U.S. ARMY GARRISON, HAWAII

STORM WATER POLLUTION PREVENTION PLAN

MAY 2008

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CERTIFICATION

I hereby certify that I have visited and examined the U.S. Army installations in Hawaii, and attest that this Storm Water Pollution Prevention Plan (SWPPP) has been prepared in accordance with good engineering practice and the best available storm water pollution guidance, and that it meets the requirements for a Storm Water Pollution Control Plan (SWPCP) as outlined in NPDES Permit HI S000090 issued to U.S. Army Garrison Hawaii.

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AAFES	-	Army and Air Force Exchange Service
AAMDC	-	Army Air Missile Defense Command
AHFH	-	Army Hawaii Family Housing
AMR	-	Aliamanu Military Reservation
ASB	-	Aviation Support Battalion
AST	-	Aboveground Storage Tank
AUL	-	Authorized Use List
AVN	-	Aviation
BAE	-	British Aerospace Engineers
BDE	-	Brigade
BMP	-	Best Management Practice
BN	-	Battalion
BOD	-	Biological Oxygen Demand
CAB	-	Combat Aviation Brigade
CFR	-	Code of Federal Regulations
Co	-	Company
COD	-	Chemical Oxygen Demand
COE	-	Corps of Engineers
CSU	-	Colorado State University
DBEDT	-	Department of Business and Economic Development
DCA	-	Directorate of Community Affairs
DOD	-	Department of Defense
DOIM	-	Directorate of Information Management
DOL	-	Directorate of Logistics
DPW	-	Directorate of Public Works
ECO	-	Environmental Compliance Officer
ECS	-	Equipment Concentration Site
EN	-	Engineers
EPA	-	Environmental Protection Agency
ER	-	East Range
FA	-	Field Artillery
FS	-	Fort Shafter
GIS	-	Geographic Information System
GPS	-	Global Positioning System
HEMTT	-	Heavy expanded mobility tactical truck
HHC	-	Headquarters and Headquarters Company
HMR	-	Helemano Military Reservation
HMMWV	-	High mobility multipurpose wheeled vehicle
HSMS	-	Hazardous Substance Management System
HWSSP	-	Hazardous Waste Shop Storage Point
IDDE	-	Illicit Discharge Detection and Elimination
IPMP	-	Installation Pest Management Plan

ISCP	-	Installation Spill Contingency Plan
ISO	-	International Organization for Standardization
LID	-	Low Impact Development
LSI	-	Lear Siegler Inc.
MBR	-	Membrane Bio Reactor
MOGAS	-	Automotive Gasoline
MS4	-	Municipal Separated Storm Sewer System
MSC	-	Mission Support Command
NPDES	-	National Pollution Discharge Elimination System
POL	-	Petroleum, Oil, and Lubricants
POV	-	Privately Owned Vehicles
RMSSP	-	Recyclable Material Shop Storage Point
SB	-	Schofield Barracks / Sustainment Brigade
SBCT	-	Stryker Brigade Combat Team
SDOH	-	State Department of Health
SIC	-	Standard Industrial Classification
SOP	-	Standing Operating Procedure
SPCCP	-	Spill Prevention Control and Countermeasures Plan
SSP	-	Shop Storage Point
STB	-	Special Troops Battalion
SWMP	-	Storm Water Management Plan
SWPCP	-	Storm Water Pollution Control Plan (also known as a SWPPP)
SWPPP	-	Storm Water Pollution Prevent Plan
TAMC	-	Tripler Army Medical Center
TAP	-	Transfer Accumulation Point
TDS	-	Total Dissolved Solids
TPH	-	Total Petroleum Hydrocarbons
TSC	-	Theater Support Command
TSS	-	Total Suspended Solids
USACHPPM	-	United States Army Center for Health Promotion and Preventive Medicine
USAG	-	United States Army Garrison
USARPAC	-	United States Army Pacific
WAAF	-	Wheeler Army Air Field
WWTP	-	Waste Water Treatment Plant

1 Introduction

1.1 Purpose

This Storm Water Pollution Prevention Plan (SWPPP) satisfies the need to develop a Storm Water Pollution Control Plan (SWPCP) as required by the National Pollution Discharge Elimination System (NPDES) permit HI S000090 issued in accordance with the Clean Water Act, Hawaii Revised Statutes, Chapter 342D, and Hawaii Administrative Rules, Chapters 11-54 and 11-55. The current permit is dated February 7, 2007.

This SWPPP is designed to (1) identify the sources of pollution that affect the quality of industrial storm water discharges, and (2) describe and implement best management practices (BMP) to reduce or prevent pollutants in industrial storm water discharges by limiting contact of storm water with source materials. These sources include raw materials, finished products, waste materials, machinery, fuels, lubricants, solvents, and chemicals.

The primary purpose of this SWPPP is to identify facilities where implementing BMPs can effectively reduce or prevent storm water contamination. BMP are defined as maintenance procedures, operating procedures, prohibitions of practices, schedules of activities, and other management practices to prevent or reduce pollution. BMP also include practices to control runoff, spillage, leakage, waste disposal, or drainage from storage of raw materials at a facility.

The specific objectives of this project were as follows:

- Identify facilities within USAG-Hawaii installations that are potential sources of contamination to storm water;

- Visually assess these facilities;

- Identify current BMPs in place at these facilities that reduce or eliminate storm water contamination;

- Recommend additional BMPs to further reduce or eliminate storm water contamination from source materials at these facilities; and

- Prepare a SWPPP for each industrial activity that documents the current and recommended BMPs.

Installation Overviews

1.1.1 Schofield Barracks

This section describes the physical environment of Schofield Barracks and provides an overview of land use and industrial activities on the installation.

1.1.1.1 Geographic, geologic, and climatic setting

Schofield Barracks is located in the saddle between the Waianae and Ko'olau Volcanoes that form the island of Oahu. The installation has an area of 13,632 acres and extends from the ridge crest of the Waianae Volcano east to the town of Wahiawa. It is bounded on the north by Kaukonahua Stream that flows from the crest of the Ko'olau Volcano, and on the south by Waikele Stream that flows from the crest of the Waianae Volcano. At higher elevations, the terrain is steep and rugged. Developed areas are concentrated near the lower (eastern) side of the installation between 850 to 1000 ft above sea level on land that slopes gently toward the west.

The installation lies on soil and weathered lava from the Waianae and Ko'olau Volcanoes. Typically, 10 ft of clay-rich soil is underlain by 100 ft of saprolite (weathered volcanic rock). The water table is typically about 275 ft above sea level.

The climate is sub-tropical. Temperatures range predominantly from 60-90° F. Mean annual rainfall across the installation ranges from 60 to 40 inches, with greater rainfall at higher elevations. About 65% of the mean annual rainfall occurs between November and March. Moderate northeast trade winds are typical.

1.1.1.2 Function and organization of the installation

Schofield Barracks is home to the 25th Infantry Division (Light). Vehicles, equipment, and supplies used by the Division are stored and maintained on base. The installation also conducts on-going training exercises and often has units deployed overseas. The installation has housing and amenities for approximately 20,000 service members and dependents.

1.1.1.3 Overview of industrial activities

The principle industrial activities at Schofield Barracks are maintenance and repair of tactical vehicles and other military equipment. Maintenance and repair of installation facilities also requires some industrial-level support. This section covers:

- Motor pools and tactical maintenance facilities
- Equipment maintenance, service, and repair shops
- Golf course maintenance facilities
- Maintenance facilities to support range-training areas
- A recycling center and hazardous waste Transfer and Accumulation Point (TAP)
- Automotive salvage yard

- Auto craft shop
- A bulk fuel yard
- DPW maintenance and motor pool shops
- East Range warehouses
- Range maintenance

The NPDES permit requires a list of all industrial activities, as defined in 40 CFR 122.26 (b)(14) and their Standard Industrial Classification (SIC) codes. An excerpt from 40 CFR 122.26(b)(14) is included in Appendix I. Industrial activities at Schofield Barracks and East Range are shown in Table 1. Some activities may fit into more than one classification. For purposes of this document, each activity is listed under the SIC code that describes its primary function.

