.1 Annual Monitoring Plan

> ***Part F.1.a*** *The Permittee shall submit the Annual Monitoring Plan to the DOH by June 1st of each year for review and acceptance. The Annual Monitoring Plan shall be implemented over the coming fiscal year.*
> *The monitoring program must be designed and implemented to meet the following objectives:*

Part F.1.a.(1) *Assess compliance with this permit (including TMDL Implementation & Management (I&M) Plans and demonstrating consistency with wasteload allocations (WLAs), if required);*

Part F.1.a.(2) *Measure the effectiveness of the Permittee's SWMP;*

Part F.1.a.(3) *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;*

Part F.1.a.(4) *Characterize storm water discharges;*

Part F.1.a.(5) *Identify sources of specific pollutants;*

Part F.1.a.(6) *Detect and eliminate illicit discharges and illegal connections to the MS4; and*

Part F.1.a.(7) *Assess the water quality issues in watershed resulting from storm water discharges to receiving waters.*

Part F.1.b *The plan shall, at a minimum, include the following items:*

Part F.1.b.(1) *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;*

Part F.1.b.(2) *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.*

Part F.1.b.(3) *The Permittee shall develop a priority based monitoring schedule for each type of industrial area or facility consistent with part 1 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 facilities not ranked first shall be monitored on a rotational basis (at least two facilities monitored per year per type). The Plan shall provide the rationale for the priority rankings, identify the types of industry and the priority facilities within each industry, and provide a monitoring schedule for the rotational monitoring of industrial facilities. 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.*

Part F.1.b.(4) *For each activity, a description of how the results will be used to determine compliance with this permit.*

Part F.1.b.(5) *Identification of management measures proven to be effective and/or ineffective at reducing pollutants and flow.*

Part F.1.b.(6) *Written documentation of the following:*

(i) Characteristics (timing, duration, intensity, total rainfall) of the storm event(s);
(ii) Parameters for measured pollutant loads; and

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

Part F.1.b.(7) *Written documentation of the analytical methods to be used;*

Part F.1.b.(8) *Written documentation of the Quality Assurance/Quality Control procedures to be used; and*

Part F.1.b.(9) *Estimated budget to be implemented over the coming fiscal year.*

Part G.2 Annual Monitoring Report

Part G.2.a. *The Permittee shall submit the Annual Monitoring Report by December 31st of each year in pdf format (minimum 300 dpi) in accordance with Part A.6. The Annual Monitoring Report shall cover the past fiscal year.*

Part G.2.b. *The monitoring report shall at a minimum, include the following items:*

Part G.2.b.(1) *Discussion on the activities/work implemented to meet each objective, as outlined in Part F.1.a, including any additional objectives identified by the Permittee, and the results [e.g., assessment of the water quality issues in each watershed resulting from storm water discharges, refer to Part F.1.a.(7)] and conclusions.*

Part G.2.b.(2) *Written narrative of the past fiscal year's activities, including those coordinated with other agencies, objectives of activities, results and conclusions.*

Part G.2.b.(3) *Data gathered on levels of pollutants in non-storm water discharges to the Permittee's MS4; and*

Part G.2.b.(4) *Using rainfall data collected by the Permittee and other agencies, the Permittee shall relate rainfall events, measured pollutant loads, and discharge volumes from the watershed and other watersheds that may be identified from time to time by the DOH or Permittee.*

Part G.2.b.(5) *Dates when monitoring occurred for each industrial facility covered under this permit. The monitoring event shall be of a representative storm event, where results were available for all required parameters following the QA/QC measures as described in the Annual Monitoring Plan.*

Part G.2.b.(6) *Discharge Monitoring Reports (DMRs) for industrial facilities shall be included in the Annual Monitoring Report and be submitted via NetDMR once established by the DOH. NetDMR is a Web-based tool that allows NPDES permittees to electronically sign and submit their DMRs to EPA's Integrated Compliance Information System (ICIS-NPDES) via the Environmental Information Exchange Network. A DMR must be submitted for the facility which is scheduled to be monitored even if sampling was not conducted. An explanation as to why sampling was not conducted shall be explained with the submittal."*

12.1.1 Monitoring Plan Background

MCB Hawaii's Monitoring Program consists of three types of monitoring: (1) sampling and laboratory analysis; (2) wet weather visual observations; and (3) dry weather visual observations. The Annual Monitoring Plans will describe in detail the sampling procedures and laboratory analysis. Detailed information on wet and dry weather visual observations is contained in Sections 12.3 and 12.4, and Chapter 3, the "Illicit Discharge Detection and Elimination" section of this SWMP.

Each Annual Monitoring Plan will include, at a minimum:

- Monitoring Plan objectives and description of activities for that year.
- Representative monitoring locations, pollutants of concerns, and justification of each site.
- Priority based monitoring schedule.
- Description of how monitoring results will be used to determine compliance with the MS4 Permit.
- Evaluation of BMPs that have been implemented.
- Detailed documentation of sampling events including:
    - Storm event selection;
    - Parameters for measured pollutant loads;
    - Discharge volumes, as well as timing, frequency, and duration identified;
    - Analytical methods used;
    - Quality Assurance/Quality Control procedures; and
    - Estimated budget for the coming fiscal year.

The MS4 Permit establishes narrative effluent limitations for the effective prohibition, to the MEP, of non-storm water discharges through the permitted storm drain system throughout the entire MS4. Additionally, the MS4 Permit establishes narrative and numerical receiving water limitations for industrial facilities. These discharge limitations constitute the use of BCT or BAT economically achievable to manage storm water to the MEP associated with industrial activity, and must be satisfied to comply with MS4 Permit No. HI S000007.

Although Total Maximum Daily Loads (TMDLs) and wasteload allocations (WLAs) are not currently part of the MS4 Permit, each subsequent Monitoring Plan must incorporate any such limits that may be developed during the permit period.

MCB Hawaii's Monitoring Program includes storm water discharge monitoring locations associated with all industrial activities specified in the MS4 Permit. As a military installation, these sampling locations are representative of the most significant routine activities that occur on base.

As required by the MS4 Permit, these monitoring locations shall be designated using a priority based ranking system per industrial type. Industrial types are defined by SIC codes that have been assigned to each industrial facility in accordance with its primary industrial activity. SIC codes are described in further detail in Chapter 11 "Industrial Facilities." Facilities 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 monitored per year, per SIC type. In cases where a site is the only site within a SIC category, it is identified as the priority location for that industry type.

Annual monitoring sites, with rationale for selection as primary sampling location, include:

- 105-2 Near Maintenance Hangar 105 – Highest potential to discharge pollutants
- LF-1 Sanitary Landfill - Only location in category
- 1304 Ordnance Operations - Only location in category
- 1170, 1171 Aircraft Fuel Islands – Highest potential to discharge pollutants
- Parking Apron P-3 Aircraft parking Apron – Highest potential to discharge pollutants
- WRF 1 Water Reclamation Facility – Highest potential to discharge pollutants
- 132 Recycling Center - Only location in category

Secondary locations to be rotated throughout the course of the permit:

- 1388 Lab/ Boat Shop
- 129 Small Boat Repair Shop
- 351 Vehicle Maintenance Shop
- 373 Motor Vehicle Maintenance (1st Radio Battalion)
- 375 Aircraft maintenance
- 1631 Aircraft Wash and Rinse
- 1619 Ground Support Equipment Shop
- 5069 Corrosion Control Facility
- 6183 Engine Test Facility
- 6182 Fuel Delivery Branch and Refueler Truck Parking
- 6025 Liquid Oxygen/ Nitrogen Facility
- 6479 Aircraft Ready Fuel Storage
- WRF 2 Water Reclamation Facility

Within this Monitoring Program section are additional details to be included in each Monitoring Plan, such as selection of proper storm events for storm water sample collection, methods of obtaining and analyzing storm water samples, strategies for conducting inspections and visual training programs for staff, methods of documenting BMP effectiveness, records management and reporting, and overall monitoring plan evaluation. Detailed information on sampling protocols and visual observations are discussed in Section 12.3.

The Monitoring Program also has reporting and recordkeeping requirements, which are described in Section 12.7. Section 12.7 includes guidance for collecting and maintaining records of MCB Hawaii's Monitoring Program information. It also includes specific information on Annual Monitoring Report requirements, and duration in which all Monitoring Program data and information must be kept at ENV.

12.1.2 Annual Monitoring Plan Objectives

MCB Hawaii's monitoring under the MS4 Permit provides a consistent ongoing assessment of the progress and results of the overall storm water program. Much of the SWMP stresses the implementation of qualitative BMPs, while the Monitoring Program is intended to quantify the results of storm water management efforts. The DOH's NPDES Storm Water Permit program is intended to establish and achieve a baseline level of monitoring and a basis for consistent comparison: (1) among sites in the same industry but in different locations and (2) at a given site in one location over time. The monitoring approach allows the use of visual observations to supplement resource-intensive sampling

and analytical monitoring. Visual requirements are discussed in Sections 12.3 and 12.4 and Chapter 3 of the SWMP.

