



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

October 27, 2006

In Reply Refer To: WTR-7

Ron Lanier, Environmental Flight Chief
15 CES/CEV
75 H Street, Bldg 1203
Hickam AFB, HI 96853-5233

Re: April 11, 2006 Clean Water Act Inspection

Dear Mr. Lanier:

Enclosed is the October 27, 2006 report for our April 11 inspection of the domestic sewer service area industrial wastewater sources at Hickam Air Force Base. Please submit a short response to the findings in Sections 3 through 5 of this report to EPA and Hawaii DOH, by **December 30, 2006**. The main findings are summarized below:

1 Hickam and NAVFAC operate a very effective and thorough sewer use permit program for Hickam wastewater sources. So far, Hickam has imposed some source control practices to limit inadvertent, incompatible, or uncontrolled releases. Hickam can further lessen risks through consolidation of the oil/water separators and sewer entry points, and instituting "dry floor" practices base-wide. In particular, the number of entry points poses a risk because many of the industrial activities at these sources operate sporadically without permanent operating staff, and under infrequent oversight.

2 The sewer use permit program for non-domestic wastewaters is highly effective. All program inspectors, environmental staff, and shop operators were fully knowledgeable.

3 The Fort Kam NPDES permit properly applies Federal standards to qualifying internal sources. No Hickam sources currently qualify, however, many would if the expected new operations incorporate certain processes such as alodining, or if Hickam and Pearl Harbor are realigned to be one facility with a unified command structure and function.

We appreciate the helpfulness of the staff from each of the commands extended to us during this inspection. We remain available to the Navy, the Air Force, and the State of Hawaii to assist in any way. Please do not hesitate to call me at (415) 972-3572, or Greg V. Arthur of my staff at (415) 972-3504, or e-mail arthur.greg@epa.gov.

Sincerely,

*Original signed by:
Greg V. Arthur*

Greg V. Arthur
CWA Compliance Office

cc: Mike Tsuji, Hawaii DOH



U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION

REPORT No. 2

NPDES Permittee: United States Navy - Navy Region Hawaii
for the Fort Kamehameha Wastewater Treatment Facility Outfall
(NPDES Permit HI 0110086)

Facility No.1: Pearl Harbor Naval Complex

- Naval Facilities Engineering Command Hawaii
- Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility
- Naval Station Pearl Harbor
- Fleet and Industrial Supply Center Pearl Harbor

Facility No.2 **Hickam Air Force Base**

- United States Air Force 15th Airlift Wing
- Hawaii Air National Guard
- Logistics Readiness Squadron
- Aerospace Ground Support

Inspected Facilities

Service Area Sources:

- HiANG Bldg 11222 - Engine Test Cell Facility
- HiANG Bldg 11672 - Alternate Stand-by Wash Rack
- HiANG Bldg 3400 - Maintenance Hanger
- HiANG Bldg 3407 - Indoor Wash Rack
- HiANG Bldg 3386 - Armament Support Shop
- HiANG Bldg 3424 - Ground Support Wash Rack
- 15th Airlift Wing Bldg 2025 - Outdoor Wash Rack
- 15th Airlift Wing Bldg 2030 - Maintenance Hanger
- 15th Airlift Wing Bldg 2125 - Fuel Control Center

Dates of Inspection: Apr 11, 2006 - Hickam Air Force Base Service Area Sources
Apr 13, 2006 - Close-out Interview



Inspection Participants:

US EPA: Greg V. Arthur, CWA Compliance Office, (415) 972-3504

Hawaii DOH: None

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SGT Nefi Martinez, HiANG Bldg 11672 NDI Tech, (808) 448-7222
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Frank Webb, Bldg 2030 Production Suprintendent, (808) 449-6708
Gary Suan, Bldg 2030 AGE Flight Chief, (808) 448-2212
Ernest Brooks, Bldg 2125 Fuels Op Supervisor, (808) 449-2707
Edward Tote, Bldg 2125 Fuel Control Supr, (808) 449-2509
MSGT Baldwin Ojeiro, Bldg 3386 Armament NCC, (808) 448-7762
TSGT Charles Kaga, Bldg 3424 Mechanic, (808) 448-7726

Report Prepared By: Greg V. Arthur, Environmental Engineer, USEPA Region 9

October 27, 2006



Table of Contents

1.0	Scope and Purpose	page 4
1.1	Background	4
1.2	Description of the Facilities	5
1.3	Pearl Harbor Naval Complex and Fort Kam WWTF	5
1.4	Hickam Air Force Base	6
1.5	Pearl Harbor Naval Shipyard Dry Docks	6
1.6	Facility SIC Code	6
2.0	Hickam Air Force Base Wastewater Sources	page 7
	Delivery, Handling, Treatment, Discharge, and Disposal	7
2.1	COMNAVREG Hawaii Instructions	7
2.2	Hickam Air Force Base Non-Domestic Wastewater Sources	7
2.3	Process Descriptions of Industrial Wastewater Sources	9
2.4	Photo Documentation	11
3.0	NPDES Permit Requirements	page 12
	Summary, Requirements and Recommendations	12
3.1	Industrial Wastewater Sewer Discharge Permit System Program	12
3.2	Classification of Industrial Wastewaters by Fed Point Source Category	13
3.3	Federal Categorical Standards	13
3.4	Non-Categorical Industrial Wastewater Sources	14
3.5	Point(s) of Compliance	15
4.0	Industrial Wastewater Permit System Program Requirements	page 16
	Summary, Requirements and Recommendations	16
4.1	Inventory of Industrial Wastewater Sources	17
4.2	Controlled Entry Points into the Fort Kam sewers	17
4.3	Permit System Implementation	17
4.4	Annual Reporting	18
5.0	Compliance with Standards at Internal Outfalls	page 19
	Summary, Requirements and Recommendations	19
5.1	Fort Kam Wastewater Treatment Facility Performance	20
5.2	Oily Wastewater Handling	20
5.3	Other Pollutants of Concern	21
5.4	Determination of Compliance	22
5.5	Dilution and Bypassing Prohibitions	22
5.6	Compliance with NPDES Permit Monitoring Requirements	22
Appendices		page 23
1	Schematic Overview of Wastewater Handling	
2	Hickam AFB Schematic of Wastewater Collection and Treatment	



1.0 Scope and Purpose

On April 10-13, 2006, EPA conducted an NPDES compliance evaluation inspection of the Pearl Harbor military installations. The purpose of this inspection was to ensure compliance with the NPDES permits and the Federal regulations covering the discharge of domestic and non-domestic wastewaters into waters of the United States from the Fort Kamehameha wastewater treatment facility (Fort Kam), and the Pearl Harbor Naval Shipyard (PHNSY) dry docks, as well as the non-domestic discharges from service area sources into the Fort Kam sewer system, and sludge disposal from Fort Kam.

This is the second of three reports. This report covers the findings pertaining to the Fort Kam sewer service area sources within Hickam Air Force Base (Hickam).

