



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

January 28, 2011

In Reply Refer To: WTR-7

Mathews Pothen, President and CEO
Guam Shipyard
P.O. Box 13010 (NAVACTS)
Santa Rita, Guam, 96915-3010

Re: Storm Water Inspections of the Guam Shipyard

Dear Mr. Pothen:

Enclosed is the January 28, 2011 report for our April 27, April 30, and May 6 inspection of the floating dry dock for compliance with the NPDES permit and of the on-shore facilities for compliance with the Multi-Sector General Permit. Please submit a short response to the findings in Sections 3.0, 3.2, and 4.0 of this report to EPA and Guam EPA, by **March 28, 2011**. The main findings are summarized below:

- Guam Shipyard has maintained an updated SWPPP to implement the storm water control measures required by the MSGP for the shipyard and by the NPDES permit for the dry dock. Most were found effectively deployed (drain inlet stenciling, covered storm drains during shipyard activities, spill containment kits ready for use, bilge handling capability, weekly walk-through inspections, swept up debris, and capture of air compressor condensate). No oily debris, oil stained pavement, or oily sheen on the water was observed.
- There were a few missing or ineffective control measures, most of which were corrected in response to the October 25, 2011 EPA storm water report for the waterfront. The remaining issues pertain to the rusty condition of the dry dock deck, and spent blasting grit exposed outside of the blasting building.
- The sampling protocols result in non-discrete samples of the floating dry dock drainage which makes the sample results to be of questionable use in determining compliance.

I appreciate the helpfulness you and your staff extended to me during this inspection. We remain available to the Guam Shipyard, Guam EPA, and the Navy to assist in any way. Please do not hesitate to call me or have your staff call me at (415) 972-3504, or e-mail arthur.greg@epa.gov.

Sincerely,

Original signed by:

Greg V. Arthur
CWA Compliance Office

cc: Ivan Quinata, GEPA



U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES and MSGP STORM WATER COMPLIANCE INSPECTION

Report No. 3

Permittee: Guam Shipyard
(NPDES GU0020362)
(NPDES 2008 MSGP - GUR05A267)

Facilities: AFDB-8 Machinist Floating Dry Dock
Shipyard Waterfront Wharves, Piers, and On-Shore Shops

Dates of Inspection April 27, April 30, and May 6, 2010

Inspection Participants:

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Report Prepared By: Greg V. Arthur, Environmental Engineer, USEPA Region 9
January 28, 2011



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1.0 Scope and Purpose

As part of a comprehensive Clean Water Act review of the military and industrial installations around Apra Harbor, on April 27, April 30, and May 6, 2010, EPA conducted an NPDES compliance evaluation inspection of the industrial activities at the Guam Shipyard for non-domestic wastewater and storm water. The purpose of the inspection of the Guam Shipyard was to ensure compliance with (1) the individual NPDES permit for the Guam Shipyard floating dry dock, (2) the NPDES Multi-Sector General Permit (“MSGP”) for the other industrial activities at the Guam Shipyard, and (3) the NPDES permit for the Apra Harbor wastewater treatment plant and the discharges from the Guam Shipyard into the domestic sewer system.

This is the third of three reports pertaining to the Guam Shipyard. The first report, issued on September 7, 2010 to the Navy, covers the findings pertaining to the Apra Harbor wastewater treatment plant, the contributing domestic sewer system, and the non-domestic service area sources, including those within the Guam Shipyard. The second report, issued on October 25, 2010 to the Navy and the Guam Shipyard, covers the findings pertaining to the industrial storm water management of the Apra Harbor naval port operations, including the wharves and piers operated by the Guam Shipyard. The Naval Base Guam and Guam Shipyard naval port operations were evaluated together for compliance because of common waterfront activities and the shared CHT collection system.

This third report covers the industrial storm water management at the entire Guam Shipyard and the direct discharge of wastewaters from the floating dry dock to the ocean, both of which the Guam Shipyard consolidates under a single storm water pollution prevention plan (“SWPPP”). Some parts of the first and second reports pertaining to the Guam Shipyard are restated in this third report. The inspection participants are listed on the title page. Arthur conducted the inspections on April 27, April 30, and May 6.

1.1 Background

On-Shore Industrial Activities - The Guam Shipyard qualifies for regulation under the requirements of the 2008 MSGP for industrial activities (MSGP ID No. GUR05A267). The Guam Shipyard submitted Notices of Intent (“NOIs”) on April 12, 2001 and January 18, 2007 for coverage under the 2000 MSGP and on January 22, 2009 and November 5, 2009 for coverage under the 2008 MSGP. The NOIs cover the following industrial sectors.

MSGP Sector K – Hazardous Waste Treatment, Disposal or Storage
MSGP Sector R – Vessel Repair Activities

