

Annual Construction Stormwater Monitoring Report

Seattle-Tacoma International Airport

For the Period July 1, 2016 through June 30, 2017

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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 1: Industrial Wastewater, Part 2: Industrial Stormwater and Part 3: Construction Stormwater. NPDES Permit Part 1 Special Condition S2.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 STIA routinely undergoes facility upgrades to improve outdated infrastructure and to increase facility and operational capacity to accommodate the increased number of passengers and meet other needs of the airline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 3 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 3, Special Condition 3S2 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 3S1.A Table III . 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 1-1 & S2.A.1 Table S2-1.

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	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
16C/34C Reconstruction Project	Non-Chem Chem	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
Logistics Expansion Project	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
SR 518 Interchange Rstoration Project	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
International Arrivals Facility	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
North Satellite Renovation Project	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
Tyee Conversion to Pollinator Habitatl	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
Flight Corridor Safety Program Phase 1	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-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*. The Port's NPDES permit specifies monitoring parameters and frequencies in addition to Ecology's General Use Level Designation requirements.

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

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-five (25) 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 six (6) 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 0.5-Inch within 24-Hour Monitoring Events

Month (July 2016 – June 2017)	Number 0.5-Inch Stormwater Events
July	0
August	0
September	0
October	5
November	4
December	1
January	1
February	6
March	6
April	1
May	0
June	1

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 3, Special Condition S2.E. Any effluent limit exceedances are noted in Appendix B *NPDES Construction Stormwater Annual Data Summary, Non-Chemically Treated Discharge*.

All 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.

During February 2017 the region experienced heavy snowfall event that limited access to some of the construction monitoring sites and impacted instream turbidity values. Each of these instances were reported to Ecology in notification and on DMR submittal.

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

Date	Outfall	NTUs above background	Explanation
02/09/17	D13	16	The outfall discharge was less than the upstream turbidity value. As a result, the elevated turbidity is not associated with construction activity.
02/16/17	L30	6.8	The outfall discharge was only 0.4 NTUs greater than the upstream turbidity value. As a result, the elevated turbidity is not associated with construction activity.
04/12/17	L30	8.0	The outfall discharge was 8.3 NTUs which was greater than the upstream turbidity value of 4.0. There was no evidence the elevated turbidity was associated with construction activity..

3.1.2 pH

There were two (2) 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. 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	pH	Explanation
02/09/17	D5 L30	6.34 6.46	The projects discharging to these outfall did not have any low pH generating activity occurring. There was no evidence the depressed pH was associated with construction activity. This construction event was associated with the snow event which could have impacted downstream pH conditions.

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 continuous flow system active during this reporting period. The CESF system discharges to Northwest Ponds via the D5C – Northwest Ponds #5 Chemical Outfall however the system was removed on July 13, 2016 and there was no discharge from the treatment system during July 2016.