Sampling and analyses are required for conventional and toxic pollutant parameters in accordance with the MS4 Permit No. HI S000007, including pollutants of concern as specified in Appendix D of 40 CFR 122. These are intended to provide a baseline level of pollutant data in a cost-effective manner. Because pollutant concentrations in storm water samples have been found to vary substantially within and between storm events, it is not clear that trends will be seen in monitoring data until years of data have been gathered. The process of evaluating the "effectiveness" of BMPs in controlling storm water pollutants, and of the overall monitoring program itself, will be more of a recordkeeping exercise than a true numerical comparison of results obtained prior to and following implementation of BMPs. As described in the Final Program Effectiveness Assessment Plan (Appendix 13-1), MCB Hawaii may also utilize water quality monitoring analysis results conducted by other county or state agencies to evaluate effectiveness of its BMPs and SWMP.

The intent of the monitoring program is to determine the quality of the storm water runoff from the MS4, including identified industrial areas. The determination for measured pollutant loads for a single rainfall event is not a true representation of the pollutant loading from the monitored area since the quantity, or volume, of rainfall in the area would vary tremendously throughout the year and every year. DOH has stated, “The volume of discharge is dependent upon rainfall-induced runoff and is highly variable,” (**permit HI S000001**). Therefore, since pollutant loading is directly related to the quantity of storm water discharge, the determination for pollutant loading itself would be considered highly variable and inaccurate.

Each Monitoring Plan has several specific objectives to be achieved through the monitoring program. These objective are listed below, followed by a detailed discussion.

- ***Assess compliance with this permit (including TMDL Implementation & Management (I&M) Plans and demonstrating consistency with wasteload allocations (WLAs), if required).***

  The monitoring provisions of the MS4 Permit are intended to conform to existing discharge prohibitions, numeric and narrative effluent limitations, and any applicable water quality standards for the receiving waters. Industrial facilities with pollutants of concern, that are stored, used, or are a byproduct or end-product of the industrial facilities listed in the MS4 Permit No. HI S00007, must sample for all applicable pollutants. Compliance will be assessed in the Monitoring Program by comparing numerical water quality chemistry values to the allowable limits under HAR 11-54.

- ***Ensure that practices to control pollutants in storm water discharges are evaluated and revised, as necessary, to meet changing conditions at MCB Hawaii.***

  The monitoring program is intended to provide information that can be used to reflect changes in facilities, operational procedures, or materials handled that could lead to changes in the quality of storm water discharges.

- ***Measure the effectiveness of the Permittee's SWMP.***

  Effectiveness will be measured by reviewing and identifying improvements in water quality chemistry values, where improvements are needed to meet compliance, and by other factors specified in the Final Program Effectiveness Assessment Plan (Appendix 13-1).

- ***Qualitatively measure the effectiveness of BMPs in preventing, minimizing, or removing pollutants in storm water discharges.***

  The SWMP requires implementation of BMPs that are selected on a site-by-site basis to reduce storm water pollutants from certain identified sources. The process of evaluating sources and selecting BMPs is usually done prior to wet weather. Thus, certain decisions are made without the benefit of visual observations and analytical results. In addition, storm water quality BMPs may not result in a predictable reduction in pollutant concentrations. Analytical and visual monitoring should eventually provide a means for evaluating the effectiveness of selected BMPs. The natural variability of storm water quality data may make it difficult to establish trends within the first few years. Information gained from analytical data and visual observations may result in the modification of selected BMPs or selection of different BMPs as the program evolves.

- ***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.***

  As described in the Final Program Effectiveness Assessment Plan (Appendix 13-1), MCB Hawaii may also utilize water quality monitoring analysis results conducted by other county or state agencies to evaluate effectiveness of its BMPs and SWMP.

- ***Characterize storm water discharges.***

  Flow, physical appearance and color will be recorded as noted in section 12.3.

- ***Identify sources of specific pollutants.***

  Sampling locations have been identified to represent industrial facilities in accordance with the MS4 Permit. Detections of water chemistry parameters will be unique to operations at or around the facility closest to the monitoring point. An additional part of MCB Hawaii's Base-wide monitoring includes outfall screening and general Base-wide inspections, which will help to identify other sources of pollution on Base. Data/observations shall be used to determine which specific activities may cause presence of a specific pollutant.

- ***Detect and eliminate illicit discharges and illegal connections to the MS4.***

  Detections of chemical pollutants not related to the operations of a facility will be evaluated as potential illicit discharges or illegal connections. This will also be supplemented by outfall screening exercises and routine base-wide inspections, by the Base Inspectors office, as specified in Chapter 3.

- ***Assess the water quality issues in watershed resulting from storm water discharges to receiving waters.***

  Receiving water quality will be assessed in the Monitoring Plan by comparing numerical water quality chemistry values to the allowable limits under HAR 11-54.

- ***Aid in the implementation of facility-specific SWPCPs and SWMP required by the MS4 Permit.***

  The monitoring program has three major components that are intended to aid in the implementation of the SWPCPs and the SWMP: (1) site inspections; (2) visual observations; and (3) sampling and analysis. Section 12.4 describes these inspection requirements. The site inspection is intended to assess how well BMPs are being implemented and whether additional pollutant control measures are needed. Visual observations and storm water sampling and analysis are intended to provide a comprehensive assessment of storm water quality. As storm water quality data are accumulated and assessed, the SWPCP will be modified to reflect these data.

12.1.3 Outfall Selection Criteria

The storm water regulations require that samples be collected from all representative outfalls where storm water is discharged from an industrial site. Outfalls that drain only non-industrial areas, such as personnel parking lots or administrative buildings, need not be sampled, as long as there is no potential for contact of storm water with industrial processes or significant materials. The MS4 permit states that where two or more outfalls are expected to convey substantially similar storm water effluent, the facility may choose to monitor as few as one of those outfalls, provided that the outfalls monitored are representative of the overall storm water discharges from the facility.

In 2012, site visits were conducted at the MCB Hawaii industrial sites to identify outfalls and associated portions of the MS4. Each outfall was inspected, photographed, and assigned a unique identification number. Each outfall's drainage area and associated industrial facilities were described in detail. Based on this survey and the surveys conducted in 2015, outfalls were selected for possible sampling. Additional information regarding the outfalls selected for sampling at MCB Hawaii is presented in Section 12.3.

12.1.4 Information Sources

Information sources used in the selection of outfalls and preparation of the sampling and analysis plan include:

- MCAS Kaneohe Bay Hawaii Master Plan, October 1983;
- Marine Corps Base Hawaii, Kaneohe Bay, Storm Drain System Location Plan, January 1995;
- Marine Corps Base Hawaii Overall Base Map;
- Marine Corps Base Hawaii GIS Map, 2015;
- Field Observations;
- Correspondence and telephone conversations with various MCB Hawaii personnel; and
- Site characterization.

12.2 Storm Event Selection Criteria

MCB Hawaii's MS4 Permit No. HI S000007 requires dischargers to collect and analyze grab and composite samples by manual or automatic monitoring methods, from a representative storm event. The permit states that a representative storm event is defined as *a storm event that is greater than 0.1 inch in magnitude and that occurs at least 72 hours after any previous storm events of 0.1 inch or greater.* Sampling schedules for the various parameters are discussed in Section 12.3.3. Sampling methods are described in Section 12.3.5 of this report.

12.3 Storm Water Sampling and Analysis

This section provides detailed information for performing wet weather sampling and analysis. The information provided describes annual sampling locations, the prioritized sampling schedule, pertinent analytical parameters, sampling methods and protocols, describes the sampling schedule.

Any site found to have an analyte that fails to meet HAR 11-54 receiving water limits, must be evaluated and management practices improved. The evaluation will be conducted to identify any potential pollutant source(s) and appropriate mitigation measures will be implemented immediately. In the event that, after a comprehensive investigation, it is determined that all applicable BMPs are utilized to the MEP and there is no reasonably anticipated source of pollution, the ENV will submit a letter to DOH requesting approval for the suspension of additional sampling during which time sampling at the site will return to its original sampling schedule. This letter will be accompanied with documentation of all investigative efforts, including photographs, to demonstrate after comprehensive evaluation there is no reasonably expected risk to storm water quality. MCB Hawaii is in the process of developing a checklist to guide these investigations and it will be incorporated it into Appendix 12-1 upon completion.

For all other sites, where these requirements cannot be met, samples shall be taken from the next representative storm event, for all parameters until none of the limitations are exceeded.

12.3.1 Annual Sampling Locations

Table 12-1 presents data gathered during field investigations of outfalls, catch basins, storm drains or other areas that receive storm water drainage from MCB Hawaii industrial facilities. The industrial facilities have been organized by general category/SIC code and given a priority ranking within that general category/SIC code. This priority ranking is based on the perceived potential risk that the facility poses to storm water quality due to the nature of its industrial activities, or proximity to receiving waters if BMPs are not correctly followed. Included in Table 12-1 are the priority ranking of each facility within its general category/SIC code, the industrial facility and building number, general category and SIC code, outfall type and identification numbers (where applicable), a description of the outfall or sampling location, and justification for the priority ranking.