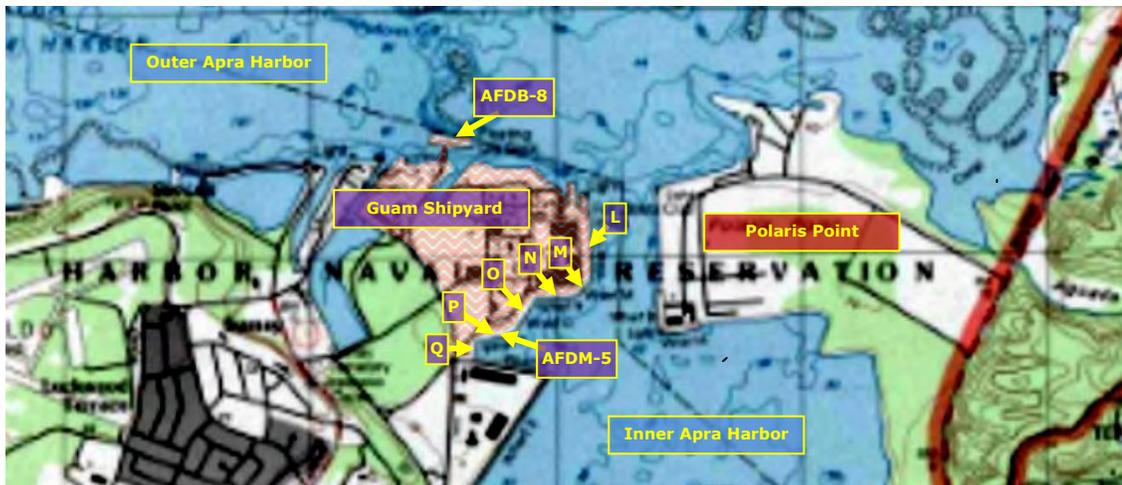
The Guam Shipyard developed a unified SWPPP to cover both the on-shore industrial activities under the MSGP and the on-ship industrial activities for a floating dry dock under both the MSGP and a separate NPDES permit. The original SWPPP was developed in 2001. Changes and notations of review have been made every December since then.



Floating Dry Docks - The Guam Shipyard has two auxiliary floating dry docks. The Machinist (AFDB-8), classified as a large auxiliary floating dry dock, is operational and berthed on the west side of the property. The Resourceful (AFDM-5), classified as a medium auxiliary floating dry dock, is inoperable and berthed at Papa Wharf. The Machinist operates under NPDES permit GU0020362 that covers discharges of non-contact cooling waters, fire pressure water, dry dock deck drainage, and vessel hull washing. The permit does not cover ballast, CHT ships sanitary, bilge, or tank cleaning and chlorination water. There have been no ships under repair for the past two years. Bilge from vessels in dry dock is collected for hauling to off-site disposal or for discharge through a new oily wastewater treatment unit to the domestic sewers. CHT ships sanitary discharges through dedicated risers into the Apra Harbor sewers.

Location - The Guam Shipyard lies on Point Orote across the entrance into the Apra Inner Harbor from Polaris Point. It is surrounded on-shore on all sides by the Naval Base Guam.

Figure 1.1
Map of the Guam Shipyard



Operational Control – The Guam Shipyard is a private lease of the former Naval Ship Repair Facility (“NSRF”) including its associated naval port operations. In 1997 the Guam Economic Development Agency leased from the Navy the former NSRF after it was decommissioned from service. The Guam Shipyard subleased the former NSRF from the Guam Government. The Navy retains ownership.

1.2 Facility Wastewater Sources and Handling

The Guam Shipyard generates and discharges process-related wastewaters, domestic sewage, vessel ballast waters, and storm water drainage. The handling of these wastewaters classifies into three general categories for regulation under separate permitting.



Sewage – Domestic and non-domestic wastewaters discharge into the Guam Shipyard and Naval Base Guam domestic sewer system for treatment through the Apra Harbor wastewater treatment plant. The treatment plant discharges through a joint outfall into the Titalao Bay under NPDES permit GU0110019, issued to the Navy. The shipyard discharges into the domestic sewers include a few process-related wastewaters generated by shipyard activities, CHT ships sanitary from berthed ships, treated bilge water from an on-site oil water separator, and vessel ballast water on occasion. The shipyard discharges into the domestic sewers are more fully described in the Section 5 of the September 7, 2010 EPA inspection report for the Apra Harbor wastewater treatment plant. Guam Shipyard responded to this inspection report in a December 9, 2010 letter.

Shipyard Drainage - Storm water run-off from on-shore shipyard activities drains into storm sewers facility-wide as well as through open scuppers along the waterfront, for discharge into the surrounding waterways. This inspection included site visits of the following facilities.

- Wharves L-Q and Finger Piers - The shipyard activities along the waterfront can result in the inadvertent release of wastewaters to the storm drains and the exposure of shipyard materials, wastes, and debris to storm water drainage. The control and discharge of the waterfront drainages is more fully described in detail in the October 25, 2010 EPA inspection report for the Apra Harbor naval waterfront.
- Bldg 2063 Boat Shop - This inactive materials storage building had no materials or debris exposed to storm water. Nearby open storm drain inlets were stenciled with “no dumping into storm drain”. See Photo #1-1 in Section 1.4 of this report on page 6.
- Bldg 2100 Media Blasting - Guam Shipyard performs depainting and surface preparation of parts with copper slag media inside a covered building. On the first day of this inspection, deposits of spent media grit were found on the ground outside the building bay. See Photo #1-2 in Section 1.4 of this report on page 6.
- Bldg 2078 Compressor Plant - Condensate and cooling tower bleed accumulates in an outside pit with a weir-leveled sewer connection. Captured drainage discharges to the sewers. See Photo #1-3 in Section 1.4 of this report on page 6.
- Bldgs 20, 21, and 22 - The machine, structural, and paint shop operations are housed indoors, with the nearby storm drain inlets stenciled and, if in the proximity of the waterfront activities, covered. See Photo #1-4 in Section 1.4 of this report on page 6.

The Guam Shipyard responded by letter on December 14, 2010 to the pertinent findings in the October 25, 2010 EPA report covering waterfront storm water management. The Guam Shipyard adopted all but one recommendation. Guam Shipyard has (1) repaired all CHT risers, (2) repaired the pump station serving the floating dry dock, (3) repaired observed fire pump and fresh water leaks on the waterfront, (4) removed recyclable materials from the wharf staging areas, (5) committed to shelter or remove recyclable materials in a timely



manner, (6) committed to block pier scuppers during the transfer of ships bilge to shore, and (7) is preparing an SOP covering the use of the CHT ships sanitary risers. See Photos #1-7 through #1-12 in Section 1.4 of this report on page 7.

