USEPA NJPDES Compliance Sampling Inspection Report – Bayonne Dry Dock & Repair Corp.

NJPDES No. NJ 022 5746 **NJPDES No.** NJ 016 5808 - Stormwater and Sediment

Date of Inspection: July 13, 2016

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Aerial Image from BDD Webpage

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Image from BDD Website Showing Scale of Operation

S u m m a r y

Based upon the results of the July 13, 2016 NJPDES Compliance Sampling Inspection (CSI) of Bayonne Dry Dock & Repair Corp. Inc, no deficiencies were observed with respect to the requirements and limitations of NJPDES Permit No. NJ 022 5746. None of the samples was found in exceedance of the NJPDES Permit. An evaluation of their catch basins and various stormwater BMPs related to their stormwater permit, NJPDES Permit No. NJ 016 5808, resulted in a satisfactory rating.

Objective

At the request of the EPA regional program office and the NJDEP, EPA conducted an announced NJPDES 24-hour CSI at the Bayonne Dry Dock & Repair Corp. Inc, hereinafter referred to as Bayonne Dry Dock or BDD, on July 13, 2016. Prior to this July 13 inspection, a Reconnaissance Inspection was conducted July 6 to evaluate the wastewater treatment (WWT) system and the configuration of its discharges and sampling locations.

The inspection was conducted at the request of NJDEP as part of the EPA-DECA workplan agreement and to provide NJDEP information from the discharges due to the BDD's NJPDES Stormwater Permit undergoing renewal. Another purpose of this inspection was to determine whether the permittee is discharging in compliance with the requirements and limitations of its NJPDES permit(s), i.e., NJPDES Permit No. NJ 022 5746 for the sump pump discharge through DSN 001A and No. NJ 016 5808 for the four stormwater discharges and two sediment monitoring locations.

Besides citizen inquiries over the years, the NJDEP permit writers were concerned with pumping mechanisms possibly not being reported, and discharge of contaminated wastewater high in metals from grinding and sanding operations, through an underground system. In addition, DECA-WCB inspectors recommended this facility based upon an EPA Oversight Inspection conducted 4/1/14.

Facility History and Background

The 430-acre peninsula at Bayonne's shipping port terminal on New York Bay was constructed of dredged and filled material in the 1930s to create additional industrial space for the city. During World War II in 1942, the United States Navy acquired the property for use as a dry dock and supply/logistics center and took on the name Marine Ocean Terminal Bayonne (MOTBY). (Dry dock has three spellings which include dry-dock or drydock.)

MOTBY was used during every major U.S. military operation since then, including the Persian Gulf War (ending in 1991). By 1967, the peninsula became a United States Army base which housed some of the Atlantic Reserve Fleet. It had the largest dry dock on the eastern seaboard able to accommodate of all types of cargo. Ships carried goods from the terminal which could handle a full range of munitions loaded onto the vessels using dedicated rail lines on-site.

But with the end of the Cold War, the federal government decided to close MOTBY in 1995, and completed closure in 1999 under a BRAC directive. Since that time, the area has been undergoing redevelopment into a mix-used waterfront community. Bayonne Dry Dock (BDD) opened in 1998 at the former MOTBY with no discharge permit. BDD was issued its first NJPDES permit on 12/19/07.

In 2002, MOTBY was officially renamed "The Peninsula at Bayonne Harbor" whose complex is made up of six distinct districts. BDD occupies portions of the Maritime Industrial District at the end of the long pier. Refer to the aerial image of the facility property (included as Figure #1) at the end of the narrative report on page 14. The Cape Liberty Cruise Port is also located at the end of this long pier.

In 2010, the Port Authority purchased 130 acres along the waterfront intending to create more port facilities. In 2015, the Bayonne City Council entered into a settlement which prevents the Port Authority from developing its land as a container port for 30 years.

Permits: Industrial Wastewater Discharge (**NJ0225746**) and Stormwater/Sediment (**NJ0165808**)
(Acronyms: EDP = Effective Date of Permit; XDP = Expiration Date of Permit)

The original NJPDES Permit (NJ0165808) was issued on 12/19/07 with EDP 3/1/08 and XDP 2/28/13. It was modified 12/1/10. Upon its expiration in 2013, it was divided into two separate permits - the industrial wastewater discharge (No. NJ0225746) and the former permit for the stormwater outfalls and sediment monitoring.