The overall NPDES compliance evaluation inspection of the Pearl Harbor military installations consisted of the following:

- The on-site inspection of the Fort Kam wastewater treatment facility;
- On-site inspections of the 15 industrial activities qualifying as Federal categorical sources and specifically regulated by the Fort Kam NPDES permit at internal outfalls;
- On-site inspections of the PHNSY dry docks and 15 other selected industrial activities;
- Close-out briefings with staff from Navy Region Hawaii, NAVFAC Hawaii, PHNSY, and Hickam AFB;
- Review of Navy Region Hawaii instructions 11345.5 and 11345.2C for the industrial wastewater sewer discharge permit system program and the applicable limits;
- Review of 2004-2005 influent, effluent and sludge data for Fort Kam;
- Review of 2004-2005 effluent data for the PHNSY dry docks;
- Review of 2004-2005 effluent data for the permitted internal outfalls;
- Review of the 2004 and 2005 Navy Region annual reports on industrial wastewaters.

The inspection participants related to the sewer service area sources within Hickam Air Force are listed on the title page. Arthur conducted the inspections of Hickam Air Force Base on April 11 and the final close-out briefing on April 13.

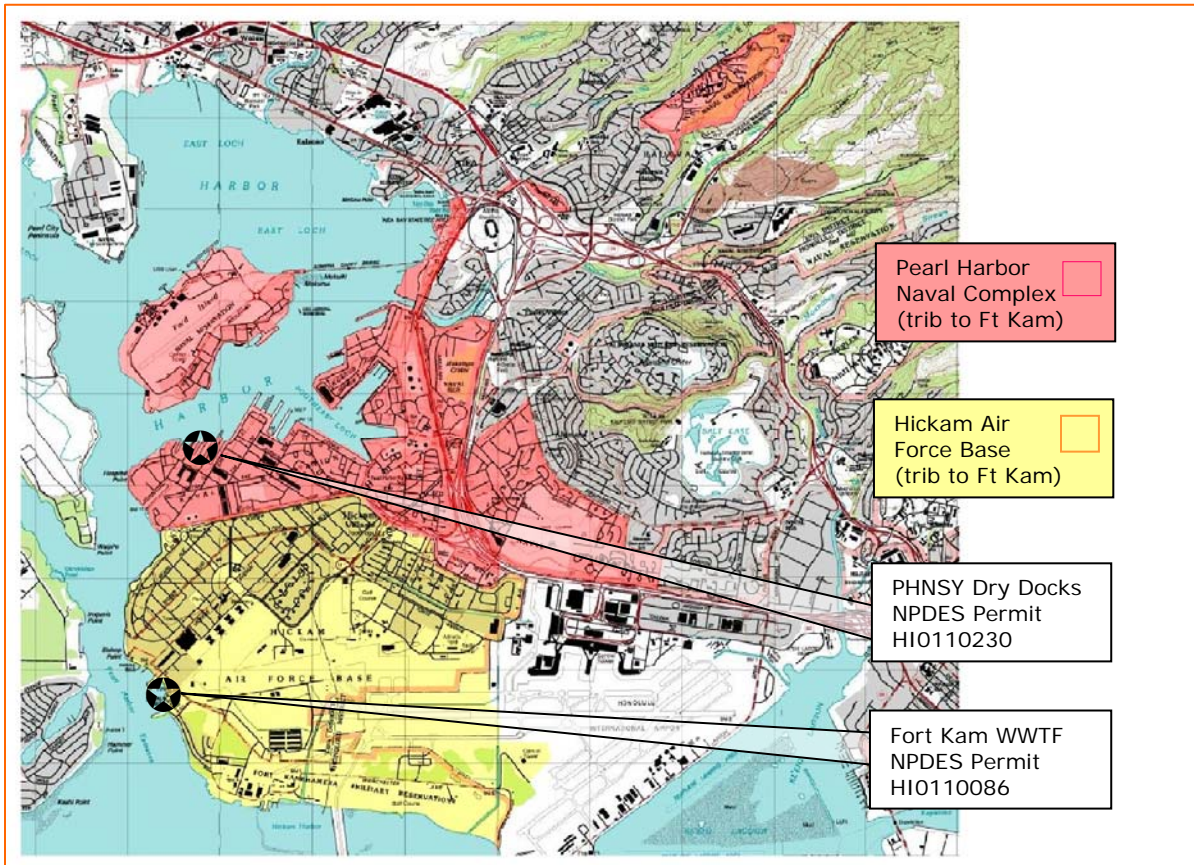
1.1 Background

In June 1996, EPA issued an inspection report that documented the findings of a comprehensive NPDES permit issuance evaluation of the Pearl Harbor military installations. Following the inspection report and after extensive consultations with the Navy, HDOH issued a revised Ft Kam NPDES permit on December 31, 2001, the PHNSY NPDES permit on January 15, 2002, and the final Fort Kam permit modifications on December 23, 2004. This inspection report covers the scope and mirrors the format of the earlier report, with added compliance determinations with the current NPDES permits and modifications. As a result, these three reports together cover Fort Kam, the non-domestic sources into its service area, and the discharges of non-domestic wastewaters from the shipyard dry docks to the waterways. They do not cover the discharge of storm water run-off into and from a storm sewer system authorized under another NPDES permit.



1.2 Description of the Facilities

The military installations comprise the Pearl Harbor Naval Complex and the Hickam Air Force Base, which together generate and collect domestic and non-domestic wastewater for discharge to the Pacific Ocean under the authority of two NPDES permits issued for Fort Kam and the Pearl Harbor Naval Shipyard dry docks. *See* Appendix 1 for a list of industrial operations by building number.



1.3 Hickam Air Force Base

Hickam operates military flight operations, maintenance hangers, aircraft wash racks, and non-destructive testing, photo, and x-ray labs. Hickam also serves as the home base of a number of aircraft. The 15th Airlift Wing is the host department with its tenants including a C-17 transport aircraft squadron, the Hawaii Air National Guard (HiANG) 154th Wing, a Logistics Readiness Squadron (LRS), Aerospace Ground Support (AGE), along with many others. No aircraft rework, printed circuit board manufacturing or electroplating is done on-site. HIANG performs light aircraft maintenance in the hangers. Hickam began operations by the 1940's. The detailed descriptions and findings of this second report specifically pertain to Hickam Air Force Base follows in Section 2.0 of this report.



1.4 Pearl Harbor Naval Complex And the Fort Kam Wastewater Treatment Facility

The Pearl Harbor Naval Complex supports the Pacific fleet by providing ships berthing and repair as well as fleet supply, housing and other support services, including sewer service and domestic sewage treatment at Fort Kam. The Commander of the Navy Region Hawaii provides overall command and coordination. The Pearl Harbor Naval Complex involves a number of other commands. The Pearl Harbor Naval Shipyard (PHNSY) and Intermediate Maintenance Facility (IMF) operates dry docks, industrial fabrication shops, piers, and maintenance shops for use in ship repair. The Naval Station Pearl Harbor (NAVSTA) homeports surface ships and submarines, operates piers and repair shops, and provides other support activities. The Navy Facilities Engineering Command (NAVFAC) Hawaii operates the utilities, ships wastewater collection, the domestic sewers, Fort Kam, bilge oily wastewater and industrial wastewater treatment plants, hazardous waste handling, and a program to control non-domestic discharges to the sewers. The Fleet Industrial Supply Center (FISC) Pearl Harbor operates loading and fueling piers, warehouses, tank farms, a fuel recovery plant, and hazardous material storage. The Defense Reutilization and Marketing Office (DRMO) operates a materials reuse scrap yard. Many of the operations began before the 1940's although some sources started-up after 1982. The Pearl Harbor Naval Complex does not rework aircraft, manufacture printed circuit boards, or refine oil.

