BAE SYSTEMS

BAE Systems San Francisco Ship Repair Inc.

LEVEL 1 EXCEEDANCE RESPONSE ACTION (ERA) REPORT

PREPARED BY:

Sandor Halvax (QISP No. 00358)

December 29, 2016

Exceedance Response Action Level 1 Evaluation and Report

1.0 Site information

Facility Name	BAE Systems San Francisco Ship Repair Inc.
Address	Foot of 20th Street, San Francisco CA
Waste Discharge Identification Number	2 38I013911
SIC Code(s)	3731- Ship Building and Repair
Designated Legally Responsible Person (LRP)	BAE Systems San Francisco Ship Repair Inc. Michael Gerbracht (415) 829-0200
Discharger Contact Person	Ken Peterson
Phone Number	(415) 829-0450
E-mail Address	Kenneth.Peterson3@BAESystems.com

2.0 QISP Information

Name	Sandor Halvax
QISP Cert. Number	00358
Affiliation	BAE Systems Inc. Ship Repair Manager Environmental Affairs
Phone Number	619-572-6477
E-mail Address	sandor.halvax@BAESystems.com
Scope of Services Provided	Stormwater training, evaluation of SWPPP implementation, recommendations for improvement

3.0 Summary of Numeric Action Level (NAL) Exceedances

Details Review of data

Appendix 1 (Tables 1-1- through 1-6) detail the 2015/2016 stormwater discharge data and related NAL exceedances being addressed in this Level 1 ERA Evaluation and Report. Exceedances of NALs for copper (Cu), zinc (Zn), and aluminum (Al) are identified in this sample set.

Appendix 2 (Tables 2-1- through 2-6) detail the 2016/2017 (1st half-year results) stormwater discharge data. Samples collected during the first Qualifying Stormwater Event (10/13/16) reflect conditions prior to substantial implementation of primary BMP improvements.

As can be seen in the below table, overall improvement has been achieved for Cu and Zn from the aggressive cleaning procedures put in place prior to the second sampling event of the first semi-annual sampling period. Nonetheless, during this 1st semi-annual period the Al NAL Exceedance in 2016/2017 appears to be associated with an abnormally high Al concentration as identified in sample location P4-7 on 12/15/2016 (9.8 mg/L). This sample location/Date also has the highest concentrations for Cu, Zn, and Pb, for all 2016/2017 samples collected during either semi-annual monitoring event. It is not clear what caused this anomalous sampling result at the Pier 4 location. And, TSS at that location does not appear to

be elevated, as might be expected. Additionally, a review of the visual monitoring, as reported on the monitoring reporting form, did not reveal any specific information that could identify causation or source of elevated chemistry. While the site implemented additional housekeeping BMPs (mechanical cleaning of inaccessible areas on piers and wharf), it is believed that that the cleaning may have dislodged particulate concentrations that were then exposed to precipitation runoff. Additional cleaning measures will include pressure washing of drainage areas.

Table 3.1: Summary of 2015/2016 and 2016/2017 annual average results

Parameter	NAL($\bar{x}$)	15/16 ($\bar{x}$)	16/17 ($\bar{x}$)	%Δ
pH	Avg	N/A	N/A	N/A
Suspended Solids (TSS), Total	100	64.61	36.88	-43%
Oil & Grease (O&G), Total	15	3.79	5.42	43%
Zinc, Total[1,2]	0.26	1.01	0.81	-20%
Copper, Total[1,2]	0.0332	1.43	1.01	-29%
Lead, Total	0.262	0.03	0.11	234%
Aluminum, Total[1,2]	0.75	1.15	1.49	30%

[1]NAL Exceeded
[2]Sample Location P4-7 on 12/15/2016 has highest metals concentration of any location that date or the prior sample date of 10/14/2016.