Industrial Wastewater Discharge (NJ0225746): Issued 7/3/14 with EDP 10/1/14 and XDP 9/30/19

The industrial wastewater intermittent discharge to surface water associated with the WWT system is permitted for DSN 001A, AKA the sump pump discharge. On August 9th 2014, it underwent a minor modification, but retained its EDP and XDP.

Stormwater/Sediment (NJ0165808): Issued 12/19/07 with EDP 3/1/08 and XDP 2/28/13

This permit regulates stormwater discharges and requires sediment monitoring at two locations. The NJDEP is currently revising the NJPDES Permit No. NJ 016 5808 and requested sampling results. The permittee applied for a NJPDES permit renewal to the NJDEP Bureau of Nonpoint Pollution Control on 2/24/14. In addition, a Stormwater Discharge Renewal Permit Action was posted in an 11/18/15 NJDEP Bulletin Notice.

Although the stormwater permit was not yet renewed, this permit remains in full force and effect until a renewed permit is issued by NJDEP. Part 3 of the permit contains monitoring requirements for DSN 001, but *that portion* of the permit is no longer relevant due to it being captured on the industrial wastewater discharge permit specifically for DSN001A.

On 05/28/15, the NJDEP and BDD entered into an Administrative Consent Order (ACO) to address numerous effluent violations – mainly metals, at outfall 001A. The WWT system was installed to, among other reasons, comply with the NJPDES permit limitations, in particular, zinc and copper.

Facility Description

BDD operates a full service ship repair yard, engaged in the industrial activity of repairing and painting of large commercial and military ships (SIC 3731: Ship Building and Repair). This can include emergency repairs, paint removal and repainting (with rust inhibitor and marine paint), ship customizations/overhauling, and routine maintenance. To accomplish this, BDD floods the dry dock, floats the ship in, closes the caisson door and pumps the water out. The ship is then held up with blocks or other supports. Repairs usually take approximately 90 days. According to their website, the capacity of the work area, known as the graving dock is 1092′ x 148′ x 35′. The wet berth is 1600′ x 35′.

All work is done in accordance with the standards of the American Bureau of Shipping, U.S. Coast Guard, Lloyd's Register and Det Norske Veritas. According to the BDD website, shops are run by craftsmen and include such services as: Carpenter Shop, Electrical Shop, Machine Shop, Piping Shop, Plate Shop, Tailshaft Shop, Rigging Shop, Sandblasting and Paint Shop. With the support of various cranes (gantry and mobile), the facility can accommodate capacities of 40 tons and 64 tons. In addition, electrical and diesel pumps are available with 1,800 GPM capacity at 150 PSI.

One of the common operations requires rust and paint removal, including the toxic bottom paint designed for killing marine organisms. It is typically indicated by a black line or red line. This is typically done by blasting. Sandblasting using blasting grit material known as Black Beauty, a by-product of coal incineration, is especially useful at removing rust. However, this practice requires extra manpower for clean-up of the sandblasting waste. According to BDD representatives, "We don't sandblast that much anymore. We only hydro-blast."

Water and Wastewater

Fresh water is obtained from the city of Bayonne. Sewage is plumbed to the city of Bayonne sewer system.

Wastewater from DSN 001A consists of discharges from the sump well, which is located inside the dry-dock, and gets pumped up to the treatment system. This sump well collects wastewater from such sources as: water from the leaking caisson gate (leaks approximately 300 gpm) to sump pump, water from the washing of boat hulls, condensate from HVAC systems on ships, process water from blasting operations, firehose testing, stormwater run-off (SWRO), and various other leaking water such as infiltration from sea water.

Prior to treatment, wastewater may include: paint chips (containing metals), spent abrasives (copper slag), cleaning/paint stripping solvents, ship surface contaminants, bilge and ballast tank residuals, rinse water, waste equipment cleaning water, and overspray from painting operations (containing paint pigments and solvents).