The following list details the outfalls that have been selected for annual monitoring:

- Inlet 105-2, located off the southwest corner of Maintenance Hangar 105 near the aircraft taxiway, was chosen as the representative inlet for storm water discharges from all Maintenance Hangar facilities (Buildings 101 through 105). Because the inlet is subject to tidal flow from Kaneohe Bay, it has been fitted with a stainless steel pan underneath the grate, and storm water is sampled as it flows into the pan. The sampling location is shown in Figure 12-1.

- The aircraft parking apron was ranked as being the highest priority in its general category of storage. A sluice gate receives most of the storm water leaving the facility and discharges into Kaneohe Bay. Figure 12-12 shows the location of the sluice gate on the facility.

- Petroleum Oil and Lubricant (POL) storage at Buildings 1170 and 1171 is the only facility identified within the POL operations industrial category. Aircraft fueling operations are conducted at the facility and potentially impacted storm water leaves the site to outfall 024. The sampling location is a grated inlet near the sign "PIT-A." See Figure 12-17.

- Building 1304 is the only facility identified within the operations industrial general category. Ordnance operations are conducted at the facility. The sampling point is a catch basin on the southwest side of the building. Figure 12-18 shows the sampling location.

- The water reclamation facility has been deemed as high priority due the close proximity to receiving water and the potential for sheet flow to carry storm water offsite. The outfall for this facility is approximately 300-ft from Kaneohe Bay. A location for collected sheet flow has been designated as a sheet flow sampling location on the southwest corner of the site. See Figure 12-19.

- Storm water runoff from the Sanitary Landfill will be sampled at least annually, as it is classified as a "High-Priority" Multi-Sector Industrial Facility (Sanitary Landfill). The sampling point is identified as sampling point LF-1. Parameters for Multi-Sector monitoring are given in Section 12.3.5. The location of Outfall LF-1 is shown in Figure 12-20.

- The recycling center is the only facility within the industrial class. The sampling location is a designated catch basin on the northern side of the facility. See Figure 12-21 for details.

The priority ranking and outfall locations are based on field reconnaissance and available information. All ranking, outfall locations, and sampling methods are subject to change, at the discretion of the ENV, in order to most effectively represent current conditions at each site and to facilitate monitoring program efforts.

Table 12-1
Summary of Outfalls and Associated Industrial Facilities, MCB Hawaii

Priority Rationale[1]	Priority Rank Within Category	Bldg. No.	Associated Industrial Facility	General Category (SIC Code)	Outfall Type & ID	Receiving Waters	Location of Sampling[2]	Justification for Priority Within Category of Facility
High Priority	1	105	Maintenance Hangars 101, 102, 103, 104 and 105	Maintenance (45)	Grated Inlet (105-2) to Outfall 019	Kaneohe Bay (Marine Waters) via Outfall 019	Stainless steel pan set beneath 5'x5' grate. Grated inlet located southeast of Hangar 105, near taxiway.	Runoff flows directly to Kaneohe Bay. Activities include significant pollutants.
Rotational	2	1388	Lab/Boat Shop	Maintenance (44)	Trench Drain to Outfall 027	Kaneohe Bay (Marine Waters) via Outfall 027	Sample at end of trench drain located north of Bldg. 1623, at southeast side of the facility.	Diverse number of potential pollutants situated close to Kaneohe Bay.
Rotational	3	129	Small Boat Repair Shop	Maintenance (44)	Outlet Pipe – Outfall 017-A	Kaneohe Bay (Marine Waters) via Outfall 017A	Outlet pipe	Facility comprised of several buildings, spread apart. Diverse number of potential pollutants situated close to Kaneohe Bay.
Rotational	4	351	Vehicle Maintenance Shop	Maintenance (41)	Trench Drain (351-3)	Kaneohe Bay (Marine Waters) via Outfalls 017 & 021	Trench drain east of Bldg. 322 at the west corner of the facility.	Relatively high possibility of activities producing potential pollutants in runoff.
Rotational	5	1619	Ground Support Equipment Shop	Maintenance (42)	SDMH	Kaneohe Bay (Marine Waters) via Outfall 017	SDMH near southwest corner of Bldg. 4036.	SDMH receives storm water runoff from trench drain located adjacent to Bldg. 4036. An OWS, connected to the sanitary sewer, is located at the South side of Bldg. 4036. There is a potential of pollutant runoff to this trench drain if BMPs are not correctly implemented for facility washdown and rinsing activities.

Priority Rationale[1]	Priority Rank Within Category	Bldg. No.	Associated Industrial Facility	General Category (SIC Code)	Outfall Type & ID	Receiving Waters	Location of Sampling[2]	Justification for Priority Within Category of Facility
Rotational	6	373	Motor Vehicle Maintenance Shop (3rd Radio Battalion)	Maintenance (42)	Sheet Flow	Kaneohe Bay (Marine Waters) via Outfall 021	Sheet flow near clogged drain inlet on northeast side of Bldg. 6469.	Lower priority as good practices noted in SWPCP.
Rotational	7	375	Aircraft Maintenance	Maintenance (45)	SDMH (375-2)	Kaneohe Bay (Marine Waters) via Outfall 021	Sample storm water discharge from the end of the pipe entering the southeast side of the Storm Drain Manhole (SDMH), which conveys runoff generated by Bldg. 375.	Lower priority as good practices noted in SWPCP.
Rotational	8	1631	Aircraft Wash and Rinse Facility	Maintenance (45)	Sheet Flow	Kaneohe Bay (Marine Waters) via Outfall 018	Along curb (in-line with OWS) at 'B' Street for sheet flow.	Secondary containment surrounds the washdown areas and conveys wash water to the OWS to route contaminants to sanitary sewer. In the unlikely event that this system were to overflow pollutants may entire the MS4 via the curbside inlet.
Rotational	9	5069	Corrosion Control Facility	Maintenance (45)	Grated Inlet (5069-2)	Kaneohe Bay (Marine Waters) via Outfall 021	With peristaltic pump through grated inlet at south side of Bldg. 5069 (easternmost grated inlet).	Lower priority as good practices noted in SWPCP.
Rotational	10	6183	Engine Test Facility	Maintenance (45)	Sheet Flow	Kaneohe Bay (Marine Waters) via sheet flow	Near front gate by Bldg. 6183 for sheet flow.	Drain inlets and OWS on site should route contaminants to sanitary sewer.

Priority Rationale[1]	Priority Rank Within Category	Bldg. No.	Associated Industrial Facility	General Category (SIC Code)	Outfall Type & ID	Receiving Waters	Location of Sampling[2]	Justification for Priority Within Category of Facility
Rotational	11	6107	Aircraft Rinse Facility	Maintenance (45)	Sheet Flow	Pacific Ocean	Lowest point, near west corner of concrete rinse pad.	Low priority. In the unlikely event that the OWS and adjacent grassy sump areas overflow, pollutants may enter storm water via surface runoff. There are no storm drain system inlets in the near vicinity, and the nearest receiving water is the Pacific Ocean (approximately 1,500-ft east).
High Priority	1	P-3 Parking Apron	Aircraft Parking Apron	Storage (45)	Sluice Gate	Kaneohe Bay (Marine Waters) via Outfalls 018, 021, & 024	Sample from sluice gate.	Potential pollutants from aircraft can enter directly to the sluice gate adjacent to Kaneohe Bay.
Rotational	2	6182	Fuel Delivery Branch and Refueler Truck Parking	Storage (51)	Sheet Flow	Kaneohe Bay (Marine Waters) via Outfall 021	Near front gate for sheet flow.	Fuel leaks may impact storm water runoff if valves for bermed containment area are not closed, or in the unlikely event that the containment area overflows.
Rotational	3	6479	Aircraft Ready Fuel Storage	Storage (51)	Grated Inlet	Kaneohe Bay (Marine Waters) via Outfall 021	Access road south of Bldg. 349 (not within the secondary containment) for sheet flow to grated inlet, east of Bldg. 370.	Lower priority as good practices noted in SWPCP.
Rotational	4	6025	Liquid Oxygen/Nitrogen Facility	Storage (45)	Grass Swale	Kaneohe Bay (Marine Waters) via sheet flow	Manually in grass swale fronting compound for sheet flow.	Lower priority as good practices noted in SWPCP.

