

Annual Construction Stormwater Monitoring Report

Seattle-Tacoma International Airport

For the Period July 1, 2014 through June 30, 2015

September 25, 2015

Prepared by

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Port of Seattle

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Section 1: Construction Stormwater Annual Report

The Port of Seattle (Port) National Pollutant Discharge Elimination System (NPDES) permit is broken down into three sections: Part I: Industrial Wastewater, Part II: Non-Construction Stormwater and Part III: Construction Stormwater. NPDES Permit Part III Special Condition S1.F requires an annual summary of construction stormwater monitoring results. The twelve month period is defined as July 1 through June 30. This report provides a summary of the number of projects, active outfalls, number of construction stormwater events and permit compliance results during this period.

1.1 Background

The Port operates and maintains the Seattle-Tacoma International Airport (STIA). STIA routinely undergoes facility upgrades to improve outdated infrastructure and to increase facility and operational capacity to accommodate the increased number of passengers and meet other needs of the airline industry. Many of these upgrades involve ground disturbing activities requiring construction stormwater runoff monitoring in accordance with Part III Special Condition S1. The monitoring results summarized in this report document permit compliance.

Section 2: Construction Stormwater Monitoring Requirements

The Port develops and submits a site-specific construction stormwater monitoring plan prior to construction activities for any project that disturbs one (1) or more acres. The monitoring plan provides a brief project description, identifies construction stormwater outfalls, stormwater treatment processes (if applicable), reporting requirements and non-compliance notification contacts and procedures. Monitoring continues until a site stabilization notification is submitted to Ecology.

Construction stormwater monitoring is defined under Part III, Special Condition S1.C Table 3 and is broken into three categories:

- Non-Chemically Treated Discharge Monitoring
- Continuous Chemical Treatment Monitoring
- Batch Treatment Monitoring.

Port personnel work with project and construction management teams to identify the appropriate form of treatment for each site and how the site will be monitored to meet permit requirements. Each category of treatment has specific monitoring frequencies and effluent limitations. Table 1 provides a summary of active construction projects in the reporting period and the form of treatment used at each.

A construction outfall grid was developed in order to determine the location of potential construction stormwater discharges so that they would be identified in the Airport's NPDES permit. These locations discharge into the six (6) receiving waters surrounding STIA. These grids or boxes reflect the associated authorized outfalls referenced in Part III, Special Condition S1.A.1 Table 1. The NPDES Construction Monitoring Outfall Areas Map (Appendix A) provides a reference for outfall locations.

The Port has the potential to utilize 62 construction outfalls identified in the NPDES permit. Each outfall can have a non-chemical construction stormwater discharge, batch-treated chemical stormwater discharge and/or a continuous flow chemical treated stormwater discharge. Appendix A NPDES Construction Monitoring Outfall Areas Map shows all of the potential construction stormwater outfalls at STIA.

The Port and Ecology track each outfall under three (3) possible operating conditions:

- Non-operational
- Inactive
- Active.

A *non-operational* outfall has never been activated as a construction stormwater outfall during the current permit cycle. An *inactive* outfall has previously been active but during a particular month(s) there was no construction activity discharging to that outfall. An *active* outfall receives stormwater from a construction site with ground disturbing activity. The Port provides an outfall summary to Ecology along with the monthly Discharge Monitoring Report (DMR) submittal to track operating outfall status. The DMRs summarize the monitoring results from all active outfalls.

The Port may also discharge construction stormwater to the Industrial Waste Treatment Plant (IWTP). All stormwater sent to the IWTP is treated and discharged per NPDES permit Part I, Special Conditions S1.A Table 1-A & S2.A.1.

Table 1. Project Summary and Treatment Type Utilized

Project	July	August	September	October	November	December	January	February	March	April	May	June	
Logistics Site	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	
Sound Transit 200 th Extension S440 Project	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	
Long Term Cell Phone Lot Project	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	
Doug Fox Service Upgrades Project	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	
Cargo Hardstand Improvements Project	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	
2014 Airfield Improvement Project	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	
16C/34C Reconstruction Project	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem Chem	Non-Chem Chem	

Non-Chem: Non-Chemically Treated Discharge

Chem: Flow Through Chitoson Enhanced Sand Filtration

2.1 Non-Chemically Treated Discharge Monitoring

Non-chemically treated discharge monitoring is triggered when conventional erosion and sediment control BMPs are utilized to meet water quality standards.