According to their permit, "*The drydock shall be cleaned of all residuals materials before discharge to DSN 001A can occur, and the drydock shall be cleaned of all residuals materials before it is filled with bay water. Specifically, all source material and residual must be removed. If a treatment system is installed and utilized for all effluent discharged through DSN 001A, the drydock shall be pressure washed to ensure the drydock is free of all source materials before it is filled with bay water. The pressure washwater shall be discharged through the treatment system via DSN 001A.*" Photo #1 below shows a typical work day and the immense area needing cleaning.

Photo #1: Typical Work Day – Photo by USEPA

The treated wastewater is discharged on an intermittent basis from an 8-inch (non-submerged) pipe at the end of the pier to Upper Bay – The Narrows, a section of Upper New York Harbor, classified as SE2(C2) or saline estuary. It is located among the Newark Bay / Kill Van Kull / Upper NY Bay Watershed.

Photo #2: Discharge 001A to Upper New York Harbor

Photo #3: Close-Up of DSN 001A

Stormwater

Three additional monitoring locations, DSN 002A and DSN 003A, and 004A consist of facility stormwater and are covered in a separate Stormwater Permit (No. NJ 016 5808). These stormwater outfalls discharge only during heavy rain events and will be sampled for permit requirements when appropriate conditions permit. Almost all requirements under the stormwater permit are "monitor only" except for petroleum hydrocarbons and pH range of 6 – 9 SUs.

Spent grit from blasting operations must be removed from the dock floor and is stored under a permanent structure consisting of shipping containers and a permanent roof. Continued monitoring of this area is conducted by the permittee to identify any runoff.

Due to the size of the dry dock and the capacity of the sump pumps, the existence of additional pumps in an underground vault raised questions with the EPA and NJDEP inspectors on their purpose within the grand scheme of the operation. These 10 feet wide and ½ mile long conveyances are not included in the permit applications, nor in the rough schematic of flow streams. If these pumps are able to circumvent the treatment process and discharge wastewaters contaminated with residue, a significant amount of heavy metals can be discharged without being captured on DMRs.

Wastewater Treatment (WWT) Description

The wastewater treatment (WWT) system was completed in 2016. It is a package plant comprised of various filters (bag, sock, sand, resin), most of which is housed inside an 8' x 20' shed (sea container). The final treatment process involves ion exchange filtering. A network of piping systems and valves is provided for backwashing and flexibility of operation. Monitoring of pressure differentials drives many of the treatment operations. The system is designed for maximum throughput of 350 gallons per minute (gpm). Final treated effluent discharges into the adjacent Upper New York Harbor through outfall 001A.

Removed solids are deposited in an adjacent, lined roll-off container for dewatering. After testing, determinations are made for proper disposal. A very simplified WWT flow schematic is attached as Figure #3. A more detailed description of the WWT process is retained in the project file and is not included here (for privacy considerations).

Photo #4: Piping from Sump to WWT System and To Outfall

Photo #5: View Inside Shed Showing Some Components of the WWT System

Filtered Solids are stored in a roll-off container for further dewatering (see photo #6 below). Because rain and snow can impact the moisture content of the materials, EPA recommended to Mr. Sullivan and Mr. Urm that this container be covered more securely and tightly.

Photo #6: Filtered Solids in Roll-Off Container

The Compliance Sampling Inspection (CSI)

The EPA inspectors checked into the Guard Gate/ Security Office, presented their EPA enforcement credentials, and obtained an escort, required to enter the facility property and conduct an inspection. Since this inspection was coordinated with BDD, the contractors were anticipating EPA's involvement. After conferring with the WWT system contractor, Triassic Technology, Inc., and the wastewater sampling contractor, Malkin Environmental and Excavating LLC, EPA set-up sampling equipment and calibrated instruments in preparation for the WWT system discharge.

The nature of this discharge is a batch treatment process which discharges episodically or intermittently. Split samples were offered to facility representatives at the start of the CSI. BDD representatives requested splits of the composite sample, but BDD contractors Malkin Environmental and Excavating and Triassic Technology, Inc., the WWT system chief operator, collected their own grab samples alongside USEPA.