4.0 SWPPP Review

A review of the SWPPP was conducted to assess compliance with requirements outlined in Section X of the General Permit. This review included all sections of the SWPPP, including the site map, monitoring implementation plan, potential pollutant generating activities, and BMP selection and implementation. The site map was found to inaccurately reflect the entire area of Drainage Area 1. And, while the addition of the omitted area does not have any active drains, it does have historical drains that were closed (concrete plug) several years ago. As a result of this slightly increased area, the SWPPP was revised to include an additional sampling point within DA-1 (added sample point H-6 which was analyzed during both 2016/2017 1st semi-annual QSE's.)

5.0 Evaluation/Identification of Potential Pollutant Sources

During the first half of the 2016/2017 monitoring period very little industrial activity was occurring at the site. During this period there were only two ships dry-docked in Drydock No. 2 (one week in July and three weeks in November). No vessels in the Eureka drydock. During this same period there were only two pierside berthings of short duration.

A pollutant source evaluation was performed for each parameter exceeding an NAL, as summarized in **Section 3.0** above. The focus of pollutant source identification emphasized those activities that could generate particulate from industrial activity. This assessment did not reveal any ongoing activity, including storage or movement of materials, which was identified to have a contribution to pollutant loading in stormwater. Therefore, the focus of the assessment shifted to potential accumulation of dust/debris in inaccessible locations that, when exposed to rain, may release particulates into stormwater runoff.

Parameter Exceeded	Potential Source/Activity Generating Exceedance[1]	Likely Source[2]	Existing BMPs to Address the Source
All metals	Vehicle traffic, Loading and unloading activities, metal parts storage, paints/solvents	Industrial	BMP 1.1 Material Storage BMP 1.2: Good housekeeping BMP 1.8: Waste Handling BMP 2.21: General Yard Cleanup BMP 2.25: Equipment Storage BMP 2.26: Transportation BMP 3.1: Emissions Prevention BMP 3.2: Abrasive Material

Based on the evaluation, additional investigation and/or monitoring is necessary to identify the potential pollutants source(s). This assessment should focus on particulates/dust/debris in inaccessible areas. Following pressure washing of site drainage areas (See section 8 below), monitoring should specifically review pollutant loading in stormwater post pressure washing to determine if such BMP improvements have reduced pollutant load.

6.0 Minimum BMP Evaluation

The site implements a number of BMPs that have been developed to specifically target shipyard industrial activities and potential pollutant sources, 51 BMPs in total. Many of these BMPs relate to shipboard activity or non-stormwater activity. Of those BMPs that are focused on preventing chemical impacts to stormwater, most are related to housekeeping and prevention of contact with stormwater. While these BMPs appear to be well implemented, this has not translated to significant reductions in concentrations of copper (Cu) and zinc (Zn). Aluminum also exceeded the Numeric Action Level (NAL).

As a result of the NAL exceedances the site employed extraordinary mechanical cleaning methods (sweeping, scraping, and vacuuming) in an attempt to remove fugitive particulates that may have been entrained in and around pier edges and electrical and other immovable equipment. Aged infrastructure was identified as a potentially contributing factor to pollutant loading as well. Some surface pressure washing of piers and similar areas was scheduled to be conducted, but has not been implemented at the time of this report.

While the BMPs themselves were not found to be deficient, some program improvements were identified as described below.

Deficiency Noted/Improvement recommended	Associated Tributary Area/Discharge Point
BMPs associated with Good Housekeeping, including material tracking, dust generation, material cover, material storage, and transportation were reviewed for completeness and responsiveness to site conditions and found to be adequate. Some minor implementation items identified that may improve implementation, but generally implementation was good as well.	All

BMPs associated with site maintenance were identified that could reduce accumulation of particulates effecting SW chemical concentrations. Specifically, areas of the wharf where deteriorated concrete had accumulations of particulates were being sawcut for resurfacing, eliminating cracks and particulate accumulation.	High Water Platform (wharf)
BMP 1.9 Quality Assurance: While inspections had been performed for each of the required monitoring periods, some records of inspections were incomplete (some data fields left blank). And, in some cases, where deficient BMP implementation was found, more detail on the deficiency and corrective action is advised. Lastly, the form used for conducting inspections was not being controlled in accordance with site document control requirements. Additionally, inspection forms were found to be in need of improvement to accurately capture sufficient information to qualitatively record observations and control document in the Environmental Management System.	All