Priority Rationale[1]	Priority Rank Within Category	Bldg. No.	Associated Industrial Facility	General Category (SIC Code)	Outfall Type & ID	Receiving Waters	Location of Sampling[2]	Justification for Priority Within Category of Facility
Rotational	5	1252 & 1253	Fuel Division Supply Department	Storage (51)	Sheet Flow	Kaneohe Bay (Marine Waters) via Outfall 021	Sheet flow along east side of asphalt driveway.	In the unlikely event that the secondary containment berms overflow, contaminated storm water runoff may potentially move toward the grated inlet near Bldg. 370 or to catch basins in 3rd Street.
Representative of Category	Annual	1170, 1171	Aircraft Fuel Islands	POL Storage (45)	Grated Inlet	Kaneohe Bay (Marine Waters) via Outfall 024	Sample at inlet closest to 1170. Near sign PIT A.	Only site in industrial class.
Representative of Category	Annual	1304	Ordnance Operations	Operations (45)	Catch Basin	Kaneohe Bay (Marine Waters) via Outfall 030	Catch basin at southwest corner of facility.	Only site in industrial class.
High Priority	1	WRF	Water Reclamation Facility	Utility (49)	Sheet Flow to Low Point	Kaneohe Bay (Marine Waters) via sheet flow	Designated sampling point for sheet flow.	Greater potential for pollutants to leave the site at this low point, via sheet flow to the adjacent Kaneohe Bay (approximately 300-ft south).
High Priority	1	SLF	Sanitary Landfill	Sanitary Landfill (49)	Outlet Pipe – Outfall LF-1*	Kailua Bay (Marine Waters) via Outfall LF-1	Inside concrete drainage structure. Westernmost outlet located along Middaugh Street.	This area intercepts storm water for a large area that has been historically prone to erosion and is in close proximity to Kailua Bay.
Representative of Category	Annual	132	Recycling Center	Recycling (50)	Catch Basin	Kaneohe Bay (Marine Waters) via Outfall 017	CBMH just outside facility pedestrian gate at the north side of facility on 'D' Street.	Only site in industrial class

[1] Each industrial site has been assigned a general category and priority ranking.
High Priority – Signifies the industrial facility that poses the highest potential threat to storm water quality, within a single category.
Rotational – All remaining industrial facilities within a specific category, after the highest priority site has been identified. Monitoring of these sites will be rotated based on the subsequent priority ranking.
Representative of Category - the monitoring rationale for categories with only one (1) applicable industrial facility
[2] Location of sampling is subject to change, based on accessibility or safety concerns and changing site conditions, at the discretion of ENV.

12.3.2 Additional Sampling Locations

In addition to the industrial sites ranked highest in each general category, at least two more sites will be monitored annually for each category and rotated each year as indicated in Table 12-2. The following locations are have been selected as additional monitoring sites:

- Building 1388 is a complex with a former lab and a boat shop. The sampling location is a trench drain on the southeast side of the facility. See Figure 12-2.
- Outfall 017A captures storm water flow from the small boat repair shop around Building 129. Samples will be collected from the outfall pipe identified in Figure 12-3.
- Building 351, vehicle maintenance, has a trench drain terminating at inlet 351-3 where samples are to be taken. 351-3 is located on the west corner of the facility as seen in Figure 12-4.
- Building 1619 is a ground support equipment maintenance facility. Samples can be taken from the storm drain manhole closest to the entrance gate on the south side of the facility as seen in Figure 12-5.
- The motor vehicle maintenance 3rd Radio Battalion Building 373 has a plugged storm drain inlet at the northeast side of Building 6469. Storm water flowing on the site can be collected at the plugged storm drain as seen in Figure 12-6.
- Building 375 has a drain inlet 375-2. Samples can be taken from the inlet as seen in Figure 12-7.
- The aircraft wash and rinse at Building 1631 has secondary containment and does not have a storm water collection point on site. In a situation where storm water overflowed out of the secondary containment area, it would flow off the site along 'B' Street. Samples are to be collected using a sheet flow sampler along 'B' Street from the curb in line with the oil water separator on site as seen in Figure 12-8.
- The corrosion control facility, Building 5069, has a grated inlet for sampling storm water 5069-2. The location is the most eastern inlet at the facility as seen in Figure 12-9.
- The engine test facility, Building 6183 does not have a storm water sampling point. Sheet flow samples are to be collected from the street near the front gate of the building. See Figure 12-10 for the location.
- The aircraft rinse facility, Building 6107, has secondary containment and does not have a storm water inlet in close proximity. If storm water were to overflow out of the adjacent grassy swales, storm water would flow toward the Pacific Ocean from the west corner of the concrete rinse pad, as shown in Figure 12-11.
- The fuel delivery branch and refueler truck parking at Building 6182 does not have a storm drain inlet to sample. Sheet flow is to be sampled near the front gate as seen in Figure 12-13.
- The aircraft ready fuel storage facility at Building 6479 includes a containment berm and an oil water separator on site. Most storm water is managed though these BMPs but some runoff of support activities may be sampled from a grated storm drain inlet at the east side of Building 370. See Figure 12-14 for details.
- The liquid oxygen and nitrogen facility at Building 6025 does not have a storm water inlet. Samples are to be collected from sheet flow manually from the grass swale fronting the facility as seen in Figure 12-15.

- The fuel division supply department has two tanks, Buildings 1252 and 1253, surrounded by a concrete berm. There is also secondary containment around the fueling pad. If these waters were to be released via overflow, the runoff would flow toward 3rd Street along a long asphalt paved driveway. The sheet flow will be manually collected along this driveway. See Figure 12-16.

12.3.3 Sample Schedule

This section details the sampling schedule for industrial sites covered by the MS4 Permit.

High priority sample locations are to be collected annually with two additional, lower priority samples collected from each general category each year. Lower priority samples shall be rotated until all sites are sampled. See Table 12-2 for sample schedule. Any changes that must be made to the monitoring schedule will be addressed with an explanation in the Discharge Monitoring Report (DMR), submitted to DOH via NetDMR once established, which will also be included in the Annual Monitoring Report. This is described in detail in Chapter 13.

Any site where any analyte fails to meet HAR 11-54 receiving water limits, must be evaluated and addressed as described in Section 12.3.

12.3.3.1 Pollutants of Concern

Storm water discharges from representative outfalls will be monitored in accordance with Table 12-2. Storm water samples should be analyzed for effluent limitations of pollutants of concern described in Section 12.3.4.

Table 12-2
MCB Hawaii MS4 Permit Storm Water Sampling Schedule

Building No. & Outfall Identification	Compliance Year				
	1	2	3	4	5
Hangar 105 (Grated Inlet 105-2)	X	X	X	X	X
Bldg. 1388 (Trench Drain)		X			
Bldg. 129 (Outfall 017A)		X			
Bldg. 351 (Trench Drain 351-3)		X			
Bldg. 1619 (SDMH)			X		
Bldg. 373 (Sheet Flow)			X		
Bldg. 375 (SDMH 375-2)			X		
Bldg. 1631 (Sheet Flow)				X	
Bldg. 5069 (Grated Inlet 5069-2)				X	
Bldg. 6183 (Sheet Flow)					X
Bldg. 6107 (Sheet Flow)					X
P-3 Parking Apron (Sluice Gate)	X	X	X	X	X
Bldg. 6182 (Sheet Flow)		X			
Bldg. 6479 (Sheet Flow)			X		
Bldg. 6025 (Grass Swale)				X	
Bldg. 1252 & 1253 (Sheet Flow)					X
Bldg. 1170 & 1171 (Grated Inlet)	X	X	X	X	X
Bldg. 1304 (Catch Basin)	X	X	X	X	X
Water Reclamation Facility (Sheet Flow)	X	X	X	X	X
Sanitary Landfill (Outfall LF-1)	X	X	X	X	X
Bldg. 132 (Catch Basin)	X	X	X	X	X

12.3.4 Analytical Requirements

As required by NPDES Permit HI S000007, conventional and toxic pollutants (as defined in Appendix D of 40 CFR Part 122) must be monitored in storm water discharges. Table 12-3 identifies the minimum monitoring requirements for the industrial facilities representative sampling points at MCB Hawaii.

Table 12-4 identifies potential pollutants associated with each representative outfall that will be monitored. The following approach was used to identify potential pollutants at MCB Hawaii:

a) A list of significant materials from 40 CFR 122.26(b)(14) defined industrial activities (products and chemicals used and/or stored) was prepared by field personnel during site characterization field visits. A list of potential pollutants was developed based on the likelihood of significant materials coming into contact with storm water. The potential pollutants associated with the drainage area of each outfall selected for sampling are listed in Table 12-4.
b) Specific analytical parameters associated with various potential pollutants are presented in Table 12-5 (organic parameters) and Table 12-6 (inorganic and general parameters). For example, if antifreeze/coolant was identified as a potential pollutant, the associated analytical parameters would be glycol esters (GEs) from Table 12-5 and copper (Cu) from Table 12-6. A list of potential pollutants, which might be found at MCB Hawaii is included in Tables 12-5 and 12-6.
c) The following Visual observations shall be recorded: color, odor, presence of oil sheen, floating solids, settled solids, suspended solids, clarity or other indicators of storm water pollution.

Based on the potential pollutants identified at each outfall, Table 12-7 was developed listing the analytical parameters that will be tested for at each representative inlet.