Grab samples were collected from the tap provided, which is just upstream of the final discharge to the Upper New York Harbor. The required monitoring location described in their permit states, *"Samples shall be taken immediately prior to discharge through DSN 001A and shall be representative of normal facility operations …"* Although the optimal sample point is at the end of the pipe, safety precautions dictated that samples be collected from the sampling tap provided in the effluent discharge pipe. This is also the location the contractors use for collecting samples.

EPA installed an automated composite sampler with a glass collection vessel and Teflon® tubing, at the end of the WWT system, collecting sample aliquots every 5 minutes for the period of batch discharge (which amounted to 4 hours and 4 minutes). The automated composite sampler started at 1012 hrs, and ended at 1441 hrs., on July 13. The EPA composite sampler location and set-up is depicted in photo #7 below. Since the facility representatives assured EPA that this would be the entire discharge for the 24-hour period, the composite sample represents the 24-hour period.

Photo #7: Wastewater Treatment and EPA Automated Composite Sampler Monitoring DSN 001A

During the CSI, 24-hour composite and grab samples were collected following the requirements of the permit. Grab samples were collected from the tap provided for pH, TSS, petroleum hydrocarbons, oil and grease (HEM), TOC, total cyanide and VOAs. The composite sample was analyzed for select metals, pesticides/PCBs and NVOA. Most, but not all parameters were sampled for, based upon the judgement of the inspector and past monitoring data.

Since there was no rain event during the EPA sampling, the stormwater outfalls were not sampled. The USEPA samples and split samples were preserved on-site following the requirements of 40 CFR §136 and transported on ice to the EPA Regional Laboratory in Edison, New Jersey for analysis. Appropriate chain-of-custody procedures were maintained throughout the survey and analyses. The results of all samples collected are summarized in Tables #1 and #2 of the Findings section below.

Findings

The results of the July 13, 2016 24-Hour NJPDES CSI of Bayonne Dry Dock and Repair Corp are summarized in Tables #1 and #2 below, presenting a summary of the samples collected from the main outfall, DSN 001A. The effluent being discharged appeared clear.

The permittee uses a totalizer to measure the effluent flow for DMR reporting. The total flow for the sampling period was calculated by recording the totalizer readings at the start of the discharge and at the conclusion of the discharge period. The total flow of treated wastewater released from the WWT system was 53,492 gallons. Since the discharge lasted approximately 244 minutes, the average flow rate was 219 gpm. This is within the recommended operating range of the WWT system.

- None of the NVOAs, pesticides or PCB's samples analyzed resulted in detectable quantities.

Table #1: USEPA Compliance Sampling Inspection for Bayonne Dry Dock – July 13, 2016

Parameter	Units	Permit Limitation	EPA Sampling Result
Flow	GPD	m.o. Mo Avg (ẍ); m.o. Daily Max	53,492
pH Eff	S.U.	6.0 – 9.0	7.71
TSS	mg/L	Mo ẍ = Report Only; Daily Max = 100	15
Cyanide, Total	ug/L	m.o. 6 mos. pre-XDP (RQL=40)	< 10 U L
TOC	mg/L	Mo ẍ = Report Only; Daily Max = 50	1.0
Oil and Grease (HEM)	mg/L	Mo ẍ = 10 / Daily Max = 15	< 5.0 U
PHCs	mg/L	m.o.	< 5.0 U
PCBs	ug/L	m.o. 6 mos. pre-XDP	Undetected
Pesticides	ug/L	m.o. 6 mos. pre-XDP	Undetected

m.o = monitor only Mo ẍ = monthly average RQL = Recommended Quantitation Levels*
U = analyte was undetected at or near the Reporting Limit (RL) L = may be biased low

***Recommended Quantitation Levels (RQLs)** are listed in the tables for some of the parameters. The Department (NJDEP) developed the RQLs to insure that useful data is provided to the Department in order to characterize the discharger's effluent. The Department recommends that the permittee achieve detection levels that are at least as sensitive as the RQLs.

Metals: Table #2 below summarizes the July 13, 2016 sampling results for metals.