Table 1 Schofield Barracks Industrial Facilities

Standard Industrial Classification	Building Number	Discussion
2499 Wood Products, Not Elsewhere Classified	Bldg. 2276 – DPTM Wood Shop	Establishments primarily engaged in manufacturing miscellaneous wood products, not elsewhere classified, and products from rattan, reed, splint, straw, veneer, veneer strips, wicker, and willow. • Blocks, tackle: wood • Fencing, wood: except rough pickets, poles, and rails • Poles wood: e.g., clothesline, tent, flag Stakes, surveyors': wood
4173 Terminal and Service Facilities for Motor Vehicle Passenger Transportation	Bldg. 940 – 25th Transportation	Establishments primarily engaged in the operation of motor vehicle passenger terminals and of maintenance and service facilities, not operated by companies that also furnish motor vehicle passenger transportation. • Maintenance facilities for motor vehicle passenger transportation
	Bldg. 955 – 209th ASB	
	Bldg. 968 – 3/25 AVN	
	Bldg. 986 – 45th SB	
	Bldg. 990 – 540th Quartermaster BN	
	Bldg. 1059 – 325 FSB	
	Bldg. 1080 – 65th EN BN	
	Bldg. 1611 – 84th EN BN	
	Bldg. 1626 – 2/14 RSTA	

Standard Industrial Classification	Building Number	Discussion
	Bldg. 1670 – BAE	
	Bldg. 2138 – BAE Shop 5	
	Bldg. 2400 – 325 BSB	
	Bldg. 2420 – 325 BSB	
	Bldg. 2440 – 3/7 FA	
	Bldg. 2460 – Not in use	
	Bldg. 2480 – Not in use	
	Bldg. 2510- 25th STB	
	Bldg. 2600 – 307 ISTB	
	Bldg. 2640 – 249 EN	
	Bldg. 3030 – 25th STB	
4225 General Warehousing and Storage	Bldg. 6037 – East Range Warehouse	Establishments primarily engaged in the warehousing and storage of a general line of goods. • General warehousing and storage • Miniwarehouse warehousing • Warehousing, self-storage
5015 Motor Vehicle Parts, Used	Bldg. 930 - Auto Salvage Center	Establishments primarily engaged in the distribution at wholesale or retail of used motor vehicle parts. This industry includes establishments primarily engaged in dismantling motor vehicles for the purpose of selling parts. • Automobile engines, used-wholesale or retail • Automobile parts, used-wholesale or retail • Motor vehicle parts, used-wholesale or retail

Standard Industrial Classification	Building Number	Discussion
5093 Scrap and Waste Materials	Bldg. 1087B - Recycle Center Bldg. 6040 – Hazardous Waste Transfer Accumulation Point	Establishments primarily engaged in assembling, breaking up, sorting, and wholesale distribution of scrap and waste materials. This industry includes auto wreckers engaged in dismantling automobiles for scrap. • Automotive wrecking for scrap-wholesale • Bag Bottles, waste-wholesale • Boxes, waste-wholesale • Iron and steel scrap-wholesale • Metal waste and scrap-wholesale • Nonferrous metals scrap-wholesale • Oil, waste-wholesale • Plastics scrap-wholesale • Rubber scrap-wholesale • Scrap and waste materials-wholesale • Wastepaper, including paper recycling-wholesale
5171 Petroleum Bulk stations and Terminals	Bldg. 2805 - Superstation	Establishments primarily engaged in the wholesale distribution of crude petroleum and petroleum products, including liquefied petroleum gas, from bulk liquid storage facilities. • Petroleum bulk stations and terminals-wholesale
5541 Gasoline Service Stations	Bldg. 80 - AAFES Service Station Bldg. 1167 – AAFES Gas Station	Gasoline service stations primarily engaged in selling gasoline and lubricating oils. These establishments frequently sell other merchandise, such as tires, batteries, and other automobile parts, or perform minor repair work. • Automobile service stations-retail • Filling stations, gasoline-retail • Service stations, gasoline-retail

Standard Industrial Classification	Building Number	Discussion
7538 General Automotive Repair Shops	Bldg. 910 – Auto Craft Center	Establishments primarily engaged in general automotive repair. • Automotive repair shops, general • Diesel engine repair, automotive • Engine repair, automotive • Engine repair, truck: except industrial • Garages, general automotive repair and service • Motor repair, automotive • Truck engine repair, except industrial
7542 Carwashes	Bldg. 6014 - East Range Wash Rack	Establishments primarily engaged in washing, waging, and polishing motor vehicles, or in furnishing facilities for the self-service washing of motor vehicles. • Bus washing • Carwashes • Truck washing • Washing and polishing, automotive
7692 Welding Repair	Bldg. 1180 - BAE Shop 6	Establishments primarily engaged in general repair work by welding, including automotive welding. • Brazing (welding) • Repair of cracked castings (welding service) • Welding shops, including automotive

Standard Industrial Classification	Building Number	Discussion
7699 Repair Shops and Related Services, Not Elsewhere Classified	Bldg. 6065 – BAE Shop 4	Establishments primarily engaged in specialized repair services, not elsewhere classified, such as bicycle repair; leather goods repair; lock and gun repair, including the making of lock parts or gun parts to individual order; musical instrument repair; septic tank cleaning; farm machinery repair; furnace cleaning; motorcycle repair; tank truck cleaning; taxidermists; tractor repair; and typewriter repair. • Engine repair, except automotive • Fire control (military) equipment repair • Gunsmith shops • Precision instrument repair • Tent repair shops
7992 Public Golf Courses	Bldg. 6028, East Range Golf Course Maintenance Facility	Establishments primarily engaged in the operation of golf courses open to the general public on a contract or fee basis. • Golf club, non-membership • Golf courses, public: operation of
8744 Facilities Support Management Services	DPW Complex	Establishments primarily engaged in furnishing personnel to perform a range of services in support of the operations of other establishments or in providing a number of different continuing services, on a contract or fee basis, within another establishment. Included in the industry are establishments primarily engaged in the private operation of jails and adult correctional facilities, whether or not providing both management and supporting staff. • Base maintenance (providing personnel on continuing basis) • Facilities management, except computer • Facilities support services, except computer

Standard Industrial Classification	Building Number	Discussion
9512 Land, Mineral, Wildlife, and Forest Conservation	Bldg. 1124 - Range Maintenance	Government establishments primarily engaged in regulation, supervision and control of land use, including recreational areas; conservation and preservation of natural resources; control of wind and water erosion; and the administration and protection of publicly and privately owned forest lands, including pest control. Planning, management, regulation, and conservation of game, fish, and wildlife populations, including wildlife management areas and field stations; and other matters relating to the protection of fish, game, and wildlife are also classified here. • Conservation and stabilization agencies-government • Land management agencies-government • Soil conservation services-government • Wind and water erosion control agencies-government

1.1.2 Wheeler Army Air Field

This section describes the physical environment of Wheeler Army Air Field and provides an overview of land use and industrial activities on the installation.

1.1.2.1 Geographic, geologic, and climatic setting

Wheeler Army Air Field (WAAF) is located in the saddle between the Wai'anae and Ko'olau Volcanoes that form the island of Oahu. The installation has an area of 2,085 acres and is bounded on the north by Schofield Barracks and Wahiawa Reservoir, on the east by Kamehameha Highway, and along the southwest by Waikele Stream. Sites of industrial activity are located along the north edge of the active runway along Santos Dumont Avenue and along Airdrome Road at the southwest side of the installation.