Dry Dock Wastewaters - The Resourceful (AFDB-8) generates differing wastewaters for discharge through the dry dock scuppers to the harbor depending on whether vessels are in dock for repair. When there are no vessels in dock, the dry dock only generates storm water drainage from the dry dock deck, and dry dock ballast waters. When there is a vessel in dock, the dry dock also generates non-contact cooling water, vessel wash water from hydro-blasting and pressure cleaning, vessel ballast water, vessel bilge, and fire protection pressure relief waters. The vessel ballast and bilge waters are collected for discharge to the Apra Harbor sewers. The ballast waters used to sink and raise and keep raised the dry dock are not covered for regulation. This inspection included the following observations.

- Not In Use - The floating dry dock was not in use on the dates of this inspection and has not had a vessel in dock since 2009. The Guam Shipyard informed the EPA inspector that they swept the deck after the last undocking (sinking of the dry dock to release the vessel and raising back up empty). The Guam Shipyard also proposed to sweep the deck again and prepare an SOP for deck maintenance.
- Rusty Conditions - The floating dry dock deck had substantial oxidation of the metal surfaces throughout. During this inspection, the Guam Shipyard proposed to refurbish the deck during the upcoming dry season through the installation of new painted panels, and by painting the exposed deck, tanks, and wing walls. Deck refurbishment should be verified in the next inspection. See Photo #1-5 in Section 1.4 of this report on page 6.
- Blanked Scuppers - The Guam Shipyard normally blocks all but one scupper on the deck to be opened only if necessary. See Photo #1-6 in Section 1.4 of this report on page 6.
- Ballast Waters - On the first day of this inspection, the EPA inspector observed the discharge of dry dock ballast waters pumped up from the dry dock ballast tanks onto the deck and through an open scupper to the surrounding harbor.
- Self-Monitoring - During the previous June 2009 EPA inspection, the Guam Shipyard informed EPA that compliance samples were obtained by consolidating grab samples of mixed deck drainage and the harbor waters collected at the waterline below the scupper outlets, and of harbor waters collected midpoint between scupper outlets. The Guam Shipyard informed the EPA inspector during this inspection that samples now will be taken from the dry dock deck. See Section 4.1 of this report on page 18.

1.3 Facility SIC Codes

The Guam Shipyard is assigned the SIC code for ship building and repairing (SIC 3731).



1.4 Photo Documentation

The 23 digital photographs taken of the shipyard are saved to digital file as *guam-*number*-*date*.jpg*. The photos on this page are of shoreside activities and the floating dry dock.



Photo #1-1: Near Bldg 2063 – Open Storm Drain
Taken By: Greg V. Arthur
Date: 04/27/10



Photo #1-2: Bldg 2100 – Spent Blasting Grit
Taken By: Greg V. Arthur
Date: 04/27/10



Photo #1-3: Bldg 2078 – Drainage Overflow Inlet
Taken By: Greg V. Arthur
Date: 04/27/10



Photo #1-4: November Wharf - Covered Drain
Taken By: Greg V. Arthur
Date: 04/27/10



Photo #1-5: Floating Dry Dock – Rusty Deck
Taken By: Greg V. Arthur
Date: 04/27/10



Photo #1-6: Floating Dry Dock – Scupper Outlet
Taken By: Greg V. Arthur
Date: 04/27/10



The photos on this page are of the bilge oily wastewater handling and drainage control measures implemented on the Apra Harbor waterfront.



*Photo #1-7: Oscar Wharf – Damaged CHT Riser
Taken By: Greg V. Arthur
Date: 04/27/10*



*Photo #1-8: Lima Wharf - Bilge to Holding to Tanker
Taken By: Greg V. Arthur
Date: 04/27/10*



*Photo #1-9: Mike Wharf – Swale Between Rails
Taken By: Greg V. Arthur
Date: 05/06/10*



*Photo #1-10: November Wharf – Condensate Capture
Taken By: Greg V. Arthur
Date: 05/06/10*



*Photo #1-11: Lima Wharf – Swept Outside Rails
Taken By: Greg V. Arthur
Date: 04/27/10*



*Photo #1-12: Finger Pier – Scrapyard
Taken By: Greg V. Arthur
Date: 05/06/10*



2.0 CWA Permit Requirements

- *The 2008 Multi-Sector General Permit for storm water discharges associated with industrial activity ("MSGP") advances BPJ requirements to certain industrial sectors.*
- *The NPDES permit must apply Federal BAT/NSPS standards to all regulated sources and the Guam water quality standards to discharges into the ocean.*

EPA issued the current version of the NPDES permit to be effective on November 1, 2010 and to expire October 31, 2015. The previous version was not in effect after it expired on July 19, 2007. The NPDES permit applies end-of-pipe unadjusted Guam water quality standards and best-professional-judgment limits to the floating dry dock discharges. The NPDES permit also prohibits domestic and some non-domestic discharges and establishes best management practices for the control of dry dock storm water drainage. The Guam Shipyard qualifies for MSGP regulation under Sector R for ship and boat building and repair and under Sector K for hazardous waste treatment, storage, or disposal. The MSGP has been in effect since 2001. The NPDES permit and the MSGP overlap permit coverage of the storm water drainage from the floating dry dock.

Requirements

- None.

Recommendations

- The NPDES permit should establish a method to representatively composite samples from multiple drains or specify blanking of all but one designated scupper for sampling.
- Fire protection relief water, like dry dock ballast water, should be unregulated.
- The NPDES permit should only require BMP plans that pertain to the floating dry dock.