7.0 Advanced BMPs

Currently, the industrial area discharging to the receiving water is constructed of pile-supported over water structures (two piers and a wharf) with over 100 drainage points. Many of these drains have been closed (using concrete plugs) and 56 surface drains remain. Unlike on-shore (land-based) facilities, these over water structure drains have no interconnection between them.

As a result of NAL exceedances and the potential that continued exceedance may occur, the site commissioned the design of a stormwater collection system. The system is being designed such that it will connect each drain to common discharge piping system using several interconnected pressurized lift stations. Stormwater would then be pumped to a common location consisting of above-ground tanks. The design is consistent with Section H.6 of the IGP (Design Storm Standards for Treatment Control BMPs). And, while economic practicability and achievability have not yet been determined, this advanced BMP is being designed and evaluated as may be required under Section X.H.2.b.ii. The 50% design review has been held with the engineering firm and final design is expected to be completed during the first quarter of 2017.

As BAE Systems San Francisco Ship Repair Inc. leases the site from the Port of San Francisco, who is the property owner, construction/installation, should that be determined to be practical and achievable, would require authorization and permitting by the land owner, among others.

It is currently anticipated that collected stormwater would be discharged to the Publically Owned Treatment Works (POTW) under the site's existing Industrial User Discharge Permit, issued by the San Francisco Public Utilities Commission. This plan, if implemented in the manner described, would eliminate the discharge of stormwater to San Francisco Bay, and, as such, would eliminate future NAL exceedances. It is currently anticipated that permitting and construction of the stormwater collection systems will complete by 12/31/2017. Until such time as a collection system is implemented, additional BMP improvements will be implemented as described below.

8.0 Additional BMPs Selected for Implementation

Based on the pollutant source evaluation and evaluation of existing BMPs implemented at the site, the following additional BMPs or improvements to existing BMPs have or will be implemented to control pollutants generated from on-site industrial activities. The SWPPP for the site to has been revised to reflect the changes.

Parameter Exceeded	Additional BMP(s) Implemented to Address Exceedance	Date Implemented or Scheduled for Implementation[1]	SWPPP Section
All Metals	One-time aggressive sweeping/vacuum cleaning of previously inaccessible locations. Focus on pier edge bulwarks and fender systems that may have accumulated particulates.	October-December 2016	No SWPPP revisions required.
All Metals	One-time power washing of entire surface area of all five drainage areas. Will require securing of drains in area of discharge and collection of wash water for subsequent discharge to sewer.	1st Quarter 2017	No SWPPP revisions required.

9.0 Modification to Existing Monitoring Implementation Program (MIP)

Additional Investigation(s)/Modification(s)	Goal/Objective
Sampling procedure revision/modification.	Re-write of procedure was accomplished to include sufficient detail for sampling personnel to ensure quality of samples, preservation, handling, and documentation.
SWPPP Map was revised to include all of DA-1 and addition of Sample Point H-6.	To ensure all sampling areas accurately reflected in Map and SWPPP
Revised Monthly inspection forms	To ensure all information collected
Installation of SW monitoring station (Davis Vantage Pro 2)	To improved site specific stormwater metrological information

10.0 Evaluation and Report Completion/Submittal Information

Date ERA Level 1 Evaluation Completed:	9/14/2016
Date SWPPP Revisions Completed:	12/1/2016
Date BMP Implementation (mechanical cleaning) Complete:	12/13/2016
Date ERA Level 1 Report Certified and Submitted:	12/29/2016