WAAF lies on soil and weathered lava from the Wai'anae and Ko'olau Volcanoes. Typically, 10 ft of clay-rich soil is underlain by 100 ft of saprolite (weathered volcanic rock). WAAF straddles the southern boundary of the Schofield high-level water body. The water table declines from about 275 ft above sea level on the north side of the installation to about 30 ft above sea level on the south side of the installation.

The climate is sub-tropical. Temperatures range predominantly from 60-90° F. Mean annual rainfall across the installation ranges from 60 to 40 inches, with greater rainfall at higher elevations. About 65% of the mean annual rainfall occurs between November and March. Moderate northeast trade winds are typical.

1.1.2.2 Function and organization of installation

Wheeler Army Air Field is headquarters to the 25th Combat Aviation Brigade (CAB) of the 25th Infantry Division (Light). Helicopters, vehicles, equipment, and supplies used by the Brigade are stored and maintained at WAAF. The installation also contains a motor pool used by the Hawaii Air National Guard, and air field and maintenance facilities used by the Hawaii National Guard. National Guard facilities operate under a separate storm water permit (HI S000052). The installation has housing and amenities for approximately 3,224 service members and dependents. Maintenance of installation facilities and infrastructure is handled by the DPW Support Department at Schofield Barracks.

1.1.2.3 Overview of industrial activities

The principle industrial activities at Wheeler Army Air Field are the maintenance and repair of helicopters and other military equipment. This section covers:

- General air field operations.
- Aircraft hangars for maintenance and repair of AVN BDE helicopters.
- Motor pools and tactical maintenance facilities for AVN BDE vehicles and other ground equipment.
- A fuel yard for bulk distribution of aviation fuel.
- A waste water treatment plant.

The NPDES permit requires a list of all industrial activities, as defined in 40 CFR 122.26 (b) (14) and their Standard Industrial Classification (SIC) codes. Industrial activities at Wheeler Army Air Field are shown in Table 2. Some activities may fit into more than one classification. For purposes of this document, each activity is listed under the SIC code that best describes its primary function.

Table 2 Wheeler Army Air Field Industrial Facilities

Standard Industrial Classification	Building Number and Unit	Discussion
4173 Terminal and Service Facilities for Motor Vehicle Passenger Transportation	Bldg. 1100 – 25th AVN Regiment	Establishments primarily engaged in the operation of motor vehicle passenger terminals and of maintenance and service facilities, not operated by companies that also furnish motor vehicle passenger transportation. • Maintenance facilities for motor vehicle passenger transportation
	Bldg. 1109 – 2-6 CAV	
4581 Airports, Flying Fields, and Airport Terminal Services	Bldg. 110 - 3-25 ASB	Establishments primarily engaged in operating and maintaining airports and flying fields; in servicing, repairing (except on a factory basis), maintaining, and storing aircraft.
	Bldg. 111 - 2-6 CAV	

Standard Industrial Classification	Building Number and Unit	Discussion
	Bldg. 114 - 25th CAB Bldg. 139 - Evergreen Medical Bldg. 177 – LSI Reset Bldg. 206 – C Co 3-25 AVN Bldg. 1012 – 3-25 AVN Bldg. 1020 – 2-25 AVN Bldg. 1026 - FEDS	• Aircraft cleaning • Aircraft servicing and repairing, except on a factory basis • Aircraft storage at airports • Airport terminal services • Flying fields, except those maintained by aviation clubs • Hangar operation
4952 Sewerage Systems	Bldg 1578 - Wastewater Treatment Plant	Establishments primarily engaged in the collection and disposal of wastes conducted through a sewer system, including such treatment processes as may be provided. • Sewerage systems
5172 Petroleum and Petroleum Products Wholesalers, Except Bulk Stations and Terminals	DPTMS Hot Fuel Point	Establishments primarily engaged in the wholesale distribution of petroleum and petroleum products, except those with bulk liquid storage facilities. Included are packaged and bottled petroleum products distributors, truck jobbers, and others marketing petroleum and its products at wholesale, but without bulk liquid storage facilities. • Fueling services, aircraft-wholesale

1.1.3 Fort Shafter

This section describes the physical environment of Fort Shafter and provides an overview of land used and industrial activities on the installation.

1.1.3.1 Geographic, geologic, and climatic setting

Fort Shafter is located on the island of Oahu approximately 1 mile north of Keehi Lagoon. The installation has an area of 591 acres. The installation extends from Kamehameha Highway on

the south to upland areas bounded by the Kahauiki Military Reservation and the Honolulu Watershed Forest Reserve. Elevations range from 10 ft to 300 ft above sea level.

The installation is divided by the Moanalua Highway into the Main Post and Shafter Flats. The Main Post is primarily used for administration, housing, and recreation. Shafter Flats principally contains storage, retail, and repair facilities for Army and Army Reserve personnel.

The Main Post is located on the lower parts of a dissected slope of the Ko'olau Volcano between Kalihi Valley and Moanalua Valley. In places, the Main Post is built on Kalihi basalt. This is a thick, massive, and relatively recent lava flow that filled depressions in the Ko'olau slope and was subsequently incised by Kahauiki Stream. Typically, a thin layer of alluvium and soil covers moderately-weathered to unweathered basalt. The water table of the basal lens is in basalt and is typically 20 ft above sea level, with water levels increasing with progressive distance inland.

Shafter Flats is located on artificial fill on top of fine-grained marine and terrigenous coastal deposits and volcanic ejecta from Salt Lake and Aliamanu Craters. At Shafter Flats, the basalt dips below sea level and the water table is in the caprock at about 2 to 5 ft above sea level. The water table intersects Kahauiki and Moanalua Streams. Water levels are tidally influenced in the Shafter Flats area.

The climate is sub-tropical. Temperatures range predominantly from 60-90° F. Mean annual rainfall across the installation ranges from 25 to 35 inches, with greater rainfall at higher elevations. About 60% of the mean annual rainfall occurs between November and March. Moderate northeast trade winds are typical.

1.1.3.2 Function and organization of the installation

Fort Shafter is the headquarters for the U.S. Army, Pacific. U.S. Army, Pacific, commands based at Fort Shafter include the Surgeon, Corps of Engineers Pacific Ocean Division, Oahu Consolidated Family Housing, Inspector General, Public Affairs, Deputy Chief of Staff for Engineering, Deputy Chief of Staff for Operations and Plans, Deputy Chief of Staff for Logistics, 45th Corps Support Group (Forward), and U.S. Army Support Command, Hawaii.

Fort Shafter also houses vehicle storage and maintenance facilities for units of IX MSC, U.S. Army Reserve.

Fort Shafter has housing and amenities for approximately 4,635 service members and dependents. Maintenance of installation facilities and infrastructure is handled by the DPW Support Department at Fort Shafter.

1.1.3.3 Overview of Industrial Activities

The principle industrial activities at Fort Shafter are the repair and maintenance of tactical military vehicles, support facilities for military personnel and dependents, and maintenance and repair of installation facilities. This section covers:

- Motor pools to support vehicles of IX MSC and the 411th Engineering BN
- Directorate of Public Works Support Department repair shops and motor pool
- A golf course maintenance complex
- An auto craft center and salvage yard
- A recyclable material and hazardous waste transfer accumulation point (TAP)

The NPDES permit requires a list of all industrial activities, as defined in 40 CFR 122.26 (b) (14) and their Standard Industrial Classification (SIC) codes. Industrial activities at Fort Shafter are shown in Table 3. Some activities may fit into more than one classification. For purposes of this document, each activity is listed under the SIC code that best describes its primary function.