More detailed descriptions of the Pearl Harbor Naval Complex and the Fort Kam wastewater treatment facility can be found in the first report issued July 28 specifically pertaining to the Pearl Harbor Naval Complex.

1.5 Pearl Harbor Naval Shipyard Dry Docks

The Pearl Harbor Naval Shipyard owns and operates four dry docks designated as Dry Dock Nos. 1 through 4. Caisson vessels are flooded to seal off dry dock entrances and sections after ships are floated in. The caisson vessels are refloated to allow sea water back in to refloat the ships after repair activities have been completed. A more detailed description can be found in the third report specifically pertaining to the PHNSY Dry Docks.

1.6 Facility SIC Code

Hickam is assigned the SIC code for national security (SIC 9711).



2.0 Hickam Air Force Base Wastewater Sources Delivery, Handling, Treatment, Discharge and Disposal

Hickam Air Force Base comprises numerous industrial activities, commercial establishments, and domestic housing. The principal sources of industrial wastewaters are aircraft wash-racks, fueling stations, and maintenance hangers. These sources together largely generate oily wastewaters which are consolidated and handled through a number of oil/water separation units either for discharge into sewer connections located throughout the facility, or in some cases, for on-site recycling. Hickam also discharges non-oily wastewaters to the sewers from a few other associated sources such as non-destructive testing stations as well as non-industrial wastewaters from restaurants and other commercial activities. There are also internal floor drains located in industrial activities with connection to the Fort Kam sewers. Overall, Hickam has many non-domestic entry points into the domestic sewer system scattered through out the facility, all of which feed into the Fort Kam wastewater treatment plant, under the authority of the COMNAVREG Instructions. *See* Appendices 1 and 2 for an overview schematic of wastewater handling at the Pearl Harbor Naval Complex, and the specifically of Hickam Air Force Base in more detail.

2.1 COMNAVREG Hawaii Instructions (Navy Regulation of Discharges into the Fort Kam Sewers)

The Commander of the Navy Region Hawaii issued COMNAVREG Instructions 11345.2D and 11345.5A establishing a sewer discharge permit system and wastewater discharge limitations for industrial wastewaters into the Fort Kam sewer service area. Under the authority of the COMNAVREG Instructions NAVFAC issues industrial wastewater discharge certificates to each source establishing the specific terms that allow discharge of industrial wastewater into the domestic sewers, much like a permit issued by a municipal pretreatment program. NAVFAC issues the certificates but the certificate holders are responsible for inspections and sampling. Hickam and some other commands returned the implementation responsibilities to NAVFAC under contract.

The NPDES permit for Fort Kam requires the Navy to implement the COMNAVREG Instructions. In particular, Section F2.a(6) of the NPDES permit requires the Navy to prohibit non-domestic discharges into the Fort Kam sewers in concentrations exceeding the COMNAVREG Instruction. Section F2.b(1) prohibits any source from discharging non-domestic wastewaters into the Fort Kam sewers without first obtaining an industrial wastewater discharge certificate from NAVFAC. *See* Section 2.2 for a list of the Industrial Wastewater Discharge Certificates issued to Hickam sources and Section 3.4 for the wastewater discharge limitations.

2.2 Hickam Air Force Base Non-Domestic Wastewater Sources (Internal Discharges into the Fort Kam Sewers)

Nineteen (19) sources at Hickam discharge process-related industrial wastewaters directly to the Fort Kam domestic sewer system, with seventeen (17) of them operating under the



requirements of NAVFAC certificates. *See* Section 2.3 for descriptions of the Hickam industrial wastewater sources.

Non-Categorical Discharges - No discharges qualify for regulation under the Fort Kam NPDES permit as categorical wastewater sources subject to Federal standards. Instead, all industrial wastewater discharges to the sewers from Hickam sources are regulated as non-categorical solely under NAVFAC certificates. Most industrial wastewaters at Hickam are generated by aircraft and ground support washracks, shop sinks, non-destructive testing lines, and fire suppression water. Hickam operates eleven (13) oil/water separation units of which eight discharge to the sewers.

Non-Cat Industrial Discharges to the Sewers	Controls In-Place	Cert #
Bldg 45 CILHI Lab (photo/x-ray)	silver recovery	1404-44
Bldg 1203 Paint Shop (washdown)	none	1436-40
Bldg 1055 Hanger - Battery Shop (washdown)	none	1428-40
Bldg 1055 Hanger - Rubber Shop (sink washdown)	none	1544-40
Bldg 1055 Hanger - Structural (sink washdown)	none	1545-40
Bldg 1055 Hanger - Structural (sink washdown)	none	1546-40
Bldg 1055 Hanger - Metals Tech (cool blowdown)	none	1547-40
Bldg 1072 LRS Base Support Equip (washrack)	oil/water separator	None
Bldg 2025 Outdoor Washrack (washrack)	oil/water separator	1473-40
Bldg 2030A Maint Hanger (steam clean washrack)	oil/water separator	1541-40
Bldg 2030B Maint Hanger (dye pen washdown)	none	1671-40
Bldg 2125B Fuel Control Center (drainage)	oil/water separator	1434-40
Bldg 3386 HiANG Armament (drainage)	oil/water separator	1455-104
Bldg 3400A HiANG Maint Hanger (x-ray)	silver recovery	1296-104
Bldg 3400B HiANG Maint Hanger (washdown)	oil/water separator	1453-104
Bldg 3400C HiANG Maint Hanger (dye pen)	none	None
Bldg 3404 HiANG Equipment (sink washdown)	none	1588-104
Bldg 3407 HiANG Indoor Washrack (steam clean)	oil/water separator	1608-104
Bldg 11672 HiANG Hanger (washrack)	oil/water separator	1295-104

Non-Discharging Wastewater Sources – Five other sources generate oily wastewaters which are treated for recycling or reclaim through zero-discharging oil/water separation units. Fire suppression water using aqueous fire fighting foam (A Triple-F) also is not allowed into the Fort Kam sewers but instead is contained within the hangers or conveyed to a retention pond.