A non-chemically treated discharge monitoring event is triggered when the airport receives 0.5 inches or greater of rain in a 24-hour period. The 24-hour period is defined as being from 8:00am to 8:00am to ensure safety of field samplers and if necessary allows for Best Management Practice (BMP) adjustments or repairs to be completed that working day. The Port NPDES permit requires non-chemical treatment discharges be monitored upstream and downstream of the outfall. The upstream monitoring location is approximately five (5) feet upstream of the discharge and the downstream monitoring location is determined by Ecology's RivPlum Model and is no greater than 100 feet downstream or at the nearest accessible point. Table 2 summarizes the Non-chemically treated discharge monitoring parameters and effluent limitations.

Table 2. Non-Chemically Treated Monitoring Parameters & Effluent Limits

Monitoring Parameter	Effluent Limit
Turbidity ^(a)	5 NTU or 10% increase above background
pH	6.5 to 8.5 ^(b)
Total Petroleum Hydrocarbons	5 mg/L ^(c)
Flow	Report

Footnotes:

- (a) Background turbidity 50 NTU or less then the turbidity in the receiving water shall not exceed 5 NTU above background. Background turbidity is greater than 50 NTU cannot have 10% increase in turbidity.
- (b) With human caused variation must be within .2 units.
- (c) TPH shall only be measured and sampled if visible sheen is observed.

2.2 Continuous Chemically Treated Discharge Monitoring

Continuous or batch chemical treatment is used to treat runoff in those cases where site specific conditions may limit the ability of traditional erosion and sediment control BMPs to meet water quality standards in the receiving water. Ecology defines chemical treatment methods and requirements in BMP C250, Western Washington Stormwater Management Manual, Volume II.

A continuous chemical treatment was setup for the 16C/34C Reconstruction project in May 2015 but there was no discharge from the system during this reporting period. The Port's NPDES permit specifies monitoring parameters and frequencies in addition to Ecology's General Use Level Designation requirements.

2.3 Batch Chemically Treated Discharge Monitoring

Batch treatment is also utilized when traditional BMPs may not be adequate. The chemical treatment methods and requirements are also defined in BMP C250, *Western Washington Stormwater Management Manual, Volume II.*

The Port did not perform any batch treatment during this reporting period. The Port's NPDES permit specifies monitoring parameters and frequencies. If the Port uses batch treatment for future construction stormwater projects it will be identified in the site-specific monitoring plan and reported to Ecology on the monthly DMR.

Section 3: Construction Stormwater Monitoring Results Summary

This section summarizes the construction stormwater monitoring events and results. All data summarized in this section has been reported to Ecology on monthly DMRs and is included in Appendix B.

3.1 Non-Chemically Treated Discharge Monitoring Summary

The Port monitored twenty-three (23) 0.5-inch of rain within 24-hour storm events during this period. All of the monitoring results were reported in the monthly DMRs. During this period there were up to five (5) active construction stormwater outfalls. The Port discharged into Des Moines Creek, Northwest Ponds, and Lake Reba. Table 3 provides a monthly summary of the number of 0.5-inch/24-hour stormwater events.

Table 3. Summary ().5-Inch within 24-Hour Monitoring Events
Month	Number 0.5-Inch Stormwater

Month (July 2014 – June 2015)	Number 0.5-Inch Stormwater Events
July	1
August	1
September	2
October	4
November	2
December	2
January	2
February	4
March	4
April	1
May	0
June	0

Appendix B provides the instream monitoring data results submitted on the DMR. Please note that Appendix B reflects the maximum and minimum data results if there were multiple 0.5 inch/24-hour storm events during the month.

The following is a description of the non-chemically treated discharge monitoring events with results exceeding permit effluent limits. All non-compliance occurrences described below were reported to Ecology on the DMR and/or a 5-day non-compliance notification per Part III, Special Condition S2.E. Any effluent limit exceedances are noted in Appendix B NPDES Construction Stormwater Annual Data Summary, Non-Chemically Treated Discharge.