Table 12-3
Minimum Monitoring Requirements for Industrial Facilities

Effluent Parameter (units)	Effluent Limitation {1}	Type of Sample {2}
Flow (gallons)	{3}	Calculated or Estimated
Biochemical Oxygen Demand (5-Day) (mg/l)	{3}	Composite {4}
Chemical Oxygen Demand (mg/l)	{3}	Composite {4}
Total Suspended Solids (mg/l)	{3}	Composite {4}
Total Phosphorus (mg/l)	{3}	Composite {4}
Total Nitrogen (mg/l) {5}	{3}	Composite {4}
Nitrate + Nitrite Nitrogen (mg/l)	{3}	Composite {4}
Oil and Grease (mg/l)	15	Grab {6}
pH Range (Standard Units)	5.5-8.0 {7} 7.6-8.6 {8}	Grab {9}
Ammonia Nitrogen (mg/l)	{3}	Composite
Turbidity (0.1 NTU)	{3}	Grab
Dissolved Oxygen (0.1 mg/l)	{3}	Grab
Oxygen Saturation (1%)	{3}	Grab
Temperature (0.1 ºC)	{3}	Grab
Salinity (0.1 ppt)	{3}	Grab
Arsenic (µg/l) {10}{11}	360 {7} 69 {8}	Composite {4}
Cadmium (µg/l) {10}{11}	3+ {7} 43 {8}	Composite {4}
Chromium (VI) (µg/l) {10}{11}	16 {7} 1100 {8}	Composite {4}
Copper (µg/l) {10}{11}	6+ {7} 2.9 {8}	Composite {4}
Lead (µg/l) {10}{11}	29+ {7} 140 {8}	Composite {4}
Nickel (µg/l) {10}{11}	5+ {7} 75 {8}	Composite {4}
Selenium (µg/l) {10}{11}	20 {7} 300 [8]	Composite {4}
Silver (µg/l) {10}{11}	1+ {7} 2.3 {8}	Composite {4}
Zinc (µg/l) {10}{11}	22+ {7} 95 {8}	Composite {4}
Additional Toxic Pollutants {11}	{12}	{13}

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

+ = The value listed is 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 required in HAR, Chapter 11-55, Appendix B, Section 10(c). In the event any of these limitations are exceeded, the PERMITTEE, shall continue to monitor and report every representative storm event until limitations are met, unless as otherwise informed by the DOH-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 composite shall be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to the total flow of storm water discharge flow since the collection of the previous aliquot. 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} 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 HAR, Chapter 11-54, then the Permittee shall monitor and report the analytical result. The Department may include discharge limitations specified in HAR, Section 11-55-19 and discharge limitations based on Federal Register, Vol. 73, No. 189, Pages 56572– 56578, dated September 29, 2008.

{4} 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.

{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} This limitation applies to discharge into state waters classified as inland streams.

{8} This limitation applies to discharge into state waters classified as marine open coastal waters.

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

{10} The Permittee shall test for the total recoverable portion of all metals.

{11} Toxic pollutants, as identified in Appendix D or 40 CFR Part 122 or in HAR, Chapter 11-54, Section 11-54-4, need only be analyzed if they are identified as potential pollutants requiring monitoring in the SWPCP. The Permittee shall test for the total recoverable portion of all metals. If monitoring results indicate that the discharge limitation was equaled or exceeded, the SWPCP shall be amended to include additional BMPs targeted to reduce the parameter which was in excess of the discharge limitation.

{12} Effluent limitations are the acute water quality standards established in HAR, Chapter 11-54, Section 11-54-4. For pollutants which do not have established acute water quality standards, any detection concentration greater than 0.01 mg/l shall be reported.

{13} 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 Chapter 11-54, Section 11-54-4 shall be sampled by composite sample.

The sampling locations shall be representative of storm water discharging from the industrial facility and consist of storm water runoff from industrial activities.

Table 12-4 Representative Outfalls and Associated Potential Pollutants

Bldg. No. & Outfall Identification	Potential Pollutants									
	Detergents/ Surfactants	Hydraulic Fluid	Jet Fuel	DRO	Gasoline	Lubricants	Metals	Oil & Grease	Solvents	Used Oils
Hangar 105 (Grated Inlet 105-2)	X	X	X		X	X	X	X	X	X
Bldg. 1388 (Trench Drain)				X	X	X	X	X	X	X
Bldg. 129 (Outfall 017A)					X		X	X	X	
Bldg. 351 (Trench Drain 351-3)				X	X	X	X	X	X	X
Bldg. 1619 (SDMH)		X	X	X	X	X	X	X	X	X
Bldg. 373 (Sheet Flow)				X	X	X	X	X	X	X
Bldg. 375 (SDMH 375-2)			X	X	X	X	X	X	X	X
Bldg. 1631 (Sheet Flow)	X						X			
Bldg. 5069 (Grated Inlet 5069-2)							X		X	
Bldg. 6183 (Sheet Flow)							X			
Bldg. 6107 (Sheet Flow)							X			
P-3 Parking Apron (Sluice Gate)			X				X			
Bldg. 6182 (Sheet Flow)				X	X		X			
Bldg. 6479 (Sheet Flow)			X				X			
Bldg. 6025 (Grass Swale)							X			
Bldg. 1252 & 1253 (Sheet Flow)			X				X			
Bldg. 1170 & 1171 (Grated Inlet)			X				X			
Bldg. 1304 (Catch Basin)				X	X	X	X	X	X	X
Water Reclamation Facility (Sheet Flow)	X						X	X		
Sanitary Landfill (Outfall LF-1)							X			
Bldg. 132 (Catch Basin)					X		X	X		

Table 12-5
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	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																
Paint/Varnish															X		

Potential Pollutant	Analytical Parameter																
	TFH	TPH(D)	TPH(G)	TPH(IR)	O&G	PCBs	VOCs	BTEX	MBAS	Carb	Herb	GEs	Alcs	Expls	PAHs	Fec. Col.	Fec. Str.
Pesticides/Herbicides										X	X						
Photographic Chemicals							X										
Sanitary Waste																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 12-6
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																		
Asbestos																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	Resid Cl2	- Residual Chlorine
		SC	- Specific Conductance
Asb.	- Asbestos	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.
Cr	- Chromium (total)		
Cu	- Copper		
Hg	- Mercury	Ti	- Titanium
NH4+	- Ammonium	TSS	- Total Suspended Solids
P	- Phosphorus	TDS	- Total Dissolved Solids

Table 12-7
Organic and Inorganic Parameters for Sampling Points

Parameter[1]	105-2	BLDG 1388	Outfall 017-A	351-3	BLDG 1619	BLDG 373	BLDG 375	BLDG 1631	5069-2	BLDG 6183	BLDG 6107	Parking Apron	BLDG 6182	BLDG 6479	BLDG 6025	BLDG 1252, 1253	BLDG 1170,1171	BLDG 1304	WRF	LF-1	BLDG 132	Method	Detection Limit (ppm)
TFH	X	X	X	X	X	X	X			X		X		X				X				Summation	N/A
TPH(D)	X	X	X	X	X	X	X			X		X	X	X		X	X	X				8015	0.1
TPH(G)	X	X	X	X	X	X	X			X		X	X	X				X			X	8015	0.1
BTEX	X	X	X	X	X	X	X			X		X	X	X				X			X	602, 624, 1624	0.1
PAHs	X		X	X	X	X	X			X		X	X			X	X	X				610, 625, 1625	0.01
Glycols		X		X	X	X	X			X				X								8015	0.005
Solvents		X	X	X	X	X	X		X	X												624	0.005
Ten Metals[3]																							
As (Arsenic)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	206.5, 206.2 (GFAA), 206.3, 200.7	0.06
Cd (Cadmium)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	213.1, 213.2 (GFAA), 200.7	0.04
Cr (Chromium)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	218.3, 218.2 (GFAA), 218.3, 200.7	1
Cu (Copper)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	220.1, 220.2 (GFAA), 200.7	0.06

Parameter[1]	105-2	BLDG 1388	Outfall 017-A	351-3	BLDG 1619	BLDG 373	BLDG 375	BLDG 1631	5069-2	BLDG 6183	BLDG 6107	Parking Apron	BLDG 6182	BLDG 6479	BLDG 6025	BLDG 1252, 1253	BLDG 1170,1171	BLDG 1304	WRF	LF-1	BLDG 132	Method	Detection Limit (ppm)
Pb (Lead)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	239.1, 239.2 (GFAA), 200.7	0.1
Hg (Mercury)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	245.1 (Cold Vapor), 245.2	0.002
Ni (Nickel)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	249.1, 249.2 (GFAA), 200.7	0.09
Se (Selenium)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	270.2 (GFAA), 200.7	0.25
Ag (Silver)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	272.1, 272.2 (GFAA), 200.7	0.002
Zn (Zinc)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	289.1, 289.2 (GFAA), 200.7	0.09
Oil & Grease (O&G)[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1664 rev. A	0.2
pH[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	150.1, 4500-H^+ B	N/A
NH_4^+	X	X	X			X		X		X	X	X	X	X	X	X	X		X		X	350.1	0.001
Nitrate & Nitrite[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	353.2	0.0015
Total Kjeldahl Nitrogen (TKN)[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	351.3, 351.1, 351.2, 351.4	0.1
Total Nitrogen	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	calc	

Parameter[1]	105-2	BLDG 1388	Outfall 017-A	351-3	BLDG 1619	BLDG 373	BLDG 375	BLDG 1631	5069-2	BLDG 6183	BLDG 6107	Parking Apron	BLDG 6182	BLDG 6479	BLDG 6025	BLDG 1252, 1253	BLDG 1170,1171	BLDG 1304	WRF	LF-1	BLDG 132	Method	Detection Limit (ppm)
Total Phosphorous[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	365.2, 365.1, 365.3	0.005
BOD_5 [2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	SM5210B	N/A
COD[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	410.4, 410.1, 410.2, 410.3	10
TSS[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	SM2540D	N/A
TDS[2]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	SM2540C	N/A
Turbidity (NTU)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	180.1	0.1
Dissolved Oxygen	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	SM4500-O	0.1
Oxygen Saturation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	CALC	0.1
Temperature	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	SM2550B	0.1
Salinity	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	SM2520	0.1
MBAS								X			X								X			SM5540c	0.04
Conductivity	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	120.1	0.1
Residual Cl																			X				
Alkalinity																			X				
Total Recoverable Iron																				X		236.1, 236.2 (GFAA), 200.7	0.1

Notes.