Non-Discharging Industrial Sources	Controls In-Place	Cert #
Bldg 2006 LRS Motor Pool (washrack)	o/w sep recycling	n/a
Bldg 2010 LRS Motor Pool (washrack)	o/w sep recycling	n/a
Bldg 2125A Fuel Control Center (drainage)	o/w sep reclaim	n/a
Bldg 3407 HIANG Maint Hanger (fire suppression)	retention pond	n/a
Bldg 3424 HIANG Ground Support (washrack)	o/w sep recycling	n/a
Bldg 11666 HIANG Engine Test Cell (washdown)	o/w sep reclaim	n/a
Other Hangers (fire suppression waters)	on-site capture	n/a



Commercial Wastewaters - Thirty-six (36) non-domestic wastewaters from Hickam commercial sources discharge to the Fort Kam sewers under NAVFAC certificates. These consists primarily of food preparation sources, medical and dental photo sources, gas stations and motor pool facilities, a car wash, a swimming pool, and a laundry.

2.3 Process Descriptions of the Industrial Wastewater Sources

Bldg 1055 Dry Floor Maintenance Hanger - The Bldg 1055 operations primarily involve aircraft maintenance accomplished over a dry floor. Dry floor procedures at Hickam involve the use of drain pains placed underneath the aircraft and the use of adsorbent pad to clean-up spills. Hickam operates a number of other maintenance hangers with dry floors including the Bldg 2030 AGE Hanger and the Bldg 3400 Hanger. The Bldg 1055 operations also involve sink washdown from various shops located within the hanger, all of which discharge to the Fort Kam sewers under separate NAVFAC certificates.

Bldg 2016/2025 Outdoor Washracks - Hickam operates an aircraft washrack complex between Bldg 2016 and 2025 comprising both a covered and uncovered outdoor washracks. Drainage and wash waters collect into eight normally-covered drains that feed into a 50,000 gallon sump. The sump contents are then pumped through an oil/water separator housed in a tank which discharges the water fraction to the sewers under a NAVFAC certificate.

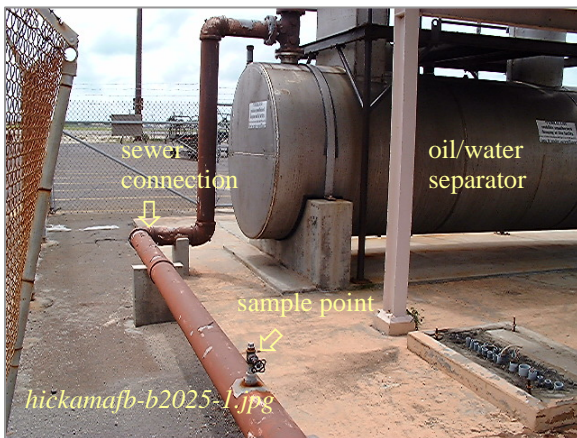


Photo: Bldg 2025 Washracks Oil/Water Sep
Taken By: Greg V. Arthur
Date: 04/11/06

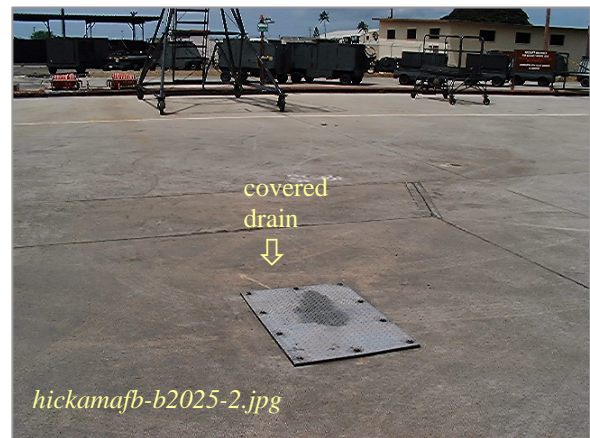


Photo: Bldg 2025 Washracks Covered Drain
Taken By: Greg V. Arthur
Date: 04/11/06

Bldg 2125 Fueling Control Center - The Bldg 2125 operations now primarily involve the stationing of fueling equipment. A washrack also exists but is no longer in use with the washing of fueling trucks accomplished in the Bldg 2010 washrack. Outside drains on one side empty through a small oil/water separator to a blind sump for evaporation or off-hauling. The washrack area on the other side drains to a splitter box outfitted with a closed gate outlet and an open overflow. The splitter overflow discharges through a second oil/water separator into the Fort Kam sewers under the authority of a NAVFAC certificate. The normally-closed gate outlet discharges through storm drains directly to the ocean. The splitter box is inspected weekly for integrity and the presence of sheen by the Fuels Operation Supervisor.



Bldg 2030 Maintenance Hanger - The Bldg 2030 operations involve ground equipment maintenance on the hanger floor and in shops sited around the hanger perimeter, and an outdoor washrack. Shop operations include a dye penetrant non-destructive testing line that involves penetrant immersion with a drag-out spray rinse, alkaline cleaning with spray rinse, a developer step and a dryer. The hanger floor is dry without floor drains. Steam cleaning washdown and drainage from the outdoor washrack drains through an oil/water separator for discharge to the Fort Kam sewers under a NAVFAC certificate. The washrack drain is normally covered and locked.



*Photo: Bldg 2030 Washrack Covered Drain
Taken By: Greg V. Arthur
Date: 04/11/06*

Bldg 11666 Engine Test Cell Facility - The Bldg 11666 operations involve an engine test and maintenance cell which generates washdown and spilled fuel for capture into an isolated floor drain. The floor drainage feeds into a sump for pumping into an oil/water separation unit with the water fraction impounded in another tank. However, both the free oil fraction and the water fraction are hauled for off-site disposal by Unitek.

Bldg 11672 Alternate Standby Washrack – Hickam operates an outside aircraft washrack near Bldg 11672. The washrack operations involve alkaline soap cleaning and rinsing. Wash waters and drainage drain to a sump feeding through an oily wastewater recycling unit comprising oil skimming, media filtration, venturi degrit, canister polishing filtration, ultraviolet sanitation, and a final recycling holding tank. The treated drainage was discharged to the sewers and not recycled at the time of this inspection.

Bldg 3400 Maintenance Hanger - The Bldg 3400 operations involve light aircraft maintenance on the hanger floor and in shops sited around the hanger perimeter. Shop operations include three non-destructive testing lines (dye penetrant, magnaflux, and x-ray weld). The dye penetrant testing line involves penetrant immersion with a drag-out spray rinse, emulsifier with spray rinse, and a developer. The magnaflux line involves immersion. X-ray weld testing involves film developing. A perimeter floor drain to a sump catches some rainwater from the hanger doors, washdown, and zamboni floor wash water. The floor sump discharges through an oil water separator to the Fort Kam sewers under NAVFAC certificate. The x-ray weld testing line discharges film developer tailwater through a silver recovery unit to the Fort Kam sewers under a second NAVFAC certificate. The dye penetrant line discharges spray rinses and work sink drainage to the Fort Kam sewers but currently without a NAVFAC certificate.