2.1 MSGP Requirements

On November 5, 2009, the Guam Shipyard submitted a Notice of Intent ("NOI") for the shipyard establishing coverage under the 2008 Multi-Sector General Permit ("MSGP") for storm water discharges associated with industrial activity to take effect on December 5, 2009 (Tracking No.GUR05A267). The 2008 MSGP advances general and specific requirements to facilities qualifying under certain industrial sectors by SIC code unless covered under an individual NPDES permit. The NOIs for the Guam Shipyard establish MSGP coverage for Sector R (Ship and Boat Building and Repair Yards) and Sector K (Hazardous Waste). Sector R applies to the facilities that primarily engage in the building and repair of naval ships, tenders, tankers, barges, cargo vessels, boats, life rafts, pontoons, lighters, and floating dry docks. Sector K applies to hazardous waste treatment, storage, or disposal



facilities (“TSDFs”). For the Guam Shipyard, MSGP Sector R applies to the entire installation including the waterfront, and the floating dry docks. MSGP Sector K applies to the Bldg 2002 hazardous materials storage facility, and the Bldg 2030 temporary hazardous materials staging site.

2.2 MSGP Control Measures, Implementation Provisions, and Specific Industrial Sector Control Measures

The 2008 MSGP requires the Guam Shipyard to develop and implement SWPPPs that cover the qualifying industrial activities. The SWPPP is required to incorporate general control measures (MSGP §2.1), general implementation provisions (MSGP §3-4-5), specific industrial sector control measures for ship building and repair (MSGP §8.R.3), and specific industrial sector control measures for hazardous waste treatment, storage, and disposal (MSGP §8.K.3). These provisions are more fully described in the October 25, 2010 EPA inspection report for the Apra Harbor naval port operations. See Section 2 of the October 25, 2010 EPA inspection report.

2.3 NPDES Permit Requirements

The NPDES permit GU0020362 covers wastewater discharges from The Machinist floating dry dock (AFDB-8) of deck drainage, and certain specified process-related wastewaters including non-contact cooling waters, fire pressure relief water, and vessel hull washing.

2.3.1 2002 NPDES Permit

Applicability - EPA issued the previous version of the permit to be effective on July 20, 2002 and to expire July 19, 2007. In May 2003, the Guam Shipyard requested termination of the permit. This version was not administratively extended since the Guam Shipyard did not submit an application for renewal 180 days before expiration, although the shipyard did submit an application for permit renewal 26 days after the deadline on February 13, 2007.

Outfalls - The NPDES permit assigns outfall numbers 001 to 010 to the ten scupper drains on the deck and outfall number 011 to a separate discharge point.

Prohibitions - Narrative provisions of the NPDES permit restrict the discharges through outfalls 001 to 010 to storm water drainage and unit-in-dock wash waters, and through outfall 011 to non-contact cooling water. The permit prohibits the discharge of ships sanitary, trash, debris, oil or petroleum products, spent abrasives, rust, scale, paint particles, cooling water additives, bilge, and unit-in-dock ballast water to the receiving waters. The permit also prohibits discharges that result in visible sheens, floatable materials, foam, visible turbidity, oily deposits, toxicity to people or aquatic life, the growth of undesirable aquatic life, or objectionable odors, color, or taste.



Effluent Discharge Limits - The 2002 permit established discharge limits for storm water drainage and unit-in-dock wash water based on best professional judgment (oil and grease) and Guam water quality standards (temperature, pH, suspended solids, turbidity, fecal coliform, orthophosphate, nitrate, hexavalent chromium, copper, lead, zinc, and tributyltin). The permit sets limits for non-contact cooling water on the same basis for oil and grease, temperature, pH, suspended solids, turbidity, fecal coliform, orthophosphate, and nitrates.

Table 2.3.1
2002 NPDES Permit Effluent Limits

2002 NPDES Permit Limits - Part A(1)	Outfalls ⑧	Discharge Limits ④⑤⑥⑦				Self-Monitoring ①	
		mo-avg	d-max	instant	ambient	outfalls	ambient
flow (mgd)	1-10,11	-	-	-	-	1/month	-
temperature (°C)	1-10,11	-	-	-	Δ 1 °C	1/month	1/month
pH (s.u.)	1-10,11	-	-	7.0-9.0	Δ 0.5	1/month	1/month
TSS (mg/l)	1-10,11	30	60	-	Δ 10%	1/month	1/month
turbidity (NTU)	1-10,11	-	-	-	Δ 1 NTU	1/month	1/month
fecal coliform (#/100ml)	1-10,11	70	400	-	-	1/month	-
oil & grease (mg/l)	1-10,11	10	15	-	-	1/month	-
orthophosphate (mg/l)	1-10,11	0.05	-	-	-	1/month	-
nitrate (mg/l)	1-10,11	0.20	-	-	-	1/month	-
hex chromium (µg/l)	1-10	-	1100	-	-	1/month	-
copper (µg/l)	1-10	3.1	4.8	-	-	1/month	-
lead (µg/l)	1-10	8.1	210	-	-	1/month	-
zinc (µg/l)	1-10	86	95	-	-	1/month	-
tributyltin (µg/l)	1-10	0.010	0.356	-	-	1/month	-
chronic toxicity (TUC)	1-10	-	94	-	-	2/yr ②③	-

- ① Self-monitoring can reduce to semi-annually after four consecutive results in compliance.
- ② Toxicity self-monitoring can be eliminated after four consecutive results in compliance.
- ③ First test with <90% survival raises self-monitoring to quarterly. Second results in TRE study.
- ④ "Ambient" discharge limits are comparisons between separate outfall and ambient results.
- ⑤ Separate samples for storm water, unit-in-dock wash waters, and non-contact cooling water.
- ⑥ Storm water drainage to be self-monitored from storm events over 0.1 inches.
- ⑦ Wash water to be self-monitored during the first 30 minutes of dock rinsing.
- ⑧ Only non-contact cooling water discharges authorized through outfall 11.