Table 3 Fort Shafter Industrial Facilities

Standard Industrial Classification	Building Number	Discussion
4173 Terminal and Service Facilities for Motor Vehicle Passenger Transportation	Bldg. T205A – 205th MI BN	Establishments primarily engaged in the operation of motor vehicle passenger terminals and of maintenance and service facilities, not operated by companies that also furnish motor vehicle passenger transportation. • Maintenance facilities for motor vehicle passenger transportation
	Bldg. 405 - HHC USARPAC STB	
	Bldg. 1507 – 8 TSC, 7 EN	
	Bldg. 1575 – IX MSC, 411 EN	
	Bldg. 1585 – IX MSC ECS	
5015 Motor Vehicle Parts, Used	Bldg. 1535 – Auto Craft and Auto Salvage Center	Establishments primarily engaged in the distribution at wholesale or retail of used motor vehicle parts. This industry includes establishments primarily engaged in dismantling motor vehicles for the purpose of selling parts. • Automobile engines, used-wholesale or retail • Automobile parts, used-wholesale or retail • Motor vehicle parts, used-wholesale or retail

Standard Industrial Classification	Building Number	Discussion
5093 Scrap and Waste Materials	Bldg. 424 – Fort Shafter Transfer Accumulation Point (TAP)	Establishments primarily engaged in assembling, breaking up, sorting, and wholesale distribution of scrap and waste materials. This industry includes auto wreckers engaged in dismantling automobiles for scrap. • Automotive wrecking for scrap-wholesale • Bag Bottles, waste-wholesale • Boxes, waste-wholesale • Iron and steel scrap-wholesale • Metal waste and scrap-wholesale • Nonferrous metals scrap-wholesale • Oil, waste-wholesale • Plastics scrap-wholesale • Rubber scrap-wholesale • Scrap and waste materials-wholesale • Wastepaper, including paper recycling-wholesale
8744 Facilities Support Management Services	Bldg. 420 - DPW Compound	Establishments primarily engaged in furnishing personnel to perform a range of services in support of the operations of other establishments or in providing a number of different continuing services, on a contract or fee basis, within another establishment. Included in the industry are establishments primarily engaged in the private operation of jails and adult correctional facilities, whether or not providing both management and supporting staff. • Base maintenance (providing personnel on continuing basis) • Facilities management, except computer • Facilities support services, except computer
5541 Gasoline Service Stations	Bldg. 536 - AAFES Gas Station	Gasoline service stations primarily engaged in selling gasoline and lubricating oils. These establishments frequently sell other merchandise, such as tires, batteries, and other automobile parts, or perform minor repair work. • Automobile service stations-retail • Filling stations, gasoline-retail • Service stations, gasoline-retail

Standard Industrial Classification	Building Number	Discussion
7538 General Automotive Repair Shops	Bldg. 1528 - AAFES Service Center	Establishments primarily engaged in general automotive repair. • Automotive repair shops, general • Diesel engine repair, automotive • Engine repair, truck: except industrial • Garages, general automotive repair and service • Motor repair, automotive
7542 Carwashes	Bldg. 1578 - Fort Shafter Wash Rack	Establishments primarily engaged in washing, waging, and polishing motor vehicles, or in furnishing facilities for the self-service washing of motor vehicles. • Bus washing • Carwashes • Truck washing • Washing and polishing, automotive
7992 Public Golf Courses	Bldg. 725 - Nagosky Golf Course Maintenance Facility	Establishments primarily engaged in the operation of golf courses open to the general public on a contract or fee basis. • Golf club, non-membership • Golf courses, public: operation of

1.1.4 Helemano Military Reservation

This section describes the physical environment of Helemano Military Reservation and provides an overview of land use and industrial activity on the installation.

1.1.4.1 Geographic, geologic, and climatic setting

Helemano Military Reservation occupies 285 acres on the northwest flank of the Ko'olau volcano on the island of Oahu. The Reservation is near the center of the island, about 2.5 miles north of the town of Wahiawa. Helemano Military Reservation is located at an altitude of 1100 feet above sea level and is bounded on the north and south by the gulches of Helemano and North Poamoho Streams.

The Reservation is built on a relatively uneroded lava flow of the Ko'olau volcano. Typically a layer of residual soil covers the moderately weathered lava flow(s) on which the facility is built.

The water table of the Schofield high-level water body is about 275 feet above sea level, or about 800 feet beneath the ground surface.

The climate is sub-tropical. Temperatures range from 60-90 degrees F. Mean annual rainfall at Helemano is 60 inches per year. The rainy season is from November through March when 58% of the mean annual rainfall occurs. Moderate northeast trade winds are typical.

1.1.4.2 Function and organization of the installation

Helemano Military Reservation provides headquarters and operational facilities to the 8th MP Brigade (BDE) of the 25th Infantry Division (Light). The reservation also has housing for active duty Army personnel and dependents.

1.1.4.3 Overview of industrial activities

The only industrial activity at Helemano Military Reservation is a consolidated motor pool operated by 8th MP BDE and British Aerospace Engineers (BAE).

The NPDES permit requires a list of all industrial activities, as defined in 40 CFR 122.26 (b) (14) and their Standard Industrial Classification (SIC) codes. Industrial activities at Helemano Military Reservation are shown in Table 4..

Table 4 Helemano Military Reservation Industrial Facilities

Standard Industrial Classification	Building Number	Discussion
4173 Terminal and Service Facilities for Motor Vehicle Passenger Transportation	Bldg. 410 – Consolidated Motor Pool	Establishments primarily engaged in the operation of motor vehicle passenger terminals and of maintenance and service facilities, not operated by companies that also furnish motor vehicle passenger transportation. • Maintenance facilities for motor vehicle passenger transportation

1.1.5 Aliamanu Military Reservation

This section describes the physical environment of Aliamanu Military Reservation (AMR) and provides an overview of land use activities on the installation.

AMR is located approximately three miles northwest of Fort Shafter, inside Aliamanu Crater, on the island of Oahu. AMR is primarily a military family housing area, with no mission function. There are approximately 2,600 housing units along with supporting facilities such as grocery stores, gas stations, and recreation centers. In addition to the housing community, there are also 154 inactive ammunition bunkers and tunnels along the crater rim, which are currently being investigated for possible contaminants.

The temperature at AMR varies between 23-27° C. Precipitation varies from an average monthly low of less than one cm in June to a high of 11 cm in January. The average yearly rainfall is approximately 60 cm.

A network of storm drain pipes and drainage ditches channel surface runoff into a 30 foot wide swale that meanders through the reservation. The swale drains into an earthen tunnel through the crater walls and into Salt Lake along the southeast boundary of the reservation during wet weather periods.

AMR is located in Aliamanu Crater, a tuff cone erupted onto the coastal plain and lower flanks of the Ko'olau Volcano. The Aliamanu tuffs are underlain by sediments of the Honolulu coastal plain, and at greater depths, by Ko'olau basalt flows, which harbor the Honolulu-Pearl Harbor basal aquifer.

1.1.5.1 Function and organization of the installation

Aliamanu Military Reservation provides housing for active duty Army personnel and dependents. Additional housing is under construction.

1.1.5.2 Overview of industrial activities

There are no industrial activities as defined by 40 CFR 122.26 (b) (14) at Aliamanu Military Reservation. However the AAFES Gas Station is included in this SWPPP.

Table 5 Aliamanu Military Reservation Industrial Facilities

Standard Industrial Classification	Building Number	Discussion
5541 Gasoline Service Stations	Bldg. 880 - AAFES Gas Station	Gasoline service stations primarily engaged in selling gasoline and lubricating oils. These establishments frequently sell other merchandise, such as tires, batteries, and other automobile parts, or perform minor repair work. • Automobile service stations-retail • Filling stations, gasoline-retail

1.1.6 Tripler Army Medical Center

This section describes the physical environment of Tripler Army Medical Center and provides an overview of land use and industrial activities on the installation.