Majority of the exceedances are associated with non-Airport influences. The non-chemical construction monitoring occurs in the receiving water which results in many

outside sources comingling with construction discharges in the receiving water. The Port performs site inspections to ensure BMPs are working effectively and unanticipated discharges are not occurring from the project site.

3.1.1 Turbidity

The Port identified three (3) occurrences which there was a 5 NTU or greater difference between upstream and downstream values. None of these exceedances were associated with Airport construction activities. The following table describes each event.

Table 4. Turbidity Limit Exceedance Notifications

-		NTUs above	
Date	Outfall	background	Explanation
1/19/15	L29	6.1	Not related to Airport construction activities. No evidence turbid water
			leaving project site was present. All BMPs were installed and
			functioning properly.
1/19/15	L30	6.1	The project site stabilized and not discharging construction related
			stormwater.
3/15/15	D10	6.5	The outfall discharge was less than the upstream turbidity value. As
			a result, the elevated turbidity is not assocatied with construction
			activity.

3.1.2 pH

There were twenty-eight (28) pH exceedances during this period. None of the exceedances were associated with Port activity. Every exceedance was below the 6.5 S.U. effluent limit and occurred in the East Branch of Des Moines Creek, Northwest Ponds, and Lake Reba. The upstream pH value associated with each exceedance was also below 6.5 S.U. in all samples except for one instance. The table below describes each exceedance and the numeric value. The depressed pH of the creek in these instances is related to basin-wide effects of low pH rainwater on the receiving water.

Table 5. pH Limit Exceedance Notifications

Date	Outfall	рН	Explanation
10/31/14	D10	6.26	Not related to Airport construction activity. The depressed pH of the
	D13	6.28	creek in these instances is related to basin-wide effects of low pH
	L29	6.08	rainwater on the receiving waters
	D5	6.15	
	L30	6.08	
11/22/14	D10	6.18	Not related to Airport construction activity. The depressed pH of the
	D13	6.19	creek in these instances is related to basin-wide effects of low pH
	L29	6.08	rainwater on the receiving waters.
	L30	6.08	
11/29/14	D10	6.22	Not related to Airport construction activity. The depressed pH of the
	D13	6.19	creek in these instances is related to basin-wide effects of low pH
	L29	6.13	rainwater on the receiving waters
	L30	6.13	
12/19/14	L29	6.29	Not related to Airport construction activity. The depressed pH of the
	L30	6.29	creek in these instances is related to basin-wide effects of low pH
			rainwater on the receiving waters
12/19/14	D13	6.39	The upstream pH value was at 6.64 S.U. and the downstream at
			6.39 S.U. This outfall collects stormwater runoff from the Logistics
			Staging Area and there were no activities that may have reduced
10/01/15	D.10	0.44	stormwater pH.
12/24/15	D10	6.11	Not related to Airport construction activity. The depressed pH of the
	D13	6.43	creek in these instances is related to basin-wide effects of low pH
	L29	6.07	rainwater on the receiving waters
04/40/45	L30	6.07	Not obtain to Africa de contraction of the Theological College
01/18/15	L29	6.32	Not related to Airport construction activity. The depressed pH of the
	L30	6.32	creek in these instances is related to basin-wide effects of low pH
04/40/45	1.00	0.07	rainwater on the receiving waters
01/19/15	L29	6.37	Not related to Airport construction activity. The depressed pH of the
	L30	6.37	creek in these instances is related to basin-wide effects of low pH
02/07/45	D10	6.20	rainwater on the receiving waters
02/07/15	D10	6.38	Not related to Airport construction activity. The depressed pH of the
	D13	6.36	creek in these instances is related to basin-wide effects of low pH
	L29	6.26	rainwater on the receiving waters
	L30	6.26	

3.1.3 Total Petroleum Hydrocarbons

The Port did not visually identify a sheen during any of the monitoring events.

3.1.4 Flow

The Port monitored flow during all of the monitoring events.

3.2 Continuous Chemical Treatment Monitoring Summary

There was one CESF continuos flow system active during this reporting period. The CESF system discharges to Northwest Ponds via the D5C – Northwest Ponds #5 Chemical Outfall. The system was activated on May 4, 2015. There were no discharges from the system during May and June 2015.