- Chromium and Manganese require monthly monitoring with no limitations.
- Only four of the required metals to be monitored have monitoring limitations.
- Lead and arsenic are limited to 50 ug/l monthly average and 100 ug/l daily maximum.
- Zinc and copper limits have been increased (i.e., relaxed) to 300 ug/l for both daily maximum and monthly average while the ACO is in effect.
- The remaining metals shown in Table #2 only require monitoring within 6 months of the XDP.
- Of the metals tested, three resulted in detectable quantities: Copper (19), magnesium (860,000), and manganese (83). (Magnesium is not a required permit parameter)

Table #2: EPA Sampling Results for Metals at BDD – July 13, 2016

Parameter	Units	Permit Limitation	EPA Sampling Result
Arsenic	ug/L	Mo ẍ = 50 / Daily Max=100 (RQL=8)	< 8 U
Chromium	ug/L	m.o.: Mo ẍ / Daily Max (RQL=10)	< 5 U
Copper	ug/L	300 (per ACO)	**19** J
Lead	ug/L	Mo ẍ = 50 / Daily Max=100	< 8 U
Manganese	ug/L	m.o.: Mo ẍ /Daily Max	**83**
Zinc	ug/L	300 (per ACO)	< 20 U J
Mercury, Total	ug/L	m.o. 6 mos. pre-XDP (RQL=1)	< 0.2 U
Cadmium	ug/L	m.o. 6 mos. pre-XDP	< 3 U J
Thallium	ug/L	m.o. 6 mos. pre-XDP (RQL=10)	< 20 U J
Silver	ug/L	m.o. 6 mos. pre-XDP (RQL=2)	< 5 U J
Antimony	ug/L	m.o. 6 mos. pre-XDP (RQL=20)	< 20 U
Nickel	ug/L	m.o. 6 mos. pre-XDP (RQL=10)	< 20 U
Selenium	ug/L	m.o. 6 mos. pre-XDP (RQL=10)	< 20 U
Magnesium	ug/L	No Monitoring Required	860,000

m.o. = monitor only U = analyte was undetected at or near the Reporting Limit (RL)
Mo ẍ = monthly average J = estimate

Data Usability Evaluation – Refer to the attached Laboratory Report.

- The reporting limit (RL) for this analysis of magnesium was raised to 500 ug/L.
- The RL for this analysis of 2,4-Dinitrophenol was raised to 32 ug/L and resulted in undetected.
- The RL for this mercury analysis was 0.2 ug/L and resulted in undetected. The permit requires use of EPA Method 1631E.

Other concerns were relayed to the USEPA by NJDEP permit writers.

- They felt the flow schematics for wastewater sources were incomplete and misrepresented some of the discharges.
- They also felt that due to the high burden of heavy metals and toxicants from industrial sources and loadings from rivers into this historic New York Harbor, BDD should incorporate higher standards for pre-clearance cleaning, comparing this facility to others on the West Coast.
- They also felt that greater scrutiny on sandblasting waste should be investigated since the waste amounts should be heavier than the virgin amounts due to occluded water weight.

In addition to this sampling effort, an evaluation of the quality and reliability of the self-monitoring data and facility operations, including a facility tour was conducted. The EPA inspectors also attempted to investigate the bases of the NJDEP officials' concerns. Although no deficiencies or concerns were discovered, this does not confirm that the concerns are not still valid, however.

Conclusions and Recommendations

Based upon the results of the July 13, 2016 NJPDES Compliance Sampling Inspection (CSI) of the Bayonne Dry Dock & Repair Corporation facility, no deficiencies were observed with respect to the requirements and limitations of NJPDES Permit No. NJ 022 5746. Continued compliance with all environmental permits is requested.

Outstanding actions are two additional USEPA CSIs to be conducted, and EPA inspector participation is requested in a pre-clearance inspection accompanying the NJDEP.

- One CSI for the three stormwater outfalls, which will require a qualifying rain event.

- One sediment sampling event using SCUBA divers, to be timed with the permittee's dive team. According to the permit, the singular sampling event of the sediment just off of the caisson gate "doors", is to occur between June 1 and September 30 of each calendar year.

- Participation in the pre-clearance inspection required by the permit prior to flooding the deck is requested.