1.1.6.1 Geographic, geologic, and climatic setting

Tripler Army Medical Center (TAMC) occupies an area of 367 acres on the southwestern flank of the Ko'olau volcano, on the island of Oahu. TAMC is about a quarter-mile northeast of Salt Lake, near Honolulu. TAMC extends from Mahamoe and Apona Streets (at an altitude of 200 feet above sea level) up the smooth flank of the mountain to forest land at an altitude of 800 feet above sea level. The area is bounded by Moanalua Gulch on the northwest and an unnamed gulch on the southeast.

TAMC is built on the lower part of a relatively uneroded lava flow(s) of the Ko'olau volcano; bounded on the northwest and southeast by gulches. Typically a thin layer of residual soil covers the moderately weathered lava flow(s) on which the installation is built. The water table of the basal lens (the primary water supply for the island) is about 20 feet above sea level, or more than 100 feet beneath the ground surface.

The climate is sub-tropical. Temperatures range from 60-90 degrees F. Mean annual rainfall at TAMC is 50 inches per year, with lower rainfall at lower elevations and higher rainfall at higher elevations. Sixty percent of the mean annual rainfall occurs between November and March. Moderate northeast trade winds are typical.

1.1.6.2 Function and organization of the installation

TAMC provides medical services to military and civilian personnel assigned to the U.S. Pacific Command. Support activities include warehousing and public works operations. The installation has housing and amenities for approximately 3,879 service members and dependents. Maintenance of installation facilities and infrastructure is handled by the DPW Hospital Support Department and the DPW Support Department at Fort Shafter.

1.1.6.3 Overview of industrial activities

Industrial activities at TAMC are limited to warehousing and support facilities. This section covers:

- Warehouses for medical and hospital equipment and supplies
- A waste transfer point
- A central plant for air conditioning, hot water, and emergency power

The NPDES permit requires a list of all industrial activities, as defined in 40 CFR 122.26 (b) (14) and their Standard Industrial Classification (SIC) codes. Industrial activities at Tripler Army Medical Center are shown in Table 6. Some activities may fit into more than one classification. For purposes of this document, each activity is listed under the SIC code that best describes its primary function.

Table 6 Tripler Army Medical Center Industrial Facilities

Standard Industrial Classification	Building Number	Discussion
4225 General Warehousing and Storage	Bldg. 161 – Warehouse	Establishments primarily engaged in the warehousing and storage of a general line of goods. • General warehousing and storage • Miniwarehouse warehousing • Warehousing, self-storage
4961 Steam and Air-Conditioning Supply	Bldg. 137 - TAMC Heating / Cooling Plant	Establishments engaged in the production and/or distribution of steam and heated or cooled air for sale. • Air-conditioning supply services • Cooled air suppliers • Distribution of cooled air • Steam heating systems (suppliers of heat) • Steam supply systems, including geothermal
5093 Scrap and Waste Materials	Bldg. 143 - Tripler Transfer Accumulation Point (TAP) and Supply Point	Establishments primarily engaged in assembling, breaking up, sorting, and wholesale distribution of scrap and waste materials. This industry includes auto wreckers engaged in dismantling automobiles for scrap. • Bag Bottles, waste-wholesale • Boxes, waste-wholesale • Iron and steel scrap-wholesale • Metal waste and scrap-wholesale • Nonferrous metals scrap-wholesale • Oil, waste-wholesale • Plastics scrap-wholesale • Rubber scrap-wholesale • Scrap and waste materials-wholesale • Wastepaper, including paper recycling-wholesale

2 Storm Water Pollution Prevention Team

The Clean Water Act Program Manager, ED, DPW, is responsible for developing, implementing, and revising the SWPPP. The Clean Water Act Program Manager will administer Permit requirements over all facilities covered by the Permit. This person has the responsibility of assuring timely implementation of all measures of this SWPCP. Reassignment of responsibilities may be required to assure completion of assigned tasks.

The Clean Water Act Program Manager, ED, DPW, will form a committee to perform this service during the life of the Permit. The committee is referred to as the Storm Water Pollution Prevention Team (SWPPT). Most duties required for the SWPPT are covered by other existing environmental plans, such as the Installation Spill Contingency Plan (ISCP) and the Spill Prevention Control and Countermeasure Plan within with ISCP. The SWPPT shall have the following responsibilities:

- Manage the implementation and modification of the SWPPP.
- Assist the Environmental Compliance Officers (ECO) assigned to individual units and facilities with the implementation of the BMPs recommended in the SWPPP.
- Review and recommend appropriate changes to the SWPPP.
- Assist with necessary personnel training and develop additional training programs as needed to assist in the implementation of the SWPPP.
- Provide management support for implementation of a storm water pollution prevention philosophy.
- Maintain a record-keeping system to store all pertinent documents and a reporting system to monitor all action items reported from inspection processes.

Other people may serve on the SWPPT as deemed appropriate. Additional personnel may also provide intermittent services to the SWPPT. Any SWPPT meetings will be documented, with meeting minutes maintained in the SWPPP record files.

3 Description of Potential Pollutant Sources

This SWPPP describes activities, materials, and physical features at industrial activities on Schofield Barracks, Wheeler Army Air Field, Fort Shafter, Helemanu Military Reservation, Aliamanu Military Reservation and Tripler Army Medical Center. An inventory of significant materials and list of potential pollutant sources for each respective location's industrial activities are described in Appendices A-F.

3.1 Inventory of Significant Materials

An inventory of significant materials that are or may be exposed to storm water is included for each industrial activity identified in Appendices A-F. Each inventory includes a description of existing storm water management controls and a storm water exposure determination. The tables will be updated as necessary to record any changes in material inventories.

3.2 Summary of Potential Pollutant Sources

A list of potential pollutant sources is provided for each industrial activity identified in Appendices A-F. A brief assessment of the storm water pollution risk associated with each source, based on the probability and potential severity of a release or spill, is also included. Additionally, visual observations and pollutants of concern are addressed for all potential

sources. The description of potential pollutant sources will be updated as necessary to reflect any changes that occur.

3.3 Significant Spills and Leaks

No significant spills or leaks occurred during the 12 months prior to April 2008 at any of the industrial activities identified in this SWPPP. Significant spills include, but are not limited to, releases of oil or hazardous substances in excess of reportable quantities.

A complete list of spills since 1995 is included in appendix I. The spill database is updated annually or as needed.

4 Storm Water Controls

BMPs are defined as physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution from entering storm water discharges. BMPs may include processes, procedures, activities, prohibitions on practices, and other management practices.

Best Management Practices can be broken down into two major categories:

- **Non-Structural BMPs**. These *source reduction* BMPs generally consist of processes, prohibitions, procedures, and scheduled activities. These are relatively low technology, cost-effective measures that should be considered before additional structural BMPs (see below) are implemented. Non-structural BMPs include good housekeeping (to maintain a clean and orderly facility); preventative maintenance; spill response (cleanup procedures and equipment); material handling and storage (to minimize exposure of pollutant sources to storm water); employee training; waste handling and recycling; record keeping and internal reporting; erosion control and site stabilization; and facility inspections.

- **Structural BMPs**. These *source control* BMPs are designed to reduce and eliminate pollutant discharges. Structural BMPs generally consist of structures that reduce or prevent pollutants and are required or recommended where non-structural BMPs are not effective. Structural BMPs include overhead coverage; control devices (berms or trenches that channel runoff and run-on away from pollutant sources); secondary containment structures; and storm water treatment (such as oil/water separators and infiltration basins).