Bldg 3407 Indoor Hanger Washrack - The Bldg 3407 operations involve the indoor steam cleaning of aircraft exteriors and light aircraft maintenance. Alkaline steam cleaning washdown collects in floor drains for discharge through an oil/water separator to the Fort Kam sewers under a NAVFAC certificate. The Bldg 3407 hanger was constructed with an automatic fire suppression water system that employs A Triple-F (aqueous fire fighting foam). A Triple-F is not allowed into the Fort Kam sewer system. If the Bldg 3407 fire suppression system is engaged, the floor drainage system automatically diverts through a shunt to a line leading outside of the hanger to a lined retention pond. The Bldg 3304 hanger also employs a similar in design fire suppression system it is now closed. The other dry floor hangers that use A Triple-F contain fire suppression water on the hanger floors for physical clean-up.



*Photo: Bldg 3407 Fire Suppression Water
Retention Pond*

Taken By: Greg V. Arthur

Date: 04/11/06

Bldg 3386 Armament Support Shop - The Bldg 3386 operations involve disassembly, assembly, painting, lubrication coating, and solvent degreasing using a naphtha-based stoddard solvent. The solvent degreasing takes place in an isolation room. The shop hanger is swept cleaned but also is outfitted with floor drains that discharge through an oil/water separator into the Fort Kam sewers under a NAVFAC certificate. The solvent isolation room has an internal sewer that can outlet either to the oil/water separator or to a holding sump for off-site hauling as hazardous. Both outlets are blinded-off by normally-closed valves to be opened by the operators after inspection.

Bldg 3424 Ground Support Outdoor Washrack - The Bldg 3424 outdoor washrack discharges drainage and washdown to a drain over a holding tank that feeds through an oil skimmer and canister filters. The treated water fraction fills a final holding tank for on-site washrack recycling. Excess recycled water and the oil fraction is hauled off-site by a contractor for disposal. This oily wastewater handling system is one of four designed to recycle the wash water and as a result does not operate under the authority of a NAVFAC certificate.

2.4 Photo Documentation

Arthur took four photographs during this inspection of Hickam. EPA file names to store the digital photos are *hickamaafb-b2025-1.jpg*, *hickamaafb-b2025-2.jpg*, *hickamaafb-b2030-3.jpg*, and *hickamaafb-b3407-4.jpg*.



3.0 NPDES Permit Requirements

The NPDES permit must apply Federal BAT/NSPS standards to all regulated sources including the sewage treatment plant and internal industrial activities, as well as apply the Hawaii water quality standards to the discharge to the ocean.

Summary

The NPDES permit for the Fort Kam wastewater treatment facility properly applies Hawaii water quality standards to the ocean outfall discharge from Fort Kam. The NPDES permit also properly applies Federal best-available-technology (BAT) and new source performance (NSPS) standards to Fort Kam and the internal industrial activities. The NPDES permit applies Federal categorical standards to the internal sources discharging to the Fort Kam sewers because dilution from domestic sewage would result in adjusted ocean outfall standards below detection limits. The NPDES permit also requires the implementation by NAVFAC of an industrial wastewater sewer discharge permit system throughout the Fort Kam sewer service area as the expression of BAT/NSPS to the numerous other non-domestic sources.

Nearly all non-domestic sources at Hickam were identified through NAVFAC's industrial wastewater sewer discharge permit system. No Hickam sources currently qualify for Federal categorical regulation. However, if the new buildings incorporate certain processes such as alodining, or if Hickam and the Naval Complex realign to be one facility, many of the internal wastewater sources to the Fort Kam sewer would become categorically regulated under the NPDES permit. The application of Federal BAT/NSPS standards and Hawaii water quality standards was determined through visual inspection.

Requirements

- None.

Recommendations

- The NPDES permit should list USAF Hickam Air Force Base as a co-permittee, since the COMNAVREG Hawaii Instructions do not include formal enforcement procedures.
- The Bldg 2125 washrack connection through the splitter box to the storm sewers and the ocean should be permanently sealed.

3.1 Industrial Wastewater Sewer Discharge Permit System Program

The NPDES permit requires the Navy Region Hawaii to implement a sewer discharge permit system that functions in a similar way, with one notable exception, to the pretreatment programs operated in municipalities. Sections F(1), F(2) and F(3) of the NPDES permit establishes the following requirements:



- All non-domestic discharges to the sewers must be authorized by a NAVFAC certificate.
- NAVFAC must inspect and ensure compliance before issuing any certificate.
- No non-domestic discharges to the storm sewers or other tributaries to surface waters.
- NAVFAC inspections of each certificate source at least once per year.
- Navy Region must submit an annual report.

In essence this means that NAVFAC must (1) maintain and update an inventory of industrial wastewater sources into the Fort Kam sewers, (2) implement facility-wide the hold-and-test procedures to direct wastewaters requiring treatment to the control points as a condition of obtaining the certificates, (3) eliminate any non-domestic wastewater discharges to the storm sewers, (4) conduct annual inspections of each certificate source, and (5) submit an annual report. These requirements do not cause the Navy Region Hawaii to implement some sort of enforcement program since conceivably every source is under Navy control. This is not exactly the case, since these requirements apply to the entire Fort Kam sewer service area past the boundaries of the Naval Complex. As a result, since these requirements (without enforcement provisions) also apply to Hickam, it would be better to include the United States Air Force on the NPDES permit as a co-permittee.

3.2 Classification of Industrial Wastewaters by Federal Point Source Category

Hickam Air Force Base does not qualify as a metal finisher subject to the Federal standards for existing sources in 40 CFR 433.13/14 and for new sources in 40 CFR 433.16. However, if the new construction expected in 2008 incorporates certain core metal finishing operations, these Federal point source standards would apply not only to the new operations but also to a number of other internal wastewater discharges into the Fort Kam sewers. Until then, all flows from Hickam are classified as domestic, or non-categorical non-domestic, or not directed to the sewers.

Facility Definition - The Hickam Air Force Base functions are performed in a number of installations that, because they are contiguous, are considered as one facility. The definition of "facility" comes from the Federal Clean Water Act regulations which define a "source" as not just a building under one command, but as a building, structure, facility, or installation from which there is or may be a discharge of pollutants, 40 CFR 122.2. Federal categorical regulations further refer to the regulated entity as a plant, user, industrial facility, or source, for example in 40 CFR 433.10(a) and 433.14. Taken together a "facility" is defined by common function on a contiguous piece of property. Hickam, defined as one facility for purposes of the Clean Water Act, does not extend to the Naval Complex, or to the ships berthed in port, or to other non-contiguous military installations.

3.3 Federal Categorical Standards

The BAT/BPT and NSPS standards for metal finishing in 40 CFR 433 do not currently apply to any internal wastewater discharges from Hickam to the Fort Kam sewers. However, the new buildings for corrosion control and aircraft washdown, expected to be constructed by 2008, if they involve a core metal finishing operation such as chemical coating, etching, or



anodizing, would qualify the entire Hickam Air Force Base as subject to the metal finishing standards. Under 40 CFR 433.10(a), the metal finishing standards "... apply to plants that perform ..." the core operations of electroplating, electroless plating, etching, anodizing, chemical coating, or printed circuit board manufacturing and they extend to other on-site operations, such as cleaning, machining, sand blasting, welding, solvent degreasing, painting, paint stripping, assembly, calibration, and testing, associated with metal finishing and specifically listed in 40 CFR 433.10(a). If any of the core operations are performed, the metal finishing standards apply to discharges from any of the core or associated operations.