APPENDIX 1

Table 1-1: 15/16 Numeric Action Level (NAL) Detail: Drainage Area 1

NAL Evaluation Worksheet

Drainage Area: DA-1: West Wharf

Discharge Point Name: H-3

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	11/2/2015	11/15/2015	1/22/2016	4/9/2016			
pH	pH units	N/A	Less than 6.0 Greater than 9.0	8.24	7.47	7.49	6.71	7.4775		No
Suspended Solids (TSS), Total	mg/L	100	400	29.7	31.6	**179**	70.4	77.675	No	No
Oil & Grease (O&G), Total	mg/L	15	25	5.3	5.4	1.1	1.3	3.275	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.72**	**0.47**	**1.2**	**0.7**	**0.7725**	**Yes**
Copper, Total	mg/L	0.0332	**1.1**	**0.58**	**1.3**	**0.71**	**0.9225**	**Yes**
Lead, Total	mg/L	0.262	0.026	0.013	0.079	0.024	0.0355	No
Aluminum, Total	mg/L	0.75	**0.82**	0.69	**3.4**	**1.9**	**1.7025**	**Yes**
Arsenic, Total	mg/L	0.15	0.0019	0.005	0.005	0.0012	0.003275	No
Mercury, Total	mg/L	0.0014	0.000025	0.000025	0.000025	0.000044	0.00002975	No

APPENDIX 1

Table 1-2: 15/16 Numeric Action Level (NAL) Detail: Drainage Area 2

NAL Evaluation Worksheet

Drainage Area:	DA-2: Pier 3
Discharge Point Name:	P3-7

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**11/2/2015**	**11/15/2015**	**1/22/2016**	**4/9/2016**			
pH	pH units	N/A	Less than 6.0 Greater than 9.0	8.04	7.57	6.37	6.69	7.1675		No
Suspended Solids (TSS), Total	mg/L	100	400	65	56	3.3	37	40.325	No	No
Oil & Grease (O&G), Total	mg/L	15	25	5.2	5.0	1.1	1.4	3.175	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.35**	**1.7**	**0.083**	**0.37**	**0.62575**	**Yes**
Copper, Total	mg/L	0.0332	**0.18**	**0.92**	**0.029**	**0.32**	**0.36225**	**Yes**
Lead, Total	mg/L	0.262	0.026	0.13	0.0018	0.023	0.0452	No
Aluminum, Total	mg/L	0.75	**0.79**	**3.9**	0.027	0.32	**1.25925**	**Yes**
Arsenic, Total	mg/L	0.15	0.0051	0.013	0.0052	0.006	0.007325	No
Mercury, Total	mg/L	0.0014	0.000025	0.000025	0.000025	0.00001	0.00002125	No

APPENDIX 1

Table 1-3: 15/16 Numeric Action Level (NAL) Detail: Drainage Area 3

NAL Evaluation Worksheet

Drainage Area:	DA-3: Central Wharf
Discharge Point Name:	H-18

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**11/2/2015**	**11/15/2015**	**1/22/2016**	**4/9/2016**			
pH	pH units	N/A	Less than 6.0 Greater than 9.0	8.17	7.28	6.97	6.89	7.3275		No
Suspended Solids (TSS), Total	mg/L	100	400	92.6	14.4	14.5	8.3	32.45	No	No
Oil & Grease (O&G), Total	mg/L	15	25	6.5	5.3	1.1	1.1	3.5	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.77**	**0.32**	**0.47**	0.18	**0.435**	**Yes**
Copper, Total	mg/L	0.0332	**0.89**	**0.56**	**0.23**	**0.39**	**0.5175**	**Yes**
Lead, Total	mg/L	0.262	0.067	0.01	0.007	0.0051	0.022275	No
Aluminum, Total	mg/L	0.75	**0.78**	0.5	0.15	0.22	0.4125	No
Arsenic, Total	mg/L	0.15	0.0011	0.005	0.0018	0.0018	0.002425	No
Mercury, Total	mg/L	0.0014	0.000025	0.000025	0.000024	0.00001	0.000021	No