1. References:
   a. Methods for Chemical Analysis of Water and Wastewater, EPA/600/4-79-020, 1983.
   b. Standard Methods for the Analysis of Water and Wastewater, 22nd Edition
   c. Methods for the Determination of Metals in Environmental Samples, EPA/600/4-91/010, June 1991; Supplement, EPA-600/R-94/111, May 1994.
   d. Leaking Underground Fuel Tank Guidelines, California State Water Resources Control Board, 2012.
   e. Test Methods for Evaluating Solid Waste, SW-846, update V, 2014.
2. O&G, pH, Nitrate & Nitrite Nitrogen, TKN, Total P, BOD_5, COD, TDS, and TSS are the conventional parameters for storm water samples.
3. If 10 Metals analysis is conducted, individual analysis need not be separately requested. Titanium analysis will need to be specifically requested as part of metals set analysis.

12.3.5 Sampling Methods and Protocol

There are essentially two types of samples required by the NPDES Permit: grab samples and flow-weighted composite samples. Grab samples are taken during the "first flush" as practically as possible, while the flow-weighted composite samples are taken during the first hour of discharge from the storm event.

12.3.5.1 Grab Samples

Grab samples are to be used for monitoring pH, oil and grease, temperature, cyanide, total phenols, bacterial counts, residual chlorine, total recoverable petroleum hydrocarbons, xylene, turbidity, dissolved oxygen (DO), oxygen saturation, salinity and compounds in the volatile fraction of the total toxic organic parameter. All other parameters are to use flow-weighted composite sampling methods, unless specified otherwise in the NPDES Permit.

Grab samples should be collected manually or automatically at the designated sampling points during the first 15 minutes of storm water discharge. The purpose of the grab sample is to catch the initial flow from the drainage surfaces, which will typically contain the highest concentrations of contaminants of concern. Samples should be representative of the flow and, therefore, taken in a well-mixed section of the flow.

If grab samples are not collected within the first 15 minutes, they should be collected as soon thereafter as possible. If samples cannot be collected within 30 minutes, they should be collected during the next qualifying storm event. An explanation should be included in the Annual Report describing the reasons for delay of the grab samples.

12.3.5.2 Composite Samples

Composite samples are collected in order to give a more representative analysis of the average water quality for the entire rain event and are used to monitor all other parameters not monitored by grab samples. A flow-weighted composite sample shall be taken for the first hour of the discharge. The flow-weighted composite sample for a storm water discharge may be taken with a continuous sampler or as a combination of a minimum of two sample aliquots taken with each aliquot being separated by a minimum period of fifteen minutes. Volumes taken from each aliquot shall be adjusted based on the observed flow during the collection period. For example, if the first bottle is collected as a grab initially and the flow drops to about 50% of the initial flow at 15 minutes, approximately half a bottle should be collected at that time. Keep in mind total sample volume needed to fill all sample containers when selecting a bottle to collect samples.

Composite samples may be collected using automatic sampling devices, as described in Section 12.6, or manually. For manual sampling, the sample bottles will be filled using a peristaltic pump or other appropriate sample collection device.

Specific analytical parameters and their associated sampling methods, such as container type, sample holding time and analytical methodology, are listed in Table 12-9.

12.3.6 Additional Requirement for Multi-Sector Facilities

The EPA's Multi-Sector General Permit (MSGP) requires additional requirements for specified storm water discharges associated with industrial activities. Applicable industrial facilities require additional terms and conditions in the monitoring and pollution control plans. At MCB Hawaii, Kaneohe Bay the Sanitary Landfill meets the conditions of a "High-Priority" Multi-Sector Facility under the "Industrial Landfills, Land Application Sites, and Open Dumps" sector. The following section provides specific additional monitoring requirements for this facility, including the analytical parameters to be monitored.

12.3.6.1 Landfill and Land Application Sites

The Industrial Landfills, Land Application Sites, and Open Dumps sector, of EPA's Storm Water Multi-Sector Permit, addresses special requirements for storm water discharges associated with industrial activity from landfill and land application sites. Pursuant to 40 CFR 122.26, storm water discharges from landfills, land application sites, and open dumps that receive or have received industrial waste, including sites subject to regulation under Subtitle D of the Resource Conservation and Recovery Act (RCRA), are required to seek permit coverage. Under this section industrial waste is defined as waste generated by any of the industrial activities described as 40 CFR 122.26(b)(14).

Landfill and Landfill Application monitoring requirements (annual grab sample), additional to the minimum monitoring requirements specified in Table 12-3:

- Total Suspended Solids (TSS)
- Total Recoverable Iron

Samples shall be taken from Outfall LF-1 (see Figure 12-20).

12.4 Inspections and Observations

The MS4 Permit requires a routine annual site inspection for the facilities requiring SWPCP and outfall screening as described in Chapter 3. The site inspection is an overall evaluation of the effectiveness of the BMPs implemented at that facility. A Routine Facility Inspection Checklist (Table 12-8) shall be completed during each routine site inspection.

Table 12-8
Routine Inspection Checklist

Activity Name: _____ **Date of Inspection:** _____

Inspector(s): _____ **Facility Name/Number:** _____

Column 1	Column 2	Column 3	Column 4	Column 5	
Source Area	BMP Number and Title	Status: FI, PI, NI, NA[1]	Briefly Describe Effectiveness (Good or Other [describe])	Corrective Measures	
				What	By When

Note : FI = Fully Implemented; PI = Partially Implemented; NI = Not Implemented; NA = No longer applicable to this source area (remove from source area master list)

Table 12-9
Quality Assurance / Quality Control Objectives

Parameter Name[1]	Units	Methodology	Maximum Holding Time	Preservation	Container Type/ Size
TFH	mg/L	GC/FID	7 days (extract) 40 days (analysis)	4ºC, pH<2, HCl	1x1 liter amber
TPH(D)	µg/L	GC/FID	7 days (extract) 40 days (analysis)	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
PCBs	µg/L	GC/ECD	7 days (extract) 40 days (analysis)	4ºC	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
Expls	µg/L	HPLC	7 days (extract) 40 days (analysis)	4ºC	1x1 liter amber
Cu	µg/L	ICP	6 months	pH<2, HNO3	500 mL plastic

Parameter Name[1]	Units	Methodology	Maximum Holding Time	Preservation	Container Type/ Size
Cr	µg/L	ICP	6 months	pH<2, HNO3	500 mL plastic
Hg	µg/L	Cold Vapor-AA	28 days	pH<2, HNO3	500 mL plastic
Ag	µg/L	ICP	6 months	pH<2, HNO3	500 mL plastic
Ti	µg/L	ICP	6 months	pH<2, HNO3	500 mL plastic
As	µg/L	Furnace-AA	6 months	pH<2, HNO3	500 mL plastic
Cd	µg/L	Furnace-AA	6 months	pH<2, HNO3	500 mL plastic
Pb	µg/L	Furnace-AA	6 months	pH<2, HNO3	500 mL plastic
Ni	µg/L	Furnace-AA	6 months	pH<2, HNO3	500 mL plastic
Se	µg/L	Furnace-AA or ydride AA	6 months	pH<2, HNO3	500 mL plastic
TI	µg/L	GL/MS	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
Zn	µg/L	ICP	6 months	pH<2, HNO3	500 mL plastic
pH	units	Electrode	ASAP	4ºC	100 mL plastic
NH4+	mg/L	Colorimetric	14 days	4ºC, pH<2, H2SO4	500 mL plastic
Nitrate & Nitrite	mg/L	Colorimetric	28 days	4ºC	500 mL plastic
Total P	mg/L	ICP	28 days	4ºC, pH<2, H2SO4	500 mL plastic
Sulfate & Sulfite	mg/L	Turbidimetric	28 days	4ºC	100 mL plastic
Anions & Cations	mg/L	IC	28 days	4ºC	100 mL plastic

Parameter Name[1]	Units	Methodology	Maximum Holding Time	Preservation	Container Type/ Size
Resid Cl2	mg/L	Titrimetric	24-48 hours	4ºC	4 oz amber
Asb.	million fibrs/Liter	TEM	ASAP	4ºC	250 mL
Fec. Col.	MPN/100mL	Assay	6 hours	4ºC, Na2S2O3	Sterile 250 mL plastic
Fec. Str.	MPN/100mL	Assay	6 hours	4ºC, Na2S2O3	Sterile 250 mL plastic
SC	µmhos/cm	Electrode	ASAP	4ºC	100 mL plastic
TSS	mg/L	Gravimetric	7 days	4ºC	100 mL plastic
TDS	mg/L	Gravimetric	7 days	4ºC	100 mL plastic

Notes.