As a result, the Federal metal finishing standards would apply to the discharges listed below (1) if Hickam adds a core metal finishing operations such as alodining, caustic etching of aluminum, anodizing, or phosphating, or (2) if Pearl Harbor (already qualified with core metal finishing operations) and Hickam realign to be one facility with a unified command structure and function.

40 CFR 433.16	Cd *	Cr	Cu	Pb	Ni	Ag	Zn	CNt	CNa	TTO
d-max (mg/l)	0.11	2.77	3.38	0.69	3.98	0.43	2.61	1.20	0.86	2.13
mo-avg (mg/l)	0.07	1.71	2.07	0.43	2.38	0.24	1.48	0.65	0.32	-
Outfall#	Potential Metal Finishing Sources					433.10(a) Qualifying Operation				
n/a	Bldg 1072 BaseSupportEquip (washrack)					cleaning				
n/a	Bldg 2025 Outdoor Washrack (washrack)					cleaning				
n/a	Bldg 2030A Maint Hanger (steam clean)					cleaning				
n/a	Bldg 2030B Maint Hanger (dye pen)					testing				
n/a	Bldg 3386 Armament (drainage)					cleaning, solvent degrease, painting				
n/a	Bldg 3400A Maint Hanger (x-ray)					testing				
n/a	Bldg 3400B Maint Hanger (washdown)					cleaning				
n/a	Bldg 3400C Maint Hanger (dye pen)					testing				
n/a	Bldg 3407 Indoor Washrack (steam clean)					cleaning				
n/a	Bldg 11672 Hanger (washrack)					cleaning				
* Existing source standards from 40 CFR 433.14 are 0.69 and 0.26 mg/l-Cd, respectively.										

Standards - The BAT/BPT and NSPS standards for existing source and new source metal finishing advance limits for metals, cyanide, toxic organics, oil & grease, suspended solids, and pH, for discharges to waters of the United States. The NPDES permit applies the standards to the qualifying internal outfalls for just metals, cyanide, and toxic organics, leaving out the standards for oil & grease, pH, and suspended solids, in the same way that pretreatment standards are applied to existing source industrial users of publicly-owned treatment works. This is appropriate because the internal wastewater discharges are further treated by Fort Kam for oil & grease and suspended solids, and regulated for pH. The BAT/BPT and NSPS standards above for existing and new source metal finishing from 40 CFR 433.14 and 433.16 are listed in Section A.1(c) and A.1(d) of the Fort Kam NPDES permit.

3.4 Non-Categorical Industrial Wastewater Sources

Sections F(1), F(2)a, and F(2)c of the For Kam NPDES permit require the implementation of a COMNAVREG Hawaii Instruction that expresses the limitations on non-domestic dis-



charges necessary to protect the sewers, treatment plants and receiving waters from adverse impacts. In particular, the COMNAVREG Hawaii Instruction prohibits discharges that can cause the pass-through of pollutants into the receiving waters, the operational interference of the treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. As a result, the internal limits applied to Hickam non-domestic sources mirror the national prohibitions in 40 CFR 403.5 that apply nationwide to all non-domestic sewer discharges.

COMNAVREG Hawaii Instruction 11345.2D					
pollutants	(d-max)	(mo-av)	pollutants	(d-max)	(mo-av)
temperature (°F)	150°F	120°F	arsenic (mg/l)	0.5	0.1
pH (s.u.)	5.5-9.5	-	barium (mg/l)	50	25
chlorine demand (mg/l)	50	20	beryllium (mg/l)	0.2	0.1
sulfides (mg/l)	5.0	0.5	cadmium (mg/l)	0.69	0.26
BOD (mg/l)	600	200	total chrome (mg/l)	2.77	1.71
TSS (mg/l)	600	300	hex chromium (mg/l)	0.50	0.25
TOC (mg/l)	1200	600	copper (mg/l)	3.38	2.07
oil&grease (mg/l)	150	75	lead (mg/l)	0.69	0.43
oil&grease-petro (mg/l)	50	25	mercury (mg/l)	0.05	0.01
MBAS surfactants (mg/l)	30	15	nickel (mg/l)	3.98	2.38
total cyanide (mg/l)	1.20	0.65	selenium (mg/l)	0.9	0.2
chlorides (mg/l)	8000	5000	silver (mg/l)	0.43	0.24
sulfates (mg/l)	1000	600	thallium (mg/l)	0.5	0.1
fluoride (mg/l)	5	2	tin (mg/l)	10	2
strong oxid agents (mg/l)	0.50	0.25	zinc (mg/l)	2.61	1.48
strong redx agents (mg/l)	5.0	1.0	orgnc solvents (mg/l)	2.5	1.0
formaldehyde (mg/l)	5.0	1.0	TTOs (mg/l)	1.37	-
selected narrative prohibitions	no adverse discoloration no gasoline, fuel oil, flammable or explosive liquids no toxic, noxious, malodorous, poisonous substances no aqueous fire fighting foam				

3.5 Point(s) of Compliance

NAVFAC Certificate Limits - The internal COMNAVREG Hawaii Instruction limits apply end-of-pipe to all non-domestic wastewater sources into the Fort Kam sewers.

Federal Metal Finishing Standards - Federal categorical standards apply end-of-process-after-treatment to all Federally-regulated discharges. They cannot be applied to combined wastewaters when the domestic fraction results in a proportional downward adjustment in the standards below pollutant detection limits. As a result, the Federal standards cannot be applied to the overall discharge from Fort Kam to the ocean. Instead, qualifying internal discharge points to the Fort Kam sewers are the suitable compliance sampling points representative of the day-to-day discharge of Federally-regulated wastewaters.



4.0 Industrial Wastewater Permit System Program Requirements

The Navy Region Hawaii must implement an industrial wastewater permit system extending to Hickam Air Force Base that does at least the following [NPDES Permit §F(1,2,3)]:

- maintain and update an inventory of industrial wastewater sources to the Fort Kam sewers,
- issue certificates to all non-domestic discharges into the Fort Kam sewers,
- implement procedures to direct all wastewaters requiring treatment to the wastewater treatment control points as a condition of obtaining the certificates,
- eliminate any non-domestic wastewater discharges to the storm sewers,
- eliminate all non-certificate industrial wastewater discharges to the Fort Kam sewers,
- conduct annual inspections of each certificate source at Hickam, and
- submit an annual report covering the Hickam non-domestic wastewater sources.

Summary

NAVFAC operates a very effective and thorough sewer use permit program for non-domestic wastewaters discharges to the Fort Kam sewers from industrial and commercial sources at Hickam. NAVFAC inspectors, Hickam hanger and shop operators, and the Hickam environmental staff, were all fully knowledgeable of the industrial wastewater sources, wastewater control procedures, and the applicable requirements. Under the requirements of the NAVFAC sewer use permit program, Hickam has begun to impose practices that limit the unauthorized disposal of spills, fire suppression waters, and storm water run-off into the Fort Kam sewers. However, Hickam has not limited the potential for inadvertent, incompatible, or uncontrolled contributions into the Fort Kam sewers through consolidation of the numerous oil/water separators and sewer entry points.