APPENDIX 1

Table 1-4: 15/16 Numeric Action Level (NAL) Detail: Drainage Area 4

NAL Evaluation Worksheet

Drainage Area:	DA-4: Pier 4
Discharge Point Name:	P4-7

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**11/2/2015**	**11/15/2015**	**1/22/2016**	**4/9/2016**			
pH	pH units	N/A	Less than 6.0 Greater than 9.0	8.01	7.23	7.71	6.52	7.3675		No
Suspended Solids (TSS), Total	mg/L	100	400	**115**	19.2	1.0	13.8	37.25	No	No
Oil & Grease (O&G), Total	mg/L	15	25	5	5.2	1.1	5.9	4.3	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.48**	**0.41**	0.052	**0.36**	**0.3255**	**Yes**
Copper, Total	mg/L	0.0332	**0.62**	**0.67**	**0.034**	**0.31**	**0.4085**	**Yes**
Lead, Total	mg/L	0.262	0.012	0.021	0.0012	0.022	0.01405	No
Aluminum, Total	mg/L	0.75	0.48	0.05	0.05	0.29	0.2175	No
Arsenic, Total	mg/L	0.15	0.0064	0.005	0.005	0.00048	0.00422	No
Mercury, Total	mg/L	0.0014	0.000025	0.000025	0.000025	0.00001	0.00002125	No

APPENDIX 1

Table 1-5: 15/16 Numeric Action Level (NAL) Detail: Drainage Area 5

NAL Evaluation Worksheet

Drainage Area:	DA-5: East Wharf
Discharge Point Name:	H-32

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**11/2/2015**	**11/15/2015**	**1/22/2016**	**4/9/2016**			
pH	pH units	N/A	Less than 6.0 Greater than 9.0	8.61	7.28	8.54	6.83	7.815		No
Suspended Solids (TSS), Total	mg/L	100	400	**126**	74.8	**318**	22.6	**135.35**	**Yes**	No
Oil & Grease (O&G), Total	mg/L	15	25	5.9	6.3	3.9	2.7	4.7	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**1.1**	**4.4**	**5.3**	**0.77**	**2.8925**	**Yes**
Copper, Total	mg/L	0.0332	**2.3**	**7.6**	**8.6**	**1.3**	**4.95**	**Yes**
Lead, Total	mg/L	0.262	0.009	0.044	0.11	0.0076	0.04265	No
Aluminum, Total	mg/L	0.75	0.35	2.6	**5.2**	0.41	**2.14**	**Yes**
Arsenic, Total	mg/L	0.15	0.0011	0.005	0.045	0.0011	0.01305	No
Mercury, Total	mg/L	0.0014	0.0006	0.000025	0.0012	0.00002	0.00046125	No

APPENDIX 1

Table 1-6: 15/16 Numeric Action Level (NAL) Detail: Summary

Parameter	Units	Annual NAL	H-3	P3-7	H-18	P4-7	H-32	Average	Annual NAL Exceeded? (Yes/No)	Instantaneous NAL Exceeded? (Yes/No)
pH	pH units	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
Suspended Solids (TSS), Total	mg/L	100	77.68	40.33	32.45	37.25	**135.35**	64.61	No	No
Oil & Grease (O&G), Total	mg/L	15	3.28	3.18	3.50	4.30	4.70	3.79	No	No
Zinc, Total	mg/L	0.26	**0.77**	**0.63**	**0.44**	**0.33**	**2.89**	**1.01**	**Yes**	
Copper, Total	mg/L	0.0332	**0.92**	**0.36**	**0.52**	**0.41**	**4.95**	**1.43**	**Yes**	
Lead, Total	mg/L	0.262	0.04	0.05	0.02	0.01	0.04	0.03	No	
Aluminum, Total	mg/L	0.75	**1.70**	**1.26**	0.41	0.22	**2.14**	**1.15**	**Yes**	
Arsenic, Total	mg/L	0.15	0.00	0.01	0.00	0.00	0.01	0.01	No	
Mercury, Total	mg/L	0.0014	0.00	0.00	0.00	0.00	0.00	0.00	No	