Storm Water Pollution Prevention - The permit requires implementation of a SWPPP consistent with MSGP Sector R for ship and boat building and repairing yards. MSGP Sector R §8.R.3.1 requires (1) capture of all pressure washing waters for separate discharge, (2) minimizing the release of blasting grit and paint overspray, (3) plain labeling of storage vessels to prevent contamination from used oil, oil filters, spent solvents, paint wastes, etc, (4) minimizing contamination from engine repair shops, materials handling areas, and (5) cleaning and maintaining dry docks. MSGP Sector R §8.R.3.2-3 also require employee training on control measures and the inspection and maintenance of storm water management devices.



2.3.2 2010 NPDES Permit

Applicability - EPA issued the current permit to be effective on November 1, 2010 and to expire October 31, 2015. No permit was in effect from July 19, 2007 to November 1, 2010.

Effluent Discharge Limits - The 2010 permit establishes discharge limits for storm water, unit-in-dock wash water, non-contact cooling water, and fire protection relief waters.

Table 2.3.2
2010 NPDES Permit Effluent Limits

2010 NPDES Permit Limits - Part A(1)	Outfalls ⑧⑨	Discharge Limits ④⑤⑥⑦				Self-Monitoring ①②	
		mo-avg	d-max	instant	ambient	outfalls	Ambient
flow (mgd)	1-10, 11	-	-	-	-	1/month	-
temperature (°C)	1-10, 11	-	-	-	Δ 1 °C	1/month	1/month
pH (s.u.)	1-10, 11	-	-	6.5-8.5	Δ 0.5	1/month	1/month
TSS (mg/l)	1-10	-	20	-	Δ 10%	1/month	1/month
turbidity (NTU)	1-10	-	-	-	Δ 1 NTU	1/month	1/month
enterococci (#/100ml)	1-10	35 ⑩	-	104	-	1/month	-
oil & grease (mg/l)	1-10	10	15	-	-	1/month	-
benzene (µg/l)	1-10	71	142.7	-	-	1/month	-
ethylbenzene (µg/l)	1-10	29000	58290	-	-	1/month	-
toluene (µg/l)	1-10	200000	402000	-	-	1/month	-
orthophosphate (mg/l)	1-10	0.05	-	-	-	1/month	-
nitrate (mg/l)	1-10	0.20	-	-	-	1/month	-
hex chromium (µg/l)	1-10	40.8	81.9	-	-	1/month	-
copper (µg/l)	1-10	2.4	4.8	-	-	1/month	-
lead (µg/l)	1-10	6.7	13.4	-	-	1/month	-
zinc (µg/l)	1-10	47	95	-	-	1/month	-
tributyltin (µg/l)	1-10	0.008	0.016	-	-	1/month	-
PCBs (µg/l)	1-10	0.00017	0.00034	-	-	1/quarter	-
acute toxicity (pass)	1-10	-	-	no diff	-	1/year	-
priority pollutants scan	1-10	-	-	-	-	years 3/5	-

- ① Wash water self-monitoring is weekly for at least 3 months and 4 sampling events.
- ② Wash water self-monitoring reduces to monthly after 3 months and 4 samples in compliance.
- ③ First test with stat diff between eff and control results in retest. Second results in TRE study.
- ④ "Ambient" discharge limits are comparisons between separate outfall and ambient results.
- ⑤ Separate samples for storm water, unit-in-dock wash waters, and non-contact cooling waters.
- ⑥ Storm water drainage to be self-monitored from storm events over 0.1 inches.
- ⑦ Wash waters to be self-monitored during the first 30 minutes of dock rinsing.
- ⑧ Non-contact cooling only through outfalls 7-8 - self-monitoring excludes BETX and metals.
- ⑨ Fire protection relief water only through outfall 11 - self-monitoring only for flow, temp, pH.
- ⑩ Geometric mean of five sequential samples taken over a 30 day period.



The limits were based on best professional judgment (oil and grease) and application of Guam water quality standards (temperature, pH, TSS, turbidity, enterococci, nitrates, orthophosphate, hexavalent chromium, copper, lead, zinc, tributyltin, benzene, ethylbenzene, toluene, PCBs, and acute toxicity). In comparison with the previous permit, the 2010 permit has more stringent water quality based discharge limits for total suspended solids, chromium, copper, lead, zinc, and tributyltin, and new water quality based limits for benzene, ethylbenzene, toluene, enterococci, PCBs, and acute toxicity.

Self-Monitoring Requirements - Also in comparison with the previous permit, the 2010 permit greatly increases the amount of required self-monitoring. With full dry dock activity and consistent compliance with all limits, the number of required samples would increase roughly five-fold over the life of the permit. The increase is due primarily to (1) a larger list of pollutants to sample, and (2) no permit provision to trigger a reduction from monthly to semi-annually after four consecutive samples in compliance. Costs further increase since sampling now includes priority pollutant scans, and volatile organics.

Outfalls - The 2010 NPDES permit assigns outfall numbers 001 through 010 to the ten scupper drains on the deck for the discharge of storm water drainage and unit-in-dock wash waters, and outfall number 011 to a separate discharge point for fire protection pressure relief water. Non-contact cooling waters are authorized for discharge only through outfalls 007 and 008.

Prohibitions - Narrative provisions of the NPDES permit restrict the discharges through the outfalls to storm water drainage, unit-in-dock wash waters, non-contact cooling water, and fire pressure relief water. The permit prohibits the discharge of ships sanitary, trash, debris, oil or petroleum products, spent abrasives, rust, scale, paint particles, cooling water additives, bilge, and unit-in-dock ballast water to the receiving waters. The permit also prohibits discharges that result in visible sheens, floatable materials, foam, visible turbidity, oily deposits, toxicity to people or aquatic life, the growth of undesirable aquatic life, or objectionable odors, color, or taste.