This plan identifies 32 BMPs that can be implemented to control storm water pollution. A complete listing and detailed description of each BMP is available in Appendix G. Additional BMPs may be identified at sites with unique requirements such as courses.

4.1 Existing Best Management Practices (BMPs)

Included within each site specific SWPPP found in Appendices A-F is a list of the BMPs that are currently being applied. These identified BMPs will continue to be implemented by USAG-Hawaii personnel.

4.2 Proposed Best Management Practices

Each site specific SWPPP identifies new BMP that can be implemented to further reduce the impact of industrial activities on storm water. Recommendations are based on BMP currently employed at the facility and an evaluation of potential storm water pollution exposure routes and pathways. Proposed BMPs are taken from the same master list of 32 found in Appendix G. A majority of the proposed BMPs can be implemented by activity personnel at no cost.

4.3 Installation Wide Best Management Practices

Effectively implementing BMPs is a key element of a successful storm water management program. The following BMPs are applicable to all industrial activities within USAG-Hawaii:

- Inside and outside areas are kept neat and clean, with no excess rubbish or debris in the work areas (BMP01).
- Warning signs for hazardous and flammable materials are appropriately placed (BMP01).
- Labels are properly and clearly placed on drums and other containers (BMP01).
- Trash bins are kept closed when not in use (BMP01).
- Maintenance records of vehicles and equipment are kept by facility personnel (BMP02).
- Facilities should have security to prevent unauthorized use of equipment and material (BMP03)
- Vehicles should be parked on an impermeable surface i.e. concrete or asphalt (BMP06)
- Stencil / label storm drains with the statement, “Dump No Waste, Flows to Ocean.” (BMP13)
- Secondary containment is used for all drums of waste POL and other hazardous materials (BMP17).
- Individual industrial units and complexes should distribute relevant sections of this plan to all personnel involved with industrial activities (BMP27).
- Minor spills are cleaned by the organization that caused the spill or the organization with operational control where the spill occurred (BMP28).
- Major spills and other environmental problems are reported by facility personnel to the Installation Spill Response Team (BMP28).
- A petroleum, oil and lubricants (POL) and hazardous-material inventory is kept by facility personnel (BMP29).

5 Employee Training

Employee training is essential to the implementation of the SWPPP. Training is needed to educate facility personnel in understanding the components and goals of the SWPPP. When properly trained, facility personnel can recognize situations that could lead to storm water contamination and respond safely and effectively to an accident. A regular employee-training

program ensures that all individuals understand the rationale for environmental regulations and procedures required for compliance.

Every industrial facility within USAG-Hawaii is required to appoint an Environmental Compliance Officer (ECO). ECOs attend 24 hours of training to familiarize them with their duties and responsibilities. ECO training includes the following subjects:

- Hazardous material and waste storage
- Used oil management
- Oil-water separator maintenance and usage guidelines
- Good housekeeping
- Facility inspections
- Spill prevention and response
- Solid waste disposal
- Storm water pollution prevention

Once trained, the ECOs are responsible for monthly inspections to insure compliance with BMP identified herein. ECOs are also expected to provide environmental training and guidance to the personnel in their unit.

6 Spill Prevention and Response Procedures

Spills and leaks are one of the largest industrial sources of storm water pollutants. The Spill Prevention Control and Countermeasures Plan (SPCCP) identifies locations and activities where the potential exists for harmful discharges to the environment of hazardous substances, establishes a general and facility specific spill prevention program, and outlines spill response procedures for personnel in indentified facilities.

In addition to implementing the BMPs identified in this SWPPP, facility personnel should also be familiar with facility specific requirement identified in the SPCCP. These two documents complement each other and, recommend many of the same preventive measures for protecting the environment.

7 Comprehensive Site Inspections

Site inspections and visual observations are simple, cost-effective methods for evaluating the status and performance of BMPs. Anticipation and detection of potential problems before they occur is a key element of successful pollution prevention programs. Environmental Compliance Officers for each unit are required to perform monthly inspections of their industrial activities. Inspections include confirming that BMPs are effectively implemented. The inspection checklist is included in Appendix H.

Personnel from USAG-Hawaii DPW Environmental Division Compliance Branch conduct comprehensive quarterly inspections of each industrial activity.

8 Conclusions

This SWPPP fulfills the requirements of National Pollution Discharge Elimination System (NPDES) permit HI S000090 to develop a Storm Water Pollution Control Plan. This SWPPP documents a storm water assessment of USAG-Hawaii facilities that was conducted in February and March of 2008. This SWPPP identifies the sources of storm water pollution, and determines BMPs to reduce or eliminate storm water pollution from those sources.

- **Sources of storm water pollution.** Sources of storm water pollution were identified by reviewing previous SWPPPs, and through the list facilities inspected by DPW Environmental Division Compliance Branch. Facilities included those that are considered by the EPA to present sources of storm water pollution, along with several additional sources not specifically identified as industrial activities, but that are generally considered storm water pollution sources. A total of 66 USAG-Hawaii facilities were identified as potential sources of storm water pollution.

- **BMPs to control storm water pollution from these sources.** Based on the assessments, facility-specific BMPs were identified for each industrial activity. Current and recommended BMPs, for each facility are included in this SWPPP as Appendices A-F. The complete BMP list is presented in Appendix G.

- **Monitoring effectiveness of BMPs in reducing storm water pollution**. A key element of a successful storm water pollution prevention program is periodic inspection and monitoring to ensure the BMPs are properly implemented. Section 7 of this SWPPP outlines inspection requirements.

Appendix A. Schofield Barracks Industrial Facility Site Specific Storm Water Pollution Prevention Plans

Appendix B. Wheeler Army Air Field Industrial Activity Site Specific Storm Water Pollution Prevention Plans

Appendix C. Fort Shafter Industrial Activity Site Specific Storm Water Pollution Prevention Plans

Appendix D. Helemano Military Reservation Industrial Activity Site Specific Storm Water Pollution Prevention Plan

Appendix E. Aliamanu Military Reservation Industrial Activity Site Specific Storm Water Pollution Prevention Plan

Appendix F. Tripler Army Medical Center Industrial Activity Site Specific Storm Water Pollution Prevention Plans

Appendix G. USAG-Hawaii Best Management Practices

BMP Number	Title	Description
BMP01	Complex Clean and in Good Repair	Inside and outside areas of industrial facilities should be kept neat and clean. This includes a regular sweeping program, proper signs displayed, and having parts, material, and equipment neatly and properly stored in areas that are clean, well-marked, and with safe access. Labels should be properly and clearly placed on drums and other containers. First-aid kits should be easily accessible in all maintenance areas, with warning signs for hazardous and flammable materials. Trash bins should be closed when not in use and there should be no excess rubbish or debris in the work areas. Complex buildings, paving, and outdoor sites such as wash racks, fueling stations, and storage sheds should be maintained in good operational condition with regular cleaning to prevent the accumulation of trash, scrap material, and debris. Neat work areas reduce pollution by reducing spills, improving work habits and reducing sloppy material handling, and reducing storm water exposure to potential contaminants. A weekly inspection by the Environmental Compliance Officer (ECO) should verify that the complex is clean and that good housekeeping practices are in effect.
BMP02	Equipment Clean	Equipment and vehicles should be kept clean and in good operational condition. Regular cleaning maintains a neat appearance and is needed to inspect for leaks and drips. Maintenance records of vehicles and equipment should be kept up to date by facility personnel. Vehicles and equipment that are not operational or in need of repair should be labeled with the work needed to fix the problem and the expected date of completion. A weekly inspection by the ECO should be conducted to verify that equipment is clean and that good housekeeping practices are in effect.
BMP03	Security	Facilities should have proper security features to prevent unauthorized access and use of equipment and material. Security features include fences with locked gates, industrial chemicals stored in secured areas, and locks on fuel pumps when not in use. A weekly inspection by the ECO should be conducted to verify that security measures prevent unauthorized access and use of equipment and material.