APPENDIX 2

Table 2-1.1: 16/17 Numeric Action Level (NAL) Detail: Drainage Area 1, Sample Point H-3

NAL Evaluation Worksheet

Drainage Area: DA-1: West Wharf

Discharge Point Name: H-3

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**10/14/2016**	**12/15/2016**					
	pH units	N/A	Less than 6.0 Greater than 9.0	7.86	6.67			7.265		No
Suspended Solids (TSS), Total	mg/L	100	400	57.4	26.5			41.95	No	No
Oil & Grease (O&G), Total	mg/L	15	25	**31**	1.6			16.3	Yes	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.83**	**0.29**			**0.56**	**Yes**
Copper, Total	mg/L	0.0332	**2.2**	**0.23**			**1.215**	**Yes**
Lead, Total	mg/L	0.262	0.056	0.015			0.0355	No
Aluminum, Total	mg/L	0.75	**1.8**	0.55			**1.175**	**Yes**

Table 2-1.2: 16/17 Numeric Action Level (NAL) Detail: Drainage Area 1, Sample Point H-6

NAL Evaluation Worksheet

Drainage Area:	DA-1: West Wharf
Discharge Point Name:	H-6

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**10/14/2016**	**12/15/2016**					
pH	pH units	N/A	Less than 6.0 Greater than 9.0	6.97	6.72			6.845		No
Suspended Solids (TSS), Total	mg/L	100	400	23.8	19.6			21.7	No	No
Oil & Grease (O&G), Total	mg/L	15	25	2.7	4.6			3.65	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.3**	**0.34**			**0.320**	**Yes**
Copper, Total	mg/L	0.0332	**0.31**	**0.32**			**0.315**	**Yes**
Lead, Total	mg/L	0.262	0.17	0.039			0.105	No
Aluminum, Total	mg/L	0.75	0.54	0.62			0.580	No

APPENDIX 2

Table 2-2: 16/17 Numeric Action Level (NAL) Detail: Drainage Area 2, Sample Point P3-7

NAL Evaluation Worksheet

Drainage Area:	DA-2: Pier 3
Discharge Point Name:	P3-7

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**10/14/2016**	**12/15/2016**					
pH	pH units	N/A	Less than 6.0 Greater than 9.0	7.37	6.81			7.09		No
Suspended Solids (TSS), Total	mg/L	100	400	42	4.9			23.45	No	No
Oil & Grease (O&G), Total	mg/L	15	25	12	1.1			6.55	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.42**	**0.48**			**0.45**	**Yes**
Copper, Total	mg/L	0.0332	**1.5**	**0.32**			**0.91**	**Yes**
Lead, Total	mg/L	0.262	**0.29**	0.064			0.177	No
Aluminum, Total	mg/L	0.75	0.69	**1.3**			**0.995**	**Yes**

Table 2-3: 16/17 Numeric Action Level (NAL) Detail: Drainage Area 3, Sample Point H-18

NAL Evaluation Worksheet

Drainage Area:	DA-3: Central Wharf
Discharge Point Name:	H-18

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**10/14/2016**	**12/15/2016**					
pH	pH units	N/A	Less than 6.0 Greater than 9.0	7.95	7.16			7.555		No
Suspended Solids (TSS), Total	mg/L	100	400	29.7	64.2			46.95	No	No
Oil & Grease (O&G), Total	mg/L	15	25	1.8	1.1			1.45	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	0.25	**0.94**			**0.595**	**Yes**
Copper, Total	mg/L	0.0332	**0.43**	**1.1**			**0.765**	**Yes**
Lead, Total	mg/L	0.262	0.086	0.051			0.0685	No
Aluminum, Total	mg/L	0.75	0.22	1.3			**0.76**	**Yes**

Table 2-4: 16/17 Numeric Action Level (NAL) Detail: Drainage Area 4, Sample Point P4-7