Storm Water Pollution Prevention - The NPDES permit requires implementation of a SWPPP consistent with MSGP Sector R for ship and boat building and repairing yard. In particular, MSGP Sector R §8.R.3.1 requires (1) capture of all pressure washing waters for separate discharge, (2) minimizing the release of blasting grit and paint overspray, (3) plain labeling of, and preventing contamination from storage vessels for used oil, oil filters, spent solvents, paint wastes, etc, (4) minimizing contamination from engine repair shops, and materials handling areas, and (5) maintaining and cleaning dry docks. MSGP §8.R.3.2 and 3 also require employee training regarding the control measures and the inspection and maintenance of storm water management devices. The NPDES permit also requires a separate BMP plan that covers the same activities, as well as the use of sacrificial anodes, the handling of hazardous waste on deck, and the handling of dry dock ballast waters.



3.0 Compliance with Storm Water BMPs

- *The 2008 MSGP requires the development and implementation of a SWPPP that establishes general and specific BMPs for storm water discharges from the entire shipyard associated with industrial activity.*
- *The NPDES permit requires the development and implementation of a SWPPP that establishes specific BMPs for the storm water discharges from the floating dry dock.*

The MSGP applies at the Guam Shipyard to the discharges of storm water runoff from all on-shore facilities and the non-operating floating dry dock. The NPDES permit applies to storm water drainage from the operating floating dry dock, although the MSGP applied when the permit was expired. The Guam Shipyard developed a SWPPP that successfully implements control measures to prevent the release of debris, oils, paint blasting grit, paint spray drift, wastewaters, unit-in-dock ballast, oily bilge, and CHT ships sanitary into the harbor through the storm sewer drainages. However, the dry dock deck was found to be rusty; some debris and recyclables were exposed on the waterfront; spent blasting grit was not contained within the building; and some ships services infrastructure was in disrepair.

Requirements

- Corrections to the storm water control measures must be included in the next version of the SWPPP for the floating dry dock and the on-shore shipyard activities.

Recommendations

- The floating dry dock deck should be swept and protective coated to prevent the discharge of rust.
- Spent media blasting grit should be contained within the sandblasting building.

3.1 Storm Water BMPs

The Guam Shipyard developed a consolidated SWPPP to address the requirements of both the MSGP and the NPDES permit. The SWPPP includes numerous best management practices (“BMPs”) to control the contact of debris, spills, and materials or wastes in storage with storm water and storm water runoff.

General BMPs - The SWPPP establishes a number of general storm water BMPs applied facility-wide covering the handling of paint, paint strippers, empty containers, excavated soils, garbage and debris bins, construction areas, debris piles, pesticides, concrete work, portable toilets, and vehicle wastes. The general BMPs also cover the allowable non-storm discharges to the storm water drainage conveyances from the washdown of pavement and the piers and wharves, steam line condensate, steam line flushing, air conditioning conden-



sate, water line flushing, trench dewatering, utility manhole dewatering, eyewash, pipe and tank hydrotesting, firefighting training, fire hydrant flushing, and landscaping.

Bldg 2063 Boat Shop - The SWPPP establishes specific BMPs for the boat shop. These BMPs require the labeling of all containers, stenciled storm drain inlets, internal sweeping, drip pan capture of vehicle leaks, routine cleaning of grated catch basin inlets, regular cleaning around the building, and annual personnel training.

Bldgs 2100/27 Paint and Sandblasting Shops - The SWPPP establishes specific BMPs for painting and media sandblasting. These BMPs require deployment of absorbent spill kits, secondary containment of materials storage, stenciled storm drain inlet, painting and sandblasting within enclosed areas, routine cleaning of grated catch basin inlets, regular shop floor cleaning, and annual personnel training.

Used Oil Storage Lot - The SWPPP establishes specific BMPs for used oil storage. These BMPs require a bermed perimeter and ramped entrance, elevation of drums and containers, regular lot cleaning, deployment of absorbent spill kits, and annual personnel training.

Bldg 2014 Hazardous Waste Storage Facility - The SWPPP establishes specific BMPs for the hazardous waste storage facility. These BMPs require regular site cleaning by sweeping or mopping without hose washdown, deployment of spill kits, secondary containment of materials storage, secure transportation of drums, the labeling of all containers, covered storage of hazardous wastes, and annual personnel training.

Repair Wharf Mike - The SWPPP establishes specific BMPs for the ship repair activities on Wharf Mike. These BMPs require containment of vessel wash waters, stenciled storm drain inlets, deployment of spill kits, routine cleaning of catch basins, routine inspection for equipment leaks, maintaining equipment in good condition, and annual personnel training.

The Machinist (AFDB-8) Floating Dry Dock – The SWPPP also establishes specific BMPs for the operating floating dry dock. These BMPs require separate handling of bilge, labeling of all containers, secondary containment of materials storage, deployment of oil containment booms during ship repair activities, deployment of absorbent spill kits, dry sweeping of the deck, limited storage of materials on deck, curtailment of sanding and painting in windy weather, and annual personnel training. The portion of the SWPPP for the floating dry dock does not address the requirements in Part VI(A)(1) of the 2010 NPDES permit to develop BMPs for activities unrelated to the floating dry dock, such as those on paved areas, dirt and gravel parking areas for vehicles awaiting maintenance, ships on a railway, slatted railway flooring, drainage ditches, and areas with a potential for soil erosion.