BMP Number	Title	Description
BMP04	Dry Sweep Kept on Site	Dry sweep, along with brooms and receptacles, should be placed in clearly marked locations at the complex. Areas where POL or other liquids are stored or disbursed should have appropriate spill-response materials nearby. Areas handling large amounts of fuel should have spill-containment materials such as absorbent pads and booms in well-marked and easily-accessible locations. Areas used to store caustic chemicals should have appropriate neutralizing compounds and containment materials. For example, shops handling battery acid should have sufficient amounts of sodium bicarbonate (baking soda) to neutralize spilled acid. A weekly inspection by the ECO should verify that dry sweep and other appropriate clean-up materials are present
BMP05	Materials on Pallets	Materials such as parts, supplies, and scrap metal and wood should be stored on pallets if kept outside to minimize exposure to storm water runoff. The pallets should be neatly stored and placed in areas that will not contribute to vehicle accidents or constitute a tripping hazard. The pallets should be in good repair so that the materials can be moved by forklift. A weekly inspection by the ECO should be conducted to insure that outdoor materials are properly stored and good housekeeping practices are in effect.
BMP06	Vehicle Parking	Vehicles should be parked on an impermeable surface. This will prevent spills and drips from infiltrating into the ground and facilitate the clean-up of spills. Parking on a paved surface also helps keep vehicles clean and reduces vehicle maintenance caused by the accumulation of dirt on the chassis, brakes, suspension, and other vehicular components. A weekly inspection by the ECO should be conducted to insure that vehicles are parked in appropriate locations.
BMP07	Oil Pans Used on Vehicles	Drip pans should be placed below engines and other potential areas of leakage on vehicles and equipment that are parked or stored outside and exposed to storm water. Water in drip pans should be visually inspected for oil or other contaminants. Dirty pans should either be cleaned with a rag or drained into a system connected to an oil-water separator if necessary. A weekly inspection by the ECO should be conducted to ensure that drip pans are being used and kept clean. Drip pans should also be inspected after heavy rains.

BMP Number	Title	Description
BMP08	Storm Drains Cleaned Regularly	Regular and proper cleaning of storm drains and other storm water conveyance features is needed to insure efficient discharge of storm water. Drains should be inspected monthly by the ECO to see if sediment is clogging the storm water system. The inspection should also check for possible contaminants in the storm water system such as oil stains on sediment, an odor of fuel or other chemicals coming from the storm water system, or a discoloration of water or oily sheen on water within the storm water system.
BMP09	Storm Water only to Storm System	Storm water outside of contained process areas such as wash racks, maintenance platforms, and fueling areas should not flow to oil-water separators or enter the sanitary sewer system. Storm water discharges to the sanitary-sewer system have the potential to exceed the designed capacity of the system and can cause back-ups and by-passes that result in the release of untreated or incompletely treated effluent. Monthly visual inspections by the ECO should verify that, as far as can be determined and except for designated areas, storm water will only flow to the storm water system and not enter the sanitary-sewer system.
BMP10	Oil-Water Separators Treat Industrial Wastewater	Oil-water separators should be constructed to intercept and treat water that may be contaminated by POL and other contaminants from industrial practices. Typical uses are in wash racks, outdoor maintenance areas, fueling and fuel-vehicle parking areas, and drainage from areas with containment curbs. The oil-water separator should have a capacity to handle the amount of water generated during operational use plus storm water that falls on the operational area. The oil-water separator should also have a capacity sufficient to handle the sediment and oil present in the industrial wastewater. An initial evaluation by Directorate of Public Works (DPW) and the ECO should verify that the design of the oil-water separator is appropriate for the operation of the complex. Following the evaluation, a weekly inspection by the ECO should verify that activities carried out in areas serviced by oil-water separators have not changed to exceed the capacity of the treatment system.

BMP Number	Title	Description
BMP11	Industrial Wastewater Discharges To Sanitary Sewer	Discharge of non-storm water to storm water conveyance features is prohibited. Water leaving industrial drains such as an oil-water separator may have residual or dissolved contaminants, and should be discharged to a sanitary sewer system for treatment at a waste-water treatment plant. Swales, inlets, and grated manholes in the storm water system in and adjacent to the complex should be inspected monthly by the ECO during a period of dry weather. The inspection should visually check for non-storm water discharges from the complex into the storm water system. If water is observed entering into or flowing through the storm water system during a period of dry weather, the ECO should attempt to locate the source of the input and notify the SWPCT at DPW.
BMP12	Seal Critical Drains	Drains that convey water and pollutants from areas subject to contamination to the storm water system should be permanently sealed. Alternatively, drains could be connected to a treatment system such as an oil-water separator or a containment basin. Monthly inspections by the ECO should verify that drains in industrial process areas do not discharge to the storm water system. Drains that convey industrial wastewater to the storm water system should be referred to the SWPCT at DPW for evaluation and sealing.
BMP13	Stencil Storm Drains	Inlets to the storm water system should have signs stenciled or posted nearby stating that the storm water inlets lead to the ocean, and that trash and contaminants introduced to the storm water system contribute to pollution. This could reduce the inadvertent introduction of storm water contaminants by individuals who are either careless or are not following established procedures. Clearly labeled inlets to the storm water system provide a relatively inexpensive way to increase public awareness of possible avenues of contamination and non-point source pollution. Overall environmental awareness can also be increased by having the labeling done by individual units or community groups. Weekly inspections by the ECO should verify that the labels to the storm water inlets are clearly visible

BMP Number	Title	Description
BMP14	Oil-Water Separator Serviced Regularly	Proper and regular maintenance of oil-water separators is essential for correct operation and pollution control. Regular maintenance includes associated settling basins, storm water splitter boxes, and grit chambers. The ECO shall verify that oil-water separators and other facilities to treat industrial wastewater are cleaned and inspected according to maintenance contracts administered by DPW. Where appropriate, weekly inspections by the ECO shall verify proper operation of industrial-wastewater treatment facilities. If necessary, the ECO shall contact DPW to arrange for cleaning or repair of industrial wastewater treatment facilities.
BMP15	Clean Trench Drains	Trench drains, settling basins, storm water splitter boxes, grit chambers, catch basins and associated drains are needed to properly convey industrial wastewater to treatment facilities. Where appropriate, weekly inspections by the ECO shall check for debris in trench and floor drains, verify that pipes are not blocked, and note the amount of sediment in grit chambers and settling basins. If necessary, the ECO shall contact DPW to arrange for cleaning or repair of industrial wastewater treatment facilities.
BMP16	POL and Other Significant Liquid Materials are not Exposed to Storm Water	POL supplies and other significant liquids such as solvents, paints, and pesticides must be stored in a facility that prevents exposure to rain and surface runoff. Significant liquids stored in exposed areas or unenclosed facilities can contaminate rain or storm water run-off and contribute to storm water pollution. Weekly inspections by the ECO shall verify that POL and other significant liquid materials are not stored in areas or containers exposed to storm water.
BMP17	Waste POL and Other Significant Materials Stored with Containment	Waste and used POL should be stored in an area with secondary containment curbs or sumps to prevent spills from leaving the site. Other liquid wastes, such as solvents, paints, and pesticides, also should be stored in a contained area. The curbs should have a containment capacity greater than the volume of waste and used materials stored inside the structure. Weekly inspections by the ECO shall verify that the containment features are in good condition and that the volume of liquids stored in the area is less than the volume of the containment features.