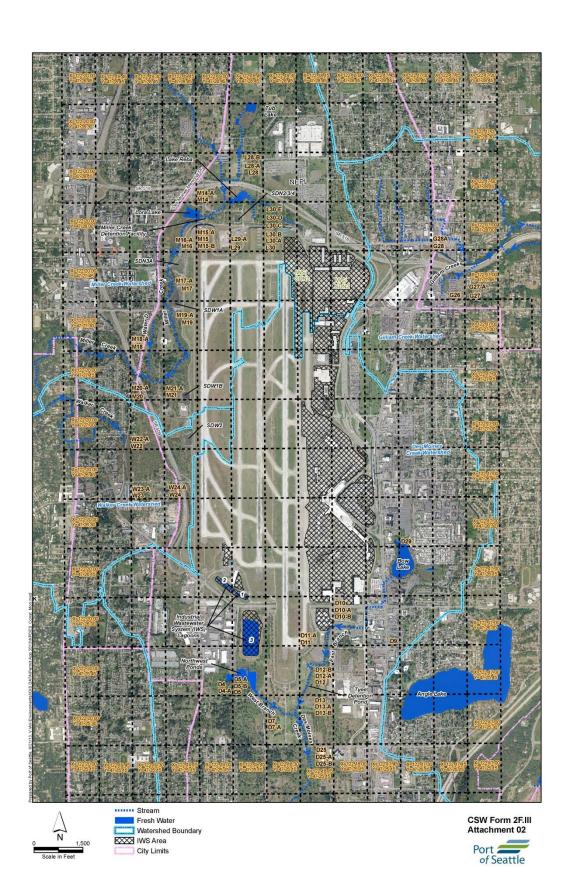
3.3 Batch Chemical Treatment Monitoring Summary

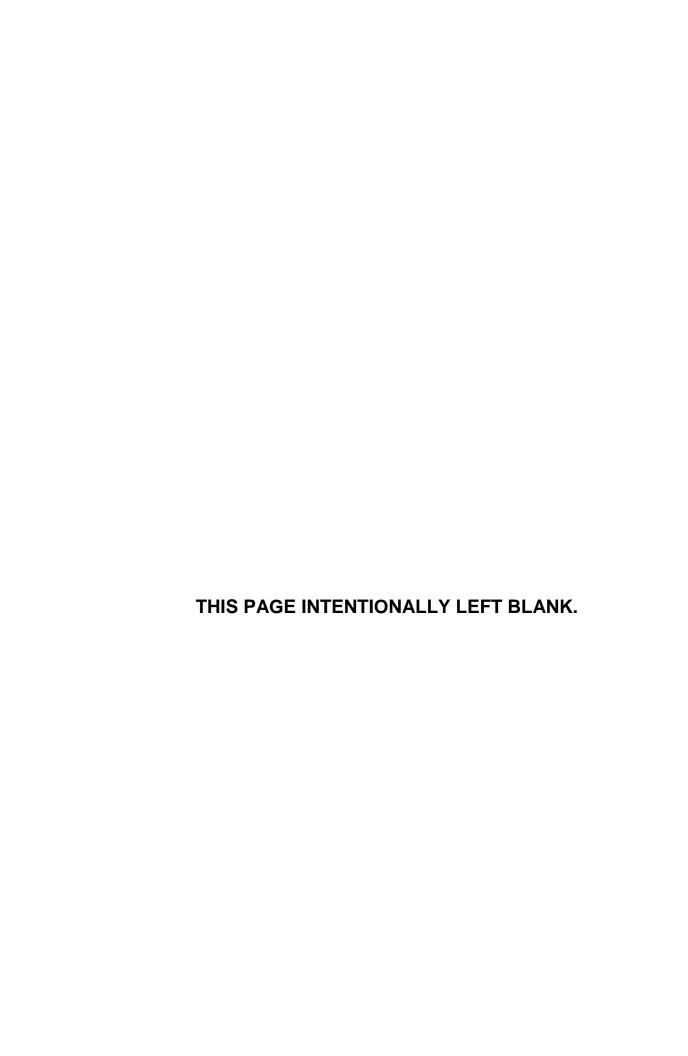
The Port did not perform any batch treatment during this reporting period. The Port's NPDES permit specifies monitoring parameters and frequencies. If the Port uses batch treatment for future construction stormwater projects it will be identified in the site-specific monitoring plan and reported to Ecology on the monthly DMR.