1. AA - Atomic absorption spectroscopy
Ag - Silver
Alcs - Alcohols
Anions & Cations - HCO3-, CO3-2, Cl-, SO4-2, NO3-, F-, OH-, Na+, K+, Ca+2, Mg+2
Asb - Asbestos
BOD5 - Five-Day Biochemical Oxygen Demand
BTEX - Benzene, Toluene, Ethylbenzene, Xylene
Carb - Carbonates
Cr - Chromium (total)
COD - Chemical Oxygen Demand
Cu - Copper
Dup RPD - Duplicate Relative Percent Difference
ECD - Electron Capture Detection
EDTA - Ethylenediaminetetraacetic acid
Expls - Explosives
Fec. Col. - Fecal Coliform
Fec. Str. - Fecal Streptococci
FID - Flame ionization detection
FPD - Flame photometric detection
GC - Gas chromatography
GEs - Glycol esters
Herb - Chlorinated Herbicides
Hg - Mercury
HPLC - High performance liquid chromatography
IC - Ion chromatography
ICP - Inductively coupled plasma atomic emission spectroscopy
IR - Infrared 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
PCBs - Polychlorinated Biphenyls
pH - Indicator of acidity or basicity
Resid Cl2 - Residual Chlorine
SC - Specific conductance
TEM - Transmission electron microscopy
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
TFH - Total fuel hydrocarbons
Ti - Titanium
TKN - Total Kjeldahl Nitrogen
TPH(D) - Total petroleum hydrocarbons (as diesel)
TPH(G) - Total petroleum hydrocarbons (as gasoline)
TPH(IR) - Total petroleum hydrocarbons (by infrared spectroscopy)
TSS - Total Suspended Solids
TDS - Total Dissolved Solids
ug/L - Micrograms per Liter
VOCs - Volatile Organic Compounds

2. Quality control values for Duplicate Relative Percent Difference (RPD), Matrix Spike RPD, and Matrix Spike Recovery shall meet the guidelines set forth by the EPA in 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants."

12.5 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.

12.5.1 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.

12.5.1.1 Reconnaissance and Preparation

Representative sampling sites have been selected in accordance with feasibility, accessibility, and safety constraints, as described in Sections 5.3, 5.5, and 5.6. Communication with laboratories will be established and a Sampling Field Notebook will be prepared, as described in Section 12.5.1.2 noted below. Field teams will be trained by experienced personnel following guidelines described in Section 12.5.1.2. Supervisors will be responsible for coordination of sampling efforts and for preparedness of teams.

12.5.1.2 Sampling Field Notebook

A specific Sampling Field Notebook will be prepared and kept on file in the MCB Hawaii, Kaneohe Bay Environmental Engineer's office. 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.

12.5.2 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 Table 12-10.

12.5.3 Laboratory Procedures

Analysis for the routine parameters will be performed by a qualified laboratory. Table 12-8 presents a list of QA/QC objectives associated with each analytical method. The laboratory must make every effort to meet target detection limits, holding times, and sample preservation techniques. The laboratory will also be required to meet the precision and accuracy objectives summarized in Table 12-9, unless extreme sample matrix interference issues are encountered. The laboratory shall provide a written QA/QC report addressing any deviations from the QA/QC requirements.

12.5.3.1 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.

12.5.3.2 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.

12.5.3.3 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.

12.5.3.4 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.

Table 12-10
Example Chain of Custody

TestAmerica Sacramento
880 Riverside Parkway
West Sacramento, CA 95605-1500
phone 916 373 5600 fax 303 467 7248

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	**Project Manager:**	**Site Contact:**	**Date:**	COC No:
Your Company Name here	**Tel/Fax:**	**Lab Contact:**	**Carrier:**	_____ of _____ COCs
Address	**Analysis Turnaround Time**			Sampler:
City/State/Zip	☐ CALENDAR DAYS ☐ WORKING DAYS			**For Lab Use Only:**
(xxx) xxx-xxxx Phone	TAT if different from below _____			Walk-in Client:
(xxx) xxx-xxxx FAX	☐ 2 weeks			Lab Sampling:
Project Name:	☐ 1 week			
Site:	☐ 2 days			Job / SDG No.:
P O #	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y / N)	Perform MS / MSD (Y / N)														Sample Specific Notes:

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Form No. CA-C-WI-002, Rev. 4.9, dated 2/2/2016

12.5.4 Data Reduction, Validation, and Reporting

Overall data quality will be assessed by laboratory personnel (MCB Hawaii ENV) 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 by the QA/QC leader, if necessary.

12.6 Automatic Sampling

The use of automatic vs. manual sampling will be at the discretion of ENV, depending on access restrictions, feasibility, and any other condition that may facilitate monitoring efforts. Battery operated automatic samplers, designed specifically for storm water sampling, may be used to obtain the required samples. These will be installed at sampling locations where deemed appropriate by ENV. The samplers are ISCO Model No. 6712 sampling units with remote data retrieval modules that allow direct download of the collected storm water data for transfer to a remote computer. The units are operated using a high-output 12-volt battery, and are housed in an enclosure when deployed to collect samples. A rain gauge is connected to the sampler and is used as one of the determining trigger points for when the sampler begins to collect the storm water sample.

Prior to deployment, the units are checked for operation and repaired or serviced as required. During deployment general maintenance of the sampling sites includes checking the condition of the weirs, the sample uptake line, the flow meter bubbler line, the rain gauge, and the removal of any debris which may hamper the acquisition of a sample.

The sampler for collection point 105-2 is typically deployed during the rainy months in anticipation of a heavy rain event. The sampler and battery are placed inside the enclosure prior to an anticipated storm event. During and after the event the sampler and battery are checked to verify operation. Typically samples can be collected during a moderate storm event due to the drainage area that the sampling point accepts. Once the sample has been collected, the sampler, battery and enclosure are removed and put back into storage.

The sampler for collection point LF-1 is also deployed during the rainy months, typically between September and March. Sample collection from LF-1 is typically more difficult to achieve due to the configuration of the collection basin at the Sanitary Landfill. The storm event must be significant enough to produce more storm water flow than can be collected and treated within the sedimentation basin. When that occurs, storm water will discharge out of the basin through the outlet, and a sample can be collected. The sampler and operating battery is set inside of an enclosure and checked on a weekly basis for operation and battery life. As necessary the battery is replaced with a freshly charged unit.

Data is archived on a regular basis and serves as a monitoring record. In anticipation of a rain event, ice is added to the samplers to chill the samples as soon as they are taken. Rainfall amount of 0.1 inches and a one-inch rise in flow level trigger these samplers. When triggered, the samplers are programmed to take both the grab and composite samples. The grab samples are used as is while the composite samples are combined, using the flow data to create a flow weighted composite.

12.7 Records Management and Reporting Formats

Well maintained records management and clear reporting formats are necessary for regulatory compliance. They are also useful for the assessment of the effectiveness of the storm water management program.

12.7.1 Records Management

The SWMP and supporting records are considered public documents under Section 308(b) of the CWA. Therefore, any member of the public may request to review MCB Hawaii's storm water permit documentation. Additionally, the SWMP and supporting data will need to be made available upon request of a representative of the EPA and DOH.

Copies of the SWMP, annual reports, monitoring information, and data pertaining to the MS4 Permit must be retained at the MCB Hawaii Environmental Affair's office for a minimum period of five years from the date of measurement, observation, report, or application. The above must also be made available to the public upon request.

12.7.2 Reporting Requirements

An Annual Report, which will include a Monitoring Report, shall be submitted to DOH at the end of each Marine Corps fiscal year. The Annual Report will be reviewed by the ENV Director, who will then submit it to the DOH CWB through the CWB Compliance Submittal Form, as outlined in the MS4 *permit requirements (Part A.7)*. Monitoring reporting will be completed in accordance with the MS4 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 Chief of DOH CWB as soon as the results become available, but in no case later than 30 days after the samples were taken. Reporting requirements are discussed in greater detail in Chapter 13 of the SWMP.

12.8 Monitoring Program Evaluation

In general, a monitoring program can be evaluated quantitatively, based on its effect on water quality through long-term trends in chemical concentrations or other measurements, or qualitatively, by keeping track of the extent to which inspections and analytical monitoring are implemented.

The monitoring program will be evaluated and revised at least once a year for consistency with the evolving goals of the storm water monitoring program. As discussed in Section 12.7, the MS4 Permit requires submittal of an annual report to DOH CWB. The annual monitoring report will describe the monitoring tasks performed over the course of the year, as well as any analytical results obtained therein. The annual report will also present MCB Hawaii’s overall assessment of its monitoring program effectiveness.