Requirements

- Connections to the storm sewers in areas of industrial activities must be sealed.
- Non-certificate industrial wastewater sources must either be sealed or issued a certificate.

Recommendations

- Hickam should be surveyed in order to find and seal-off any remaining connections to the storm sewers in areas of industrial activity.
- Hickam should be surveyed in order to determine whether any of the connections to the Fort Kam sewers could be eliminated or consolidated with other connections.
- NAVFAC should assess whether the Hickam wastewater sources are as effectively controlled as Naval Complex sources.



4.1 Inventory of Industrial Wastewater Sources

EPA found nearly all industrial wastewater sources into the Fort Kam sewers from Hickam to be operating under NAVFAC issued certificates. The 2005 Navy Region Hawaii annual report listed 54 wastewater sources operating at Hickam under certificate -- 18 industrial and 36 commercial wastewater sources. EPA found only a few non-certificate sources of industrial wastewaters which require certificates or closure. Those specifically requiring closure include any sewer connection from industrial activities to the storm sewers (*Bldg 2125 drainage splitter box*). Others requiring closure or permitting under certificate include those found during this inspection (*Bldg 1072 washrack, Bldg 3400 dye penetrant tailwater*).

4.2 Controlled Entry Points into the Fort Kam Sewers

Numerous entry points increase the risk of inadvertent, incompatible, or uncontrolled wastewater discharges into the Fort Kam sewers even though most wastewater sources were found to be identified and under certificate. In particular, there are thirteen (13) oil/water separation units serving eight washracks and five fuel handling sites, of which eight (8) discharge to the Fort Kam sewers. Most of these oil/water separation units receive wastewaters from multiple sources through floor drain systems and building sewers.

The number of entry points poses a risk because many of the industrial activities at these sources operate sporadically without permanent operating staff. Moreover, oversight review by NAVFAC and the Hickam environmental staff is also infrequent although it meets the annual NPDES permit requirements. As a result, consistent control of the wastewater entry points into the Fort Kam sewers must depend more on built-in designs such as covered or bermed drains and the sealing of floor drains than on operational practices. It may be possible to implement dry-floor practices throughout Hickam and thus seal most of not all floor drains, thereby eliminating the risk of generating contaminated drainage. It may also be possible to consolidate the number of washracks to just one or two by function or decommission them altogether upon the construction of the two new clear water washracks expected on-line in 2008. Fewer entry points greatly lessens the risks of inadvertent, incompatible, or uncontrolled discharges into the Fort Kam sewers.

4.3 Permit System Implementation

The industrial wastewater permit system is well implemented and very effective in bringing about the BAT/NSPS control of the non-domestic wastewater sources into the Fort Kam sewers. The EPA inspector observed the following:

- NAVFAC certificates were visible and posted at nearly all industrial wastewater sources inspected by EPA during this inspection. The small handful of sources found without NAVFAC certificates were those that were not identified in the inventory.
- The NAVFAC inspectors and Hickam environmental staff had thorough knowledge of all industrial wastewater sources including those not under certificate. The inspectors and



environmental staff were also immediately recognized by personnel responsible for the operation of the sources.

- NAVFAC inspectors inspected the non-domestic wastewater sources at Hickam at least once per year. Hickam also inspects their own industrial wastewater sources and reports the findings to NAVFAC.
- Hickam had environmental staff in-place that also had full knowledge of the industrial wastewater sources, the applicable requirements, and past sampling results.
- NAVFAC may not impose the same degree of control upon Hickam wastewater sources as it does upon Naval Complex sources. The Hickam sources are not controlled through hold-and-test procedures, or treatment equivalent to or exceeding BAT like the Naval Complex source. The NAVFAC annual reports also did not include water quality characterizations of the Hickam sources.

4.4 Annual Reporting

The annual reports submitted by the Navy Region Hawaii to the State fully provide the information required by the NPDES permit -- inventory list, results of inspections/sampling, and revoked certificates. The annual report should also include summary data regarding the water quality of the discharges from the Hickam oil/water separators.



5.0 Compliance with Standards at Internal Outfalls

Categorical industrial sources must comply with the Federal categorical standards that apply to their process wastewater discharges. [NPDES Permit §A(1c) and §A(1d)]

Non-domestic sources must comply with the COMNAVREG Hawaii Instruction wastewater discharge limits. [NPDES Permit §F(2a)(6)]

Bypassing of treatment necessary to comply at non-domestic sources and dilution as a substitute for treatment at categorical sources is prohibited. [NPDES Permit §A(1c) and §A(1d)]

Summary

Industrial wastewater control primarily consists of multiple (mostly oily) wastewater discharges into the Fort Kam sewers from intermittent sources through oil/water separation units. Spill containment and source control strategies are in their inception and not evident base-wide, so consistent control depends on the operators. There are two main indications that the Hickam sources are largely controlled. First, the excellent performance of Fort Kam as measured by treatment plant sampling supports a general conclusion that the NAVFAC certificate program successfully controls the industrial wastewaters from Pearl Harbor and Hickam sources. Second, all oily wastewaters discharges from Hickam are treated through oil/water separators, each of which, on average, should be able to meet the COMNAVREG Hawaii Instruction limits for oil and grease. However, determination of compliance with the instruction limits for each internal outfall cannot be made for certain in this report.

Requirements

- None.

Recommendations

- Hickam should convert all hangers and shops not expressly used as washracks to "dry floor", by sealing all floor drains, closure of sewer inlets, and instituting best management practices such as drip pans, dry adsorbent clean-up, and satellite oil collection.
- Hickam should ensure either that either all washrack drains are normally covered or that their oil/water separators have the capacity to be normally valved-off from the sewers.
- Hickam should eliminate the physical connection to the sewers of any aqueous fire fighting foam system and the solvent cleaning isolation room.

5.1 Fort Kam Wastewater Treatment Facility Performance

Fort Kam has the capacity and capability to handle the domestic wastewaters from Pearl Harbor and Hickam. Fort Kam has consistently complied with all NPDES permit effluent



and sludge limits over the past two years. The effluent is of significantly higher quality now that Fort Kam provides tertiary treatment and nitrification/denitrification, and because oily and toxics-bearing and wastewaters from the Naval Complex are controlled through BAT-equivalent pretreatment units. Furthermore, the discharge of high quality effluent through the deep-water ocean outfall would be expected to further prevent instances of toxicity, nutrient-induced biomass blooms, or adverse changes in the ambient conditions in the receiving waters. *See* the July 28, 2006 inspection report for Fort Kam and the Pearl Harbor Naval Complex for a more detailed assessment of the wastewater treatment plant performance.