Attachments
Figure #1: Aerial Image from Google®
Figure #2: Simplified Schematic Showing Sampling Points/Discharge Points
Figure #3: Simplified Line Drawing for Estimated Flow Contributions
Attachment #1: Chain-of-Custody for Sample Collection
Attachment #2: EPA Analytical Laboratory Report (11 pp)
Attachment #3: EPA Form #3560-3 (1 p)

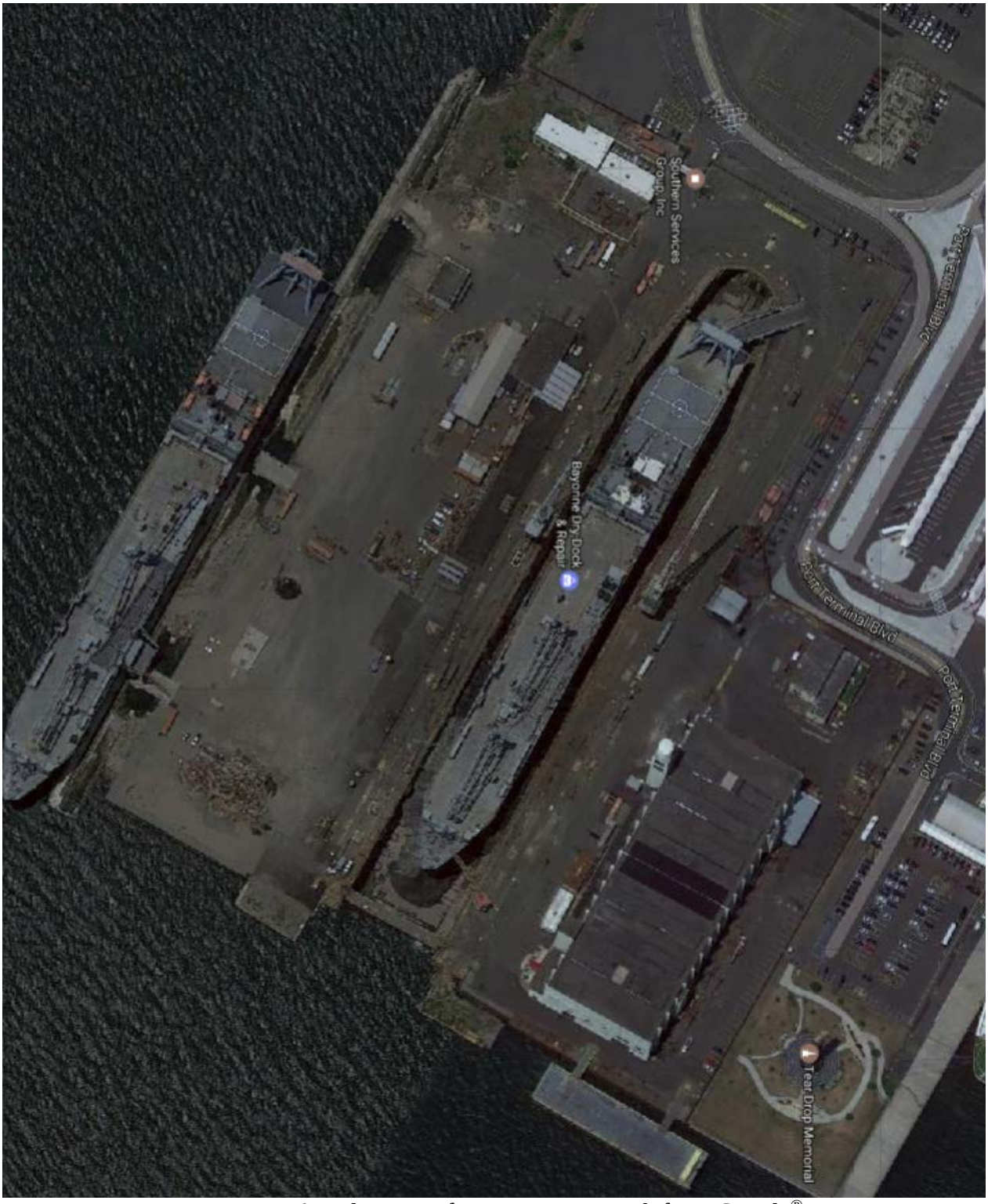

Figure #1: Aerial Image of Bayonne Dry Dock from Google®