3.2 Site Conditions

Listed on the next page are the effective storm water control measures (+) and ineffective, improvable, or missing control measures (-) observed during this inspection. The Guam



Shipyard responded by letter on December 14, 2010 to the pertinent finding in the October 25, 2010 EPA report covering waterfront storm water management. The response letter listed site-conditions that have been subsequently corrected or addressed with new control measures. See the October 25, 2010 EPA inspection report covering the findings pertaining to the waterfront activities. Also see Photos #1-1 to #1-12 in Section 1.4 of this report on pages 7 and 8.

- + The SWPPP is detailed, up to date, with the control measures well understood, and the procedures clearly described.
- + Inland storm drains are covered during ship building and repair activities.
- + Storm water drain inlets have stenciled information signs.
- + Walk-throughs are performed weekly to identify the need to deploy control measures.
- + Debris on the waterfront is swept weekly to the center point between the crane rails.
- + Spill containment kits were deployed and ready for use.
- + No oily debris, oil staining, or oil sheen on the water was observed.
- + Drain lines from the CHT riser boxes are closed when the CHT risers are in use.
- + Air compressor condensate is drained from the lines and collected to drums.
- + Portable bilge oily water storage tanks were deployed within secondary containment.
- The floating dry dock deck was rusty and in need of protective coating.
- Deposits of spent copper slag media grit was found outside of the sandblasting building.
- (corrected) Guam Shipyard does not have written operating procedures covering the CHT.
- (corrected) Not all CHT ships sanitary risers were found in good condition.
- (addressed) Piers scupper are not sandbagged during the transfer of bilge to tankers, or during CHT ships sanitary riser use.
- (corrected) Fire pump and fresh water line leaks were observed on the wharves.
- (corrected) Debris hauling is scheduled weekly but rusty debris was found on the wharves.
- (addressed) Recyclable materials have remained staged for off-hauling and thus exposed to storm water contact for long periods of time.

This review of SWPPP implementation was not comprehensive since not every activity was in operation on the days of this inspection. See the October 25, 2010 EPA inspection report covering the findings pertaining to the waterfront activities.

3.3 Annual Comprehensive Site Inspections

The MSGP §4.3 requires the Guam Shipyard to submit an annual report that summarizes activities during the fiscal year (October through September). The reports include (1) completion dates for internal review and modification of the SWPPP, (2) visual observations and sampling results, (3) an annual site inspection and submittal, and (4) signatures and certification. Guam Shipyard identified 20 storm water outfalls of which five are identified for sampling under the MSGP. The Guam Shipyard submitted reports for Fiscal Year 2008 on January 21, 2009, FY09 on March 23, 2010, and FY10 on November 16, 2010. All visual observations of discharge were reported as “uncontaminated” without visual sheen, staining, sludge deposits, objectionable odors, or floatable solids.



4.0 Compliance with NPDES Permit Discharge Limits

- *Floating dry dock discharges of storm water drainage, non-contact cooling water, unit-in-dock wash water, and fire protection relief water must meet the effluent limitations in [NPDES Permit Part II(A) Tables 1, 2 and 3].*
- *Self-monitoring of dry dock discharges must be representative of the volume and nature of the monitored discharge [NPDES Permit Part III(A)(1)]*
- *Self-monitoring of ambient waters must be representative of ambient conditions and, for comparison, take place in conjunction with dry dock discharge sampling [NPDES Permit Part III(A)(2)].*

The self-monitoring results for the floating dry dock are of questionable use for determining compliance with the NPDES permit limits because the sampling is not discrete. In other words, the shipyard protocols produce samples that likely do not represent the same thing each time they are collected. Thus they cannot with confidence be considered representative of discharge. Furthermore, compliance with some of the Guam water quality standards, as they are applied without adjustment in the NPDES permit, would be difficult to achieve in any discrete end-of-pipe sample of storm water drainage from any industrial source, active or inactive, with or without effective BMPs. The problematic permit limits include those for copper, lead, zinc, and the comparisons with ambient for temperature, pH, suspended solids, and turbidity. Consistent compliance with NPDES permit limits through the effective implementation of SWPPP BMPs can be expected for oil and grease, orthophosphates, nitrates, hexavalent chromium, tributyltin, enterococci, fuels, PCBs, and toxicity.

Requirements

- All sampling of dry dock discharges and of the ambient waters must be discrete.

Recommendations

- One scupper (or one each starboard and port) should be outfitted with a sampling weir, operated normally open, and designated for routine sampling of all dry dock drainage.
- All other scuppers should be operated normally closed in order to cause all dry dock drainage to combine and discharge through the designated sampling scupper(s).
- The dry dock sampling protocols should involve opening the normally closed scuppers only after the collection of discrete sample(s) from the designated sampling scupper(s).
- Unregulated discharges under the NPDES permit, such as dry dock ballast, should not discharge through the designated sampling scupper(s).
- The dry dock sampling protocols should identify an ambient sampling location and describe the procedures to collect a discrete sample of ambient conditions.