Appendix A

NPDES Construction Monitoring Outfall Areas Map

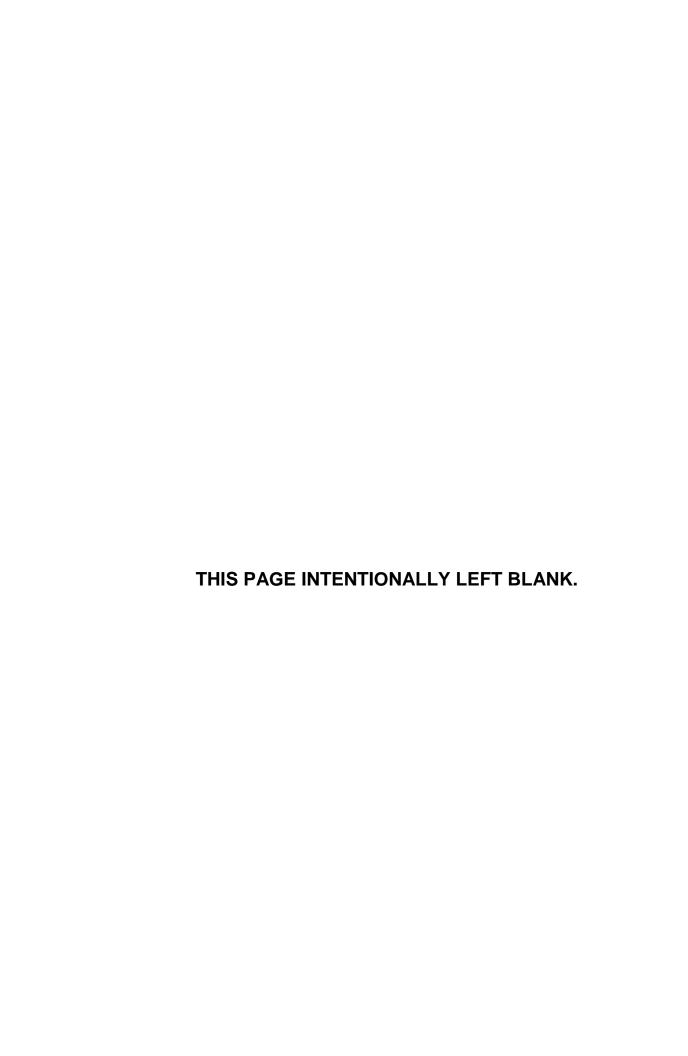






Appendix B

NPDES Construction Stormwater Annual Data Summary Non-Chemically Treated Discharge



NPDES Permit # WA-002465-1; Seattle-Tacoma International Airport Part III Construction Stormwater Annual Data Summary: July 2014 to June 2015