NAL Evaluation Worksheet

Drainage Area: DA-4: Pier 4

Discharge Point Name: P4-7

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**10/14/2016**	**12/15/2016**					
pH	pH units	N/A	Less than 6.0 Greater than 9.0	7.75	6.96			7.355		No
Suspended Solids (TSS), Total	mg/L	100	400	19.2	22.5			20.85	No	No
Oil & Grease (O&G), Total	mg/L	15	25	2.8	3.2			3	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.27**	**4.2**			**2.235**	**Yes**
Copper, Total	mg/L	0.0332	**0.35**	**4.3**			**2.325**	**Yes**
Lead, Total	mg/L	0.262	0.016	0.4			0.208	No
Aluminum, Total	mg/L	0.75	0.28	**9.8**			**5.04**	**Yes**

Table 2-5: 16/17 Numeric Action Level (NAL) Detail: Drainage Area 5, Sample Point H-32

NAL Evaluation Worksheet

Drainage Area:	DA-5: East Wharf
Discharge Point Name:	H-32

Parameter	Units	Annual NAL[1]	Instantaneous NAL[2]	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded for this Discharge Point? (Yes/No)	Instantaneous NAL Exceeded for this Drainage Point? (Yes/No)
			Date:	**10/14/2016**	**12/15/2016**					
pH	pH units	N/A	Less than 6.0 Greater than 9.0	7.81	6.35			7.08		No
Suspended Solids (TSS), Total	mg/L	100	400	**117**	15.7			**66.35**	**No**	No
Oil & Grease (O&G), Total	mg/L	15	25	2.0	1.1			1.55	No	No

Parameter	Units	Annual NAL	First Storm	Second Storm	Third Storm	Fourth Storm	Average	Annual NAL Exceeded? (Yes/No)
Zinc, Total	mg/L	0.26	**0.32**	0.2			**0.26**	**No**
Copper, Total	mg/L	0.0332	**0.91**	**0.17**			**0.54**	**Yes**
Lead, Total	mg/L	0.262	0.076	0.018			0.047	No
Aluminum, Total	mg/L	0.75	0.43	0.38			0.405	**No**

APPENDIX 2

Table 2-6: 16/17 Numeric Action Level (NAL) Detail: Summary

Facility-wide NAL Summary Sheet											
Parameter	**Units**	**Annual NAL**	**H-3**	**H-6**	**P3-7**	**H-18**	**P4-7**	**H-32**	**Average**	**Annual NAL Exceeded? (Yes/No)**	**Instantaneous NAL Exceeded? (Yes/No)**
pH	pH units	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No
Suspended Solids (TSS), Total	mg/L	100	41.95	21.70	23.45	46.95	20.85	**66.35**	36.88	No	No
Oil & Grease (O&G), Total	mg/L	15	16.30	3.65	6.55	1.45	3.00	1.55	5.42	No	No
Zinc, Total	mg/L	0.26	**0.56**	**0.32**	**0.45**	0.60	**2.24**	**0.26**	**0.74**	**Yes**	
Copper, Total	mg/L	0.0332	**1.22**	**0.32**	**0.91**	**0.77**	**2.33**	**0.54**	**1.01**	**Yes**	
Lead, Total	mg/L	0.262	0.04	0.10	0.18	0.07	0.21	0.05	0.11	No	
Aluminum, Total	mg/L	0.75	**1.18**	0.58	1.00	0.76	5.04	0.41	1.49	**Yes**	

APPENDIX 3

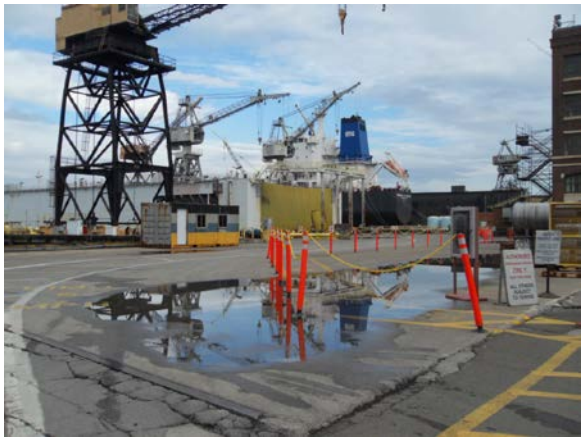
Table 3-1: 2015/2016 comparison to 2016/2017 1st Half-Year sampling