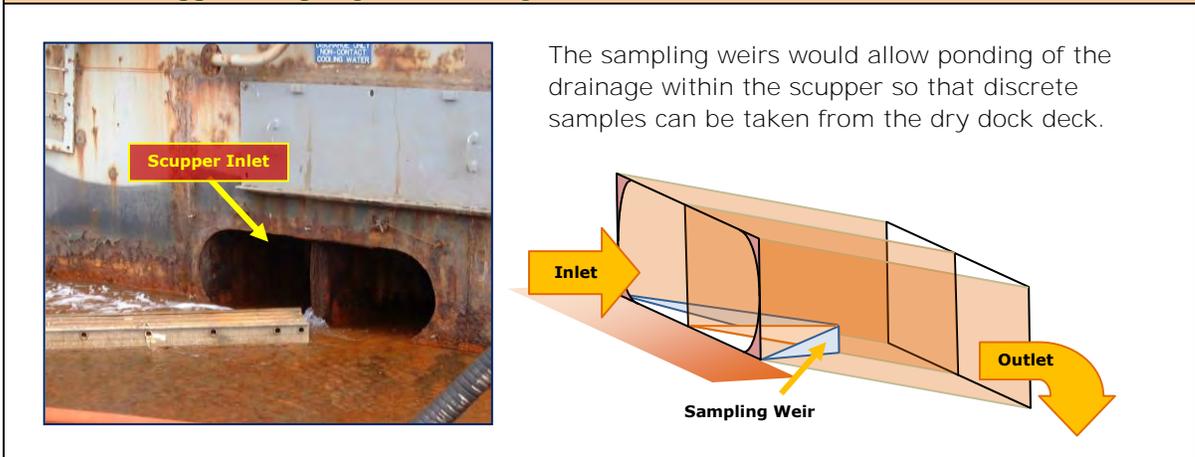
- The discharge monitoring reports should clearly designate the type of wastewater that was sampled – storm water drainage, unit-in-dock wash water, non-contact cooling water, fire prevention relief water, or a combination thereof.

4.1 Representative Sampling

The Guam Shipyard conducted self-monitoring of the floating dry dock discharges quarterly under the requirements of the 2002 NPDES permit. The EPA inspector did not witness the sampling protocols used by the Guam Shipyard to meet the self-monitoring requirements of the NPDES permit. However, the Guam Shipyard describes their protocols as manually composited grab samples of mixed deck drainage and harbor waters collected at the waterline below each of the scupper outlets. The series of grab samples collected beneath the scupper outlets are consolidated into a single grab sample for the entire floating dry dock.

The sampling protocol appears to have a number of shortcomings. First, the collection of mixed deck drainage and harbor waters at the waterline does not produce a discrete sample of deck drainage. A mixture of drainage with harbor waters cannot be compared against permit limits established for the deck drainage alone. A mixture also cannot be compared against the permit limits that establish maximum deviations from ambient in deck drainage water quality. Second, manual compositing of samples of the separate scupper discharges is not flow proportioned. Discrete samples would need to be paired with flow rate estimates in order to produce a single discrete composite sample for the dry dock, representative of all scupper discharges. The manual compositing of ambient harbor samples collected between the scuppers is discrete without flow proportioning. Third, discrete sampling on deck at the scupper inlets proves difficult since drainage discharges as sheet flow through the scuppers.

Figure 4.1
Possible Scupper Sampling Weir Configuration



Sampling weirs installed in the two mid-ship scuppers (one starboard and one port) and scupper SOPs to block the other scuppers until after collection of combined samples at the



sampling weirs should address the shortcomings in representative sampling. The flows are physically composited by funneling all deck drainages through one or two scuppers.

4.2 Sampling Record

The 2008-2010 self-monitoring results for the discharges of floating dry dock drainage reported by the Guam Shipyard are listed below in Table 4.2. However, the sampling protocols result in non-discrete samples, thereby rendering all sample results to be of questionable use in determining compliance. See Section 4.1 on page 18 of this report.

Table 4.2												
2008-2010 NPDES Permit Sampling Record												
GSY AFDB-8	2010				2009				2008			
	Jul	Jun	Apr	Jan	Oct	Jul	Apr	Jan	Oct	Jul	Apr	Jan
unit-in-dock	no	no	no	no	no	yes	yes	yes	yes	no	no	yes
Dry Dock Effluent Discharge												
flow (gpd)	0.244	0.244	ns [ⓐ]	ns	ns	0.264	0.264	0.264	0.264	ns	ns	0.264
pH (s.u.)	8.5	8.1	ns	ns	ns	8.3	8.4	8.1	8.5	ns	ns	8.1
TSS (mg/l)	1.4	1.6	ns	ns	ns	2.3	<5	4	<5	ns	ns	<5
turbidity (NTU)	0.74	0.82	ns	ns	ns	<1	0.27	0.48	0.11	ns	ns	0.41
temp (°C)	25.4	24.3	ns	ns	ns	24.6	26.2	26.4	27.0	ns	ns	26.6
fecalC (mpn)	ns	ns	ns	ns	ns	62	ns	67	55	ns	ns	40
O&G (mg/l)	1.4	1.7	ns	ns	ns	<1	<5	2	<1	ns	ns	<1
o-PO ⁴ (mg/l)	<0.1	<0.1	ns	ns	ns	<0.01	<0.01	0.01	<0.1	ns	ns	<0.01
nitrate (mg/l)	<0.10	<0.05	ns	ns	ns	<0.1	<0.1	0.26	<0.1	ns	ns	<0.1
hex-Cr (µg/l)	<100	<100	ns	ns	ns	<1	<5	ns	<1	ns	ns	<1
copper (µg/l)	56.0	75.6	ns	ns	ns	<1	ns	<1	<1	ns	ns	<1
lead (µg/l)	2.2	1.2	ns	ns	ns	<1	ns	<1	<1	ns	ns	<1
zinc (µg/l)	170	205	ns	ns	ns	<1	ns	<1	<1	ns	ns	<1
TBtin (µg/l)	<0.10	<0.10	ns	ns	ns	<0.01	ns	<0.01	<0.01	ns	ns	<0.01
Ambient Harbor Conditions												
pH (s.u.)	8.9	8.4	ns	ns	ns	8.7	8.3	8.4	8.7	ns	ns	8.3
TSS (mg/l)	ns	ns	ns	ns	ns	<1	<5	2	<5	ns	ns	<5
turbidity (NTU)	ns	ns	ns	ns	ns	<1	0.13	0.41	0.07	ns	ns	0.24
temp (°C)	25.9	24.5	ns	ns	ns	24.9	26.8	25.8	27.2	ns	ns	26.8
ⓐ ns – no sample results submitted for the quarter												