Non-Chemically Treated Discharge

Parameter	Month	D10	D13	L29	L30	D5	15B	D7	M14	M17	M19	M20	W24	L29A	G26	G28	D12	D5A	D4A	5B
	Jul-14	0.043	0.01	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ΙA	IA	IA
	Aug-14	1.08	0.65	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Sep-14	1.08	0.43	IA	ND	1.5	IA	ΙA	IA	IA										
	Oct-14	1.5	0.65	1.3	1.5	2.6	IA													
	Nov-14	0.34	0.22	0.86	0.52	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA.
E1 /1\	Dec-14	0.52	0.30	1.08	0.39	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Flow (mgd)	Jan-15	1.5	0.86	1.5	0.65	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Feb-15	1.94	0.65	0.73	0.47	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ	IA	IA	IΑ	IΑ	ΙA
	Mar-15	1.9	1.1	0.65	0.43	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ
	Apr-15	0.3	0.13	0.22	0.17	ND	IA													
	May-15	ND	ND	ND	IA	ND	IA													
	Jun-15	ND	ND	ND	IA	ND	IA													
	Jul-14	No Sheen	No Sheen	ND	ND	IA	ΙA	IA	ΙA	ΙA	ΙA									
	Aug-14	No Sheen	No Sheen	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Sep-14	No Sheen	No Sheen	IA	ND	No Sheen	IA													
	Oct-14	No Sheen	No Sheen	No Sheen	No Sheen	No Sheen	IA													
Oil and Grease -	Nov-14	No Sheen	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ	IA	IΑ
Total Petroleum	Dec-14	No Sheen	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ	ΙA
Hydrocarbon	Jan-15	No Sheen	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
(mg/L	Feb-15	No Sheen	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
,···8, -	Mar-15	No Sheen	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ	IΑ	IΑ
	Apr-15	No Sheen	No Sheen	No Sheen	No Sheen	ND	IA													
l	May-15	ND ND	ND ND	ND	IA	ND	IA													
	Jun-15	ND ND	ND	ND	IA	ND	IA	ΙA	IA	IA										
	Jul-14	6.84\6.84	6.61\6.61	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Aug-14	6.50\6.50	6.51\6.51	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Sep-14	6.63\6.67	6.61\6.69	IA	ND	6.56\7.08	IA													
pH (s.u.)	Oct-14	6.26\6.84	6.28\6.94	6.08\6.84	6.08\6.84	6.15\6.63	IA													
	Nov-14	6.18\6.22	6.19\6.19	6.08\ 6.13	and a resolution of the second	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ΙA	IA	IA
	Dec-14	6.11\6.64	6.39\6.43	6.07\6.29	6.07\6.29			IA	IA	IA		IA	IA			IA				
	Jan-15					IA IA	IA	IA		IA	IA	IA IA		IA	IA IA		IA	IA IA	IA	IA.
	Feb-15	6.66\6.78 6.38\7.00	6.53\6.65 6.36\7.07	6.32\6.37 6.26\6.99	6.32\6.37 6.26\6.99	IA IA	IA IA	IA	IA IA	IA	IA	IA	IA IA	IA IA	IA IA	IA IA	IA IA	IA IA	IΑ	IA.
	10.000 10.000 10.000 10.000	7.13\7.42	0.76 0.000.00	**************************************		IA IA	IA		IA		IA		IA	IA	IA			IA IA	IA	IA.
	Mar-15	17.40 11.00	7.25\7.53	7.22\7.29	7.22\7.29		IA IA	IA		IA.	IA	IA IA	IA	IA	IA	IA	IA	IA IA	IA	IA.
	Apr-15	7.04\7.04	SERVICE TRANSPORTED ST	1960,000,000,000,000,000,000	7.31\7.31	ND	IA	IA	IA.	IA	IA.									
	May-15	ND	ND	ND	IA IA	ND	IA													
	Jun-15	ND	ND 0	ND ND	IA ND	ND	IA													
	Jul-14	0	0	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Aug-14	4.2	0	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Sep-14	1.6	0	IA -	ND	0	IA 	IA												
l	Oct-14	1.3	0	0	0	0.3	IA													
Turbidity	Nov-14	0.5	0.4	0	0	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Background <=50	Dec-14	2.2	0	0	0	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
NTU (NTU)	Jan-15	0.4	0	6.1	6.1	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
HORPING WINESERS	Feb-15	2.4	0	5	5	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
l	Mar-15	6.5	2	0.9	0.9	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
ı	Apr-15	0.6	1.3	0.6	0.6	ND	IA													
	May-15	ND	ND	ND	IA	ND	IA	IΑ	IA	IA										
	Jun-15	ND	ND	ND	IA	ND	IA													
	Jul-14	NA	NA	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
l	Aug-14	NA	NA	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ	IA	IΑ
	Sep-14	NA	NA	IA	ND	NA	IA													
	Oct-14	NA	NA	NA	NA	NA	IA													
Turbidity	Nov-14	NA	NA	NA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA.
	Dec-14	NA	NA	NA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Background >50		Marine Co.	22020	N. A.	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ	IA	IA
	Jan-15	NA	NA	NA	IVA	0.000														
NTU (%)	Jan-15 Feb-15	NA NA	NA NA	NA NA	NA NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IΑ
	\$100 PM STORY	\$250					IA IA													
	Feb-15	NA	NA	NA	NA NA	IA												IA	IA	
	Feb-15 Mar-15	NA NA	NA NA	NA NA	NA	IA IA	IA			ΙA										

mgd = million gallons per day

mg/l = milligramsper liter

s.u. = standard units

ntu = nephelometric turbidity units

ND = No Discharge

NA = Not Applicable

IA = Inactive