Parameter	15/16 Avg	16/17 Avg	%Δ
pH	N/A	N/A	N/A
Suspended Solids (TSS), Total	64.61	36.88	-43%
Oil & Grease (O&G), Total	3.79	5.42	43%
Zinc, Total	1.01	0.81	-20%
Copper, Total	1.43	1.01	-29%
Lead, Total	0.03	0.11	234%
Aluminum, Total	1.15	1.49	30%

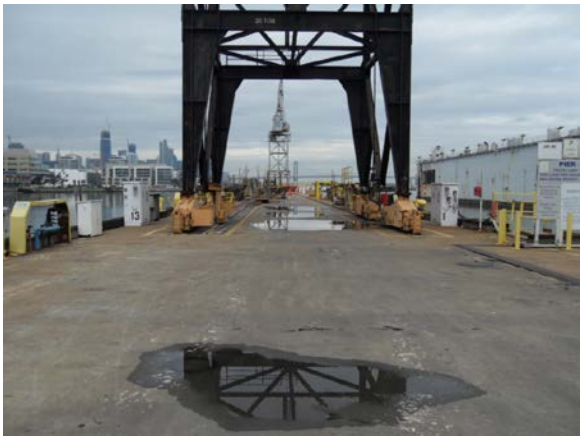
APPENDIX 4

Site Photographs

Drainage Area 1 (Sample IDs H-3 and H-6)

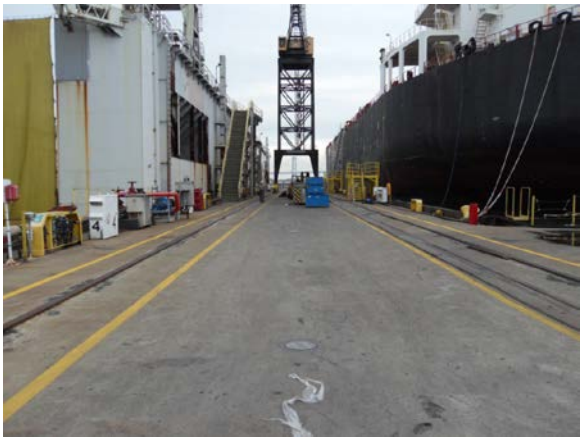


Drainage Area 2 (Pier 3, Sample ID P3-7)



Drainage Area 3 (Sample ID H-18)

APPENDIX 4



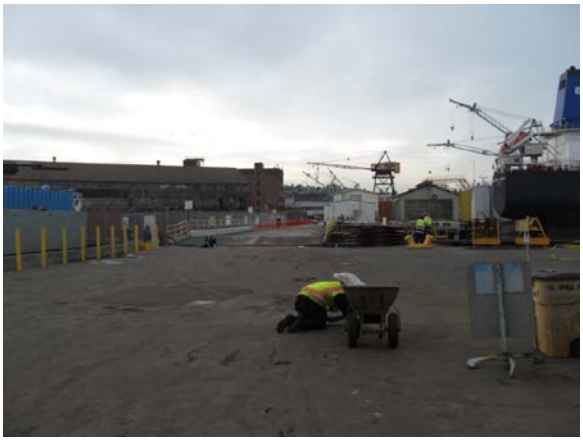
Vehicle Ramp toward DD 2

Water Treatment Plant

Drainage Area 5 (Sample ID H-32)

Drainage Area 4 (Pier 4, Sample ID P4-7)

APPENDIX 4



Saw cutting and concrete replacement

Vacuum Sweeping throughout all DAs.