In particular, regarding the industrial wastewater discharges from Hickam, there were only a handful of instances in the past two years of daily Fort Kam effluent samples registering at levels above the detection limits for oil and grease. In fact, influent oil and grease concentrations arrive at Fort Kam already under the 10 mg/l effluent NPDES permit limit, falling within a range of 2.6 and 9.2 mg/l. These are definitive indications of the effectiveness of the oily wastewater handling methods now employed at the Naval Complex and Hickam.

5.2 Oily Wastewater Handling

The sources of oily wastewaters discharged into the Fort Kam sewers are primarily the aircraft and ground equipment washracks, and drainage from fueling areas. There are good aspects to the oily wastewater handling at Hickam, but overall it is dependent on widespread discharge through numerous oil/water separators to the Fort Kam sewers. Most if not all of the principle oily wastewater sources were observed to discharge to the sewers through oil/water separators. However at Hickam, treatment efficiency is less important than effective source control, because the numerous entry points into the sewers and the intermittent nature of operations makes the oily wastewater handling heavily dependent on the personnel responsible for the operating and overseeing the wastewater discharges into the treatment.

Dry Floors - Many of the hanger and shop floors were found to be “dry floor” on which drips, spills, and oils on sealed concrete floors are wiped-up with disposable towels or captured on adsorbent pads. However, not all of the airplane hangers and shops selected for walk-throughs were observed to be “dry-floor” without floor drains, with sealed concrete floors, and with satellite oily waste collection barrels to recover used fuels, used oil, oil drainage from oil filters and other containers. Some of the hanger and shop floors were instead found to have multiple entry points into the building sewers leading to the Fort Kam sewers.

Washracks - The indoor and outdoor washracks all involve floor and tarmac drains. The outdoor washracks were found to be outfitted with drain covers and locks in order to prevent the inadvertent introduction of spills and contaminated storm water run-off. The indoor washrack drains were not observed to be covered and locked.

Treatment - Hickam employs two types of oil/water separation units. Nine of the 13 are conventional API oil/water separation units, of which seven of the nine discharge to the Fort Kam sewers. API separators are design rated to consistently achieve effluent oil and grease



concentrations below 100 mg/l with their average performance in 30 to 70 mg/l range or better depending on the weakness of incoming wastewaters. The under-capacity and intermittent use of these units should result in effluent oil and grease concentrations significantly below 100 mg/l. For these reasons, the oil/water separation units at Hickam that discharge to the Fort Kam sewers would be expected to comply most of the time with the COMNAVREG Hawaii instruction limits of 50 mg/l oil and grease. The other four are circulating oil/water separation units that, to an API oil/water separator, add filtration or, in one case media filtration, degritting, and UV disinfection, in order to recycle the tailwaters as washrack make-up. Three of these were functioning as recycling units and one was fully functioning but discharging all skimmed oil and de-oiled waters to the Fort Kam sewers.

Prevention of Sewerage Works Interference - The NPDES permit requires the Navy Region to publish an annual report that among other things lists spill and upset events. According to the 2004 and 2005 annual reports, there have been no reported spills of wastewater from the Fort Kam sewer collection system for domestic sewage. There are structural and operational reasons for the prevention of interferences primarily within the Naval Complex. Specifically at Hickam, even though there are numerous oily wastewaters, their weak strength, well-designed controls on their delivery, and the effectiveness of oily wastewater treatment have prevented the occurrence of petroleum-related sewer obstructions and treatment plant interferences.

5.3 Other Pollutants of Concern

Metals - Hickam provides metals treatment for two of the internal outfalls through silver recovery for the photo developers in the Bldg 3400 NDT x-ray room and the Bldg 45 CILHI lab. Other discharges would not be expected to often have metals concentrations exceeding the COMNAVREG Hawaii instructions, although washrack discharges would be expected to carry some metals entrained in the oily grime cleaned from the aircraft, parts, and ground equipment. The oily grime would be expected to contain metals, lubricants, and finishes removed from the parts through wear. In particular, washrack discharges would be expected to entrain significant amounts of lead at times, some aluminum, iron, copper, lead, and to a lesser degree, chromium, cadmium, nickel, and zinc.

Toxic Organics - Hickam identified one internal outfall with the potential to discharge toxic organics, and a number of hangers that could discharge aqueous fire fighting foam. The Bldg 3386 armament support shop employs a naphtha-based solvent degreaser in an isolated room, with its floor drain valved to either an oil/water separator to the Fort Kam sewers or a holding sump for off-site disposal. Aqueous fire fighting foam drainage is captured either to an outdoor evaporation pond (*Bldg 3407*) or on the hanger floor. Consistent control depends on operator competence since each of these instances involves the physical connection of toxics-generating wastewater sources to the Fort Kam sewers.



5.4 Determination of Compliance

Compliance with the COMNAVREG Hawaii Instructions at Hickam is best inferred from the performance of the Fort Kam sewers and wastewater treatment facility and the existence and use of appropriate delivery and treatment. On both counts it appears that Hickam substantially complies with requirements of the COMNAVREG Hawaii Instruction. However, a determination of compliance at the Hickam outfalls cannot be made for certain for two reasons. First, there is no comprehensive sampling data of the internal outfalls at Hickam in the NAVFAC annual report available for regulatory and public oversight, although the sampling data does exist. Second, at this time NAVFAC cannot ensure compliance outside of its command structure at Hickam since the COMNAVREG Hawaii Instructions do not include procedures to require compliance.

5.5 Dilution and Bypassing Prohibitions

Dilution as a Substitute for Treatment - The NPDES permit prohibits "dilution as a substitute for treatment" in order to prevent compromising model treatment with dilute waste streams. In particular, this prohibition applies when sample results for a diluted waste stream are below the Federal standards and the apparent compliance is used to justify discharge without treatment. This prohibition does not apply to the internal outfalls at Hickam because there are no Federally-regulated processes subject to regulation under the NPDES permit for Fort Kam. It would apply if Hickam qualifies as metal finisher under 40 CFR 433.

Bypass Provision - The NPDES permit prohibits the bypassing of any on-site treatment necessary to comply with standards unless the bypass was unavoidable to prevent the loss of life, injury, or property damage, and there were no feasible alternatives. This provision explicitly prohibits bypasses that are the result of a short-sighted lack of back-up equipment for normal downtimes or preventive maintenance. It also explicitly prohibits bypasses that could be prevented through wastewater retention or the procurement of auxiliary equipment. It specifically allows bypasses that do not result in violations of the standards as long as there is prior notice and approval from the State. Over the past two years, there have been no reported sewage overflows that bypass Fort Kam. Also, by definition at the internal outfalls, there can be no bypassing of treatment necessary to comply with standards because there are no standards that apply at Hickam through the Fort Kam NPDES permit. The bypass provision would apply if Hickam qualifies as a metal finisher under 40 CFR 433.

5.6 Compliance with NPDES Permit Monitoring Requirements

There are no NPDES permit monitoring requirements that apply to Hickam internal outfalls. The only requirements come from the NAVFAC certificates.



Appendix 1
 Pearl Harbor Naval Complex and Hickam Air Force Base
 Schematic Overview of Wastewater Handling