Quantifying the effectiveness of a storm water quality monitoring program poses some challenging issues with regard to statistical significance. Since the permit requires that grab and composite samples be obtained and analyzed for only representative storm events, there will be relatively little data to consider until many years of monitoring have been performed. In addition, since chemical concentrations vary considerably during a given storm and between different storms, it is unclear whether statistically significant data can ever be obtained using this protocol. Consequently, trends observed in water quality data should be viewed as indicators rather than definitive data on chemical loading.

As an example, a consistent trend of high pH in storm water discharge from a given outfall might indicate a source area within the drainage of that outfall, such as an outdoor soda ash storage area. The analytical monitoring data can be used as an initial step in identifying the source of the problem, and a BMP can be selected to minimize storm water contact in that suspected source area. Lower pH results following implementation of the soda ash BMP may indicate that the BMP is working. In many instances, however, consistent water quality trends may not occur, and it may not be possible to identify discrete source areas or observe the improvement in water quality caused by the implementation of a given BMP.

Such trends, or lack thereof, in water quality data, as well as actions implemented to identify source areas and BMPs, will be documented. These records will form a basis for evaluating the effectiveness of the overall monitoring program because they help meet the NPDES Storm Water Permit's objectives of implementing the SWPCP and measuring the effectiveness of BMPs.

Basic recordkeeping is another method of evaluating the effectiveness of the monitoring program. MCB Hawaii will carefully track all visual observations and analytical monitoring activities to document compliance with the requirements listed in the Individual Permit. Types of records that should be kept and reviewed may include:

- Dates when visual and analytical monitoring is performed;
- Observations during visual observations and analytical monitoring;
- Site inspections; and
- Incidents such as spills or other releases.

By documenting activities and incidents in this way, MCB Hawaii may be able to identify problem areas and take action by selecting or modifying BMPs to mitigate the problems. The "measure of effectiveness" will include a description of actions that MCB Hawaii takes in response to the visual observations or trends identified in its records. These are outlined further in the Final Program Effectiveness Assessment Plan (Appendix 13-1).

13 Reporting Requirements

In accordance with the MS4 permit, 40 CFR §122.42(c), and this SWMP, MCB Hawaii is required to submit Annual Reports to DOH by December 31st of each year. These reports include the following:

1. An Annual Report, which includes documentation of all SWMP activities during the reporting period (i.e., fiscal year) and demonstrates compliance with the MS4 permit with respect to various activities and milestones.
2. An Annual Monitoring Report, which documents the sampling events, data collection and water quality assessments described in Chapter 12, Monitoring Requirements, including the Discharge Monitoring Reports for Municipal Industrial Facility.

Well-maintained records management and clear reporting formats are necessary for regulatory compliance. They are also useful for the assessment of the effectiveness of the storm water management program.

In addition to the annual reporting requirements, certain updates to the SWMP may occur at any time during the permit period. As stated in Part D.2. of the Permit, MCB Hawaii is also required to modify the SWMP when any of the following occur:

1. An exceedance of any discharge limitation or water quality standard established in HAR, Section 11-54-4. The revisions shall include BMPs and/or measures to reduce the amount of pollutants found to be in exceedance from entering State Waters.
2. Change in conditions and incorporation of more effective approaches to pollutant control.
3. System modifications, including any planned physical alterations or additions to the permitted MS4 and any existing outfalls newly identified over the term of the permit.

"The Permittee shall properly address all modifications, concerns, requests, and/or comments to the satisfaction of the DOH and/or EPA. 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 DOH 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 its Annual Report for the year in which the modification was made."

The MS4 Permit describes the requirements for the Annual Report and Annual Monitoring Report as follows:

"Annual Report Permit Requirements (Part G.1):

a. The Permittee shall submit the Annual Report by December 31st of each year in pdf format (minimum 300 dpi) in accordance with Part A.6. The Annual Report shall cover the past fiscal year. The Annual Report for the fiscal year prior to the expiration date of the permit shall serve as the permit's renewal application. Submittal of the renewal application shall include a $1,000 filing fee.

b. The Permittee shall revise its SWMP to include a description of reporting procedures and activities, including schedules and proposed content of the Annual Reports such that, at a minimum, the following is reported for each storm water program component in each Annual Report:

(1) Requirements - Describe what the Permittee was required to do (describe status of compliance with conditions of this permit and other commitments set forth in the SWMP).

(2) Past Year Activities - Describe activities over the reporting period in comparison to the requirements, including, where applicable, progress accomplished toward meeting specific measurable goals, standards and milestones or other specific performance requirements. When requirements were not fully met, include a detailed explanation as to why the Permittee did not meet its commitments for the reporting period. Also describe an assessment of the SWMP, including progress towards implementing each of the SWMP program components.

(3) Future Activities - Describe planned activities, including, where applicable, specific activities to be undertaken during the next reporting period toward accomplishing specific measurable goals, standards and milestones or other specific performance requirements.

(4) Resources - Report on the status of the Permittee's resource base for implementing this NPDES permit during the applicable reporting period and an estimate of the resources over and above those required in the current reporting period that will be required in the next reporting period.

c. Modifications - In each Annual Report, the Permittee shall describe any modifications made to the SWMP and implementation schedule during the past year, including justifications. The Permittee shall also describe major modifications made to the Permittee's MS4, including, but not limited to, addition and removal of outfalls, drainage lines, and facilities.

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

<u>Annual Monitoring Report Permit Requirements (Part G.2):</u>

a. The Permittee shall submit the Annual Monitoring Report by December 31st of each year in pdf format (minimum 300 dpi) in accordance with Part A.6. The Annual Monitoring Report shall cover the past fiscal year.

b. The monitoring report shall at a minimum, include the following items:

(1) Discussion on the activities/work implemented to meet each objective, as outlined in Part F.1.a, including any additional objectives identified by the Permittee, and the results

[e.g., assessment of the water quality issues in each watershed resulting from storm water discharges, refer to Part F.1.a.(7)] and conclusions.

(2) Written narrative of the past fiscal year's activities, including those coordinated with other agencies, objectives of activities, results and conclusions.

(3) Data gathered on levels of pollutants in non-storm water discharges to the Permittee's MS4; and

(4) Using rainfall data collected by the Permittee and other agencies, the Permittee shall relate rainfall events, measured pollutant loads, and discharge volumes from the watershed and other watersheds that may be identified from time to time by the DOH or Permittee.

(5) Dates when monitoring occurred for each industrial facility covered under this permit. The monitoring event shall be of a representative storm event, where results were available for all required parameters following the QA/QC measures as described in the Annual Monitoring Plan.

(6) Discharge Monitoring Reports (DMRs) for industrial facilities shall be included in the Annual Monitoring Report and be submitted via NetDMR once established by the DOH. NetDMR is a Web-based tool that allows NPDES permittees to electronically sign and submit their DMRs to EPA's Integrated Compliance Information System (ICIS-NPDES) via the Environmental Information Exchange Network. A DMR must be submitted for the facility which is scheduled to be monitored even if sampling was not conducted. An explanation as to why sampling was not conducted shall be explained with the submittal."

13.1 Annual Reports

The structure of the annual report will be consistent with the structure of this SWMP.

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

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

Each chapter in the Annual Report contains the following information:

- Requirements - Status of compliance with permit requirements and commitments set forth in this SWMP,
- Past year's activities,
- Future activities,
- Resources – resource base for the current and future reporting period,
- Modifications – any changes to the SWMP, schedule, and/or the MS4, and

- Program effectiveness reporting – evaluation of activities and collected information to assess the effectiveness of past SWMP activities and to refine future decision making regarding resource allocation and program implementation.

The Annual Report will be reviewed by the ENV Director. Upon approval/concurrence, the report 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/View/home.aspx

13.2 Annual Monitoring Reports

Annual monitoring reports will be completed in accordance with the MS4 Permit and the Monitoring Plan, as described in Chapter 12 of this SWMP. The report will include a summary of collected data and an assessment of the results.

The Annual Monitoring Report will be reviewed by the ENV Director. Upon approval/concurrence, the report 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/View/home.aspx

Monitoring results exceeding the effluent limitations shall be reported to DOH CWB as soon as the results become available.

13.3 Records Management

The SWMP and supporting records are considered public documents under Section 308(b) of the CWA. Therefore, any member of the public may request to review MCB Hawaii's storm water permit documentation. Additionally, the SWMP and supporting data will need to be made available upon request of a representative of the EPA and DOH.

Copies of the SWMP, annual reports, monitoring information, and data pertaining to the MS4 Permit must be retained at the ENV office for a minimum period of five years from the date of measurement, observation, report, or application. The above must also be made available to the public upon request.

As noted in Chapter 1, the designated record keeper role on the permit management team is responsible for archiving all documents associated with the SWMP, including the site map, inspection reports, maintenance records, and annual reports.

13.4 Written Strategy for Determining the Effectiveness of the SWMP

The attached Program Effectiveness Assessment Plan, dated October 2015 and submitted to DOH CWB on October 21, 2015, presents the strategy for:

(1) measuring progress of permit compliance and implementation of BMPs;
(2) tracking program component effectiveness over the permit period; and
(3) setting the frame work to be able to link program implementation with environmental improvements over time.

See Appendix 13-1.