BMP Number	Title	Description
BMP18	Drums Contained	Drums with a capacity of 15 gallons or greater should be stored inside areas having permanent containment features to prevent contamination of storm water and soil in event of a spill. Containment features include curbs, trench drains, sumps, and false floors. Drums may also be stored inside movable over pack containers or on containment pallets. Empty drums do not need to be stored in contained areas. Weekly inspections by the ECO shall verify that all drums with liquid contents are stored with proper containment.
BMP19	Trench Drains Intercept Spills	Trench drains should be positioned to intercept or control spills in industrial work areas where significant liquids are used. The drains should prevent materials from leaving the work areas or coming into contact with storm water. Containment curbs or central floor drains may be used in place of trench drains if they are properly positioned and constructed. Structures to intercept spills are not needed if only small quantities of liquids are in use, and spills can be managed with spill-response materials on site. Weekly inspections by the ECO shall verify that work involving the handling, disbursement, or transfer of significant liquids is done only in areas with containment features or that material spills in areas without containment features can be quickly controlled with spill-response equipment on site.
BMP20	Centralize Solvents	Chlorinated liquid solvents for cleaning parts and washing tools should be used only in designated and centralized locations. Solvents should be used in contained areas or enclosed and secured parts-cleaning stations. Solvents should also be used only when necessary. Where practical, biodegradable solvents and cleaners should be used in place of chlorinated solvents. Weekly inspections by the ECO will verify that chlorinated solvents are not used outside of contained stations. The ECO shall also promote the use of biodegradable cleaners where practical.
BMP21	Fuel Containment	Areas used for fuel transfer should have containment curbs or drains leading to oil-water separators to prevent spilled materials from leaving the site and reaching the storm water system or infiltrating the ground and contaminating groundwater. Alternatively, spill-response materials may be placed at readily accessible locations in fueling areas so that spills can be immediately cleaned. Weekly inspections by the ECO will verify that fuel transfer is done only in locations equipped with containment features or having spill-response materials readily accessible.

BMP Number	Title	Description
BMP22	Fuel Trucks and Trailers Inspected	Fuel-hauling trucks and portable fuel tanks should be inspected at least weekly by the ECO to insure proper function and to check for leaks. The inspection should also verify that valves, hoses, and other equipment used in fuel transfer are in good condition and do not leak. Faulty equipment should be repaired or replaced.
BMP23	Fuel Trucks Empty or Contained	Fuel-hauling trucks and portable POL tanks should be stored empty or in areas with containment curbs or trench drains to intercept spills. Leaks and spills from fuel-hauling trucks and portable tanks can release large amounts of contamination and pollute storm water. Weekly inspection by the ECO shall verify that fuel-hauling trucks and portable tanks are either stored empty or in areas with spill-containment feature
BMP24	Graded Land Surface	Land surfaces should be graded to convey storm water away from sites of industrial activity and toward storm water conveyance features. Pollution of storm water is reduced by preventing storm water runoff from flowing over areas where industrial activities are carried out. Properly graded land surfaces can reduce the exposure of storm water to industrial process area and thereby reduce contamination. The ECO shall observe storm water runoff patterns during periods of heavy rainfall and report areas with poor grading to the SWPCT at DPW.
BMP25	Buffer Zones Vegetated	Buffer zones around sites of industrial activity should be vegetated or similarly covered to retard erosion, trap sediment, and lessen the impact of storm water run-off. Excessive sediment in storm water degrades water quality and represents a major component of non-point source pollution. The ECO shall inspect the perimeter of the complex or sites of industrial activity monthly. Recommendations to retard erosion, trap sediment, and lessen the impact of storm water run-off shall be reported to the SWPCT at DPW.
BMP26	Swales, Storm Drains, and Culverts	Storm water-drainage features should be designed to efficiently convey storm water away from industrial facilities. Pollution of storm water is reduced by preventing storm water runoff from ponding in areas where industrial activities are carried out. Properly constructed and maintained drainage features can reduce the exposure of storm water to industrial process area and thereby reduce contamination. The ECO shall observe storm water runoff patterns during periods of heavy rainfall and report any drainage problems to the SWPCT at DPW. Regular inspections, cleaning, and maintenance may be needed to insure proper function of the storm water system

BMP Number	Title	Description
BMP27	Employee Training	A regular employee training program is necessary so that all individuals understand the rationale for environmental regulations and procedures required for compliance. The training program for ECO should be modified to include a section on the environmental effects and regulatory requirements associated with the discharge of storm water from areas of industrial activity. The SWPCT at DPW shall be responsible for developing course materials as part of the ECO training. The material should include basic hydrologic principals, cover the types and sources of non-point source pollution, and describe the BMP included in this report. Once trained, the ECO shall be responsible for weekly and monthly inspections to insure compliance with the BMP identified herein. The ECO shall report problems to the SWPCT at DPW. The ECO shall distribute relevant sections of this plan to all personnel involved with industrial activities. The ECO shall also be encouraged to promote environmental awareness and regulations within sites of industrial activity
BMP28	Spills Cleaned	The ECO shall be familiar with the Oil and Hazardous Substance Spill Prevention and Response Plan. Minor spills are cleaned by the organization that caused the spill or the organization with operational control where the spill occurred. Major spills and other environmental problems should be reported by the ECO to the Installation Spill Response Team and the SWPCT, DPW. Records of major spills are maintained by ED, DPW.
BMP29	Materials Inventory	An inventory of POL, hazardous-materials, and other significant liquids that could contribute to storm water pollution should be kept by the ECO or other designated personnel at the facility. This inventory should note the type of material, the quantity on site, and storage location. The inventory should be updated monthly.
BMP30	Inspections	The ECO should conduct weekly inspections to verify compliance with this SWPPP and report any problems. A sample form that can be used for inspections is presented in Appendix A following the description of individual BMP. Inspection records should be sent to the SWPCT at DPW and maintained for one year. The ED, DPW should inspect each site of industrial activity at least quarterly for proper storage and handling of hazardous materials and waste.

BMP Number	Title	Description
BMP31	Material Covered	Mechanical equipment, chemical storage containers, wrecked or salvaged vehicles, parts, scrap metals, batteries, and other items that have been in contact with oil or chemicals shall be stored under cover. Bulk storage of chemicals, soils, and other materials shall be limited to areas that are curbed or have other runoff control. Material piles shall be under cover of permanent structures or secured tarps.
BMP32	Indoor Maintenance	Whenever practical, equipment maintenance shall be performed indoors or in an area that is isolated from the rain and has adequate facilities for the containment of spills.

Appendix H. Environmental Compliance Officer Inspection Checklist

Appendix I. Summary of All Spills 1995-Present

Appendix J. USAG-Hawaii NPDES Permit

Appendix K. Excerpt From 40 CFR 122.26(14)(b) Definition of Industrial Activity

(14) *Storm water discharge associated with industrial activity* means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under this part 122. For the categories of industries identified in this section, 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 (as defined at part 401 of this chapter); 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 final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs (b)(14)(i) through (xi) of this section) include those facilities designated under the provisions of paragraph (a)(1)(v) of this section. The following categories of facilities are considered to be engaging in “industrial activity” for purposes of paragraph (b)(14):

(i) 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 which are exempted under category (xi) in paragraph (b)(14) of this section);

(ii) Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 31l, 32 (except 323), 33, 344l, 373;

(iii) Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(1) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990) 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, byproducts or waste products located on the

site of such operations; (inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator; inactive mining sites do not include sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials, nor sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim);

(iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA;

(v) Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under subtitle D of RCRA;

(vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

(vii) Steam electric power generating facilities, including coal handling sites;

(viii) Transportation facilities classified as Standard Industrial Classifications 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 that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (b)(14) (i)–(vii) or (ix)–(xi) of this section are associated with industrial activity;

(ix) 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 1.0 mgd 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;

(xi) Facilities under Standard Industrial Classifications 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;

Appendix L. Installation Storm Water Maps with Outfall Locations