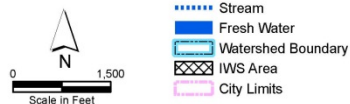
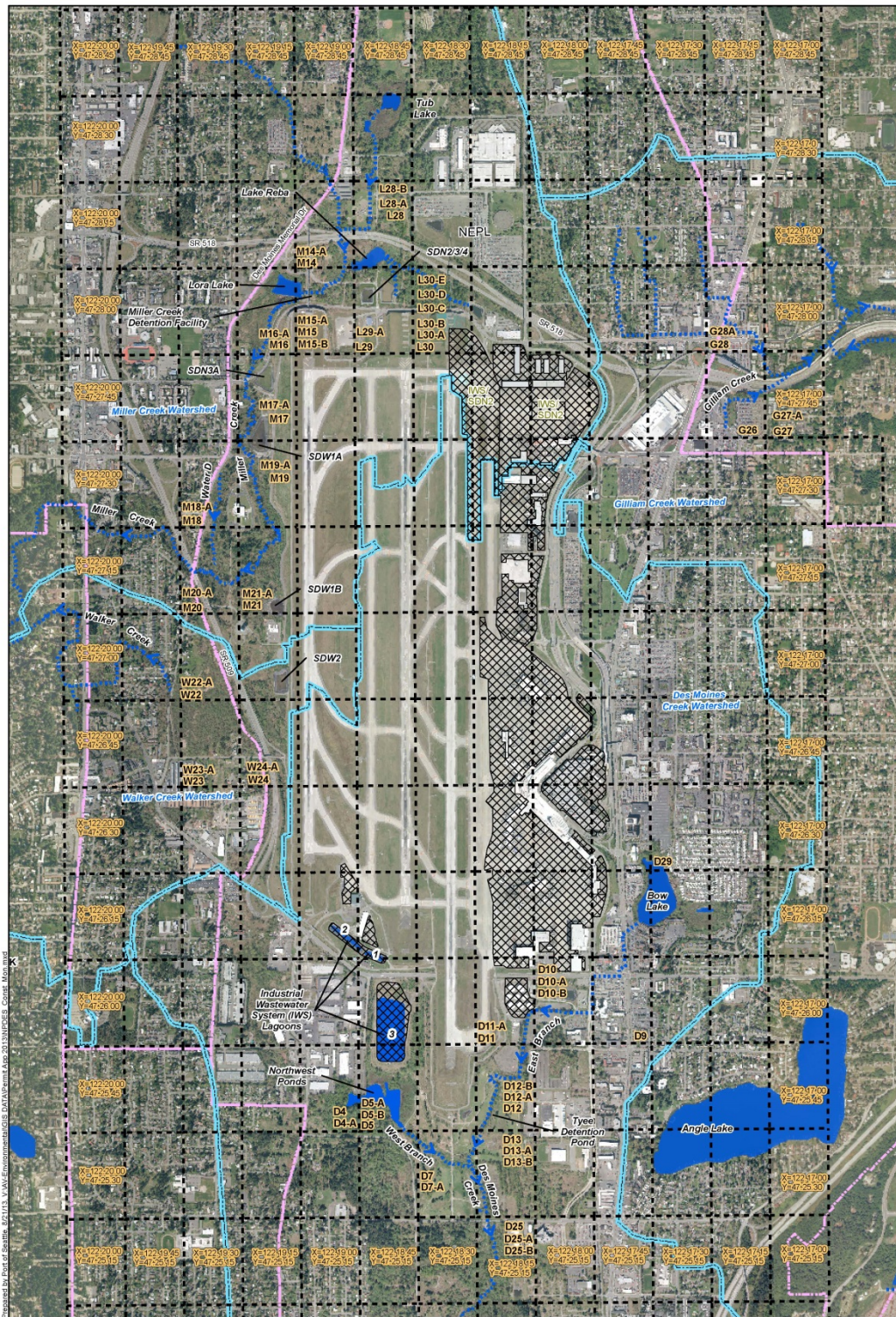
3.3 Batch Chemical Treatment Monitoring Summary

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

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Appendix B

NPDES Construction Stormwater Annual Data Summary Non-Chemically Treated Discharge

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NPDES Permit WA-0024651; Seattle-Tacoma International Airport, Part 3 Construction Stormwater Data Summary

Non-Chemically Treated Discharge: July 2016 - June 2017

Parameter	Month	Outfalls					
		D10	D13	L29	D5	L30	M20A
Flow (mgd)	Jul-16	ND	ND	ND	ND	IA	IA
	Aug-16	ND	ND	ND	ND	IA	IA
	Sep-16	ND	ND	ND	ND	ND	IA
	Oct-16	ND	1.29	2.365	ND	ND	IA
	Nov-16	1.075	0.215	ND	ND	ND	IA
	Dec-16	0.645	0.086	ND	ND	ND	IA
	Jan-17	2.365	1.505	ND	ND	ND	IA
	Feb-17	3.0	1.1	ND	4.7	0.52	0.3
	Mar-17	2.4	1.3	ND	3.0	0.47	0.13
	Apr-17	1.075	0.086	ND	3.87	0.129	0.086
	May-17	ND	ND	ND	ND	ND	ND
	Jun-17	0.215	<0.086	ND	1.935	0.086	<0.086
Oil and Grease Total Petroleum Hydrocarbon (mg/L)	Jul-16	ND	ND	ND	ND	IA	IA
	Aug-16	ND	ND	ND	ND	IA	IA
	Sep-16	ND	ND	ND	ND	ND	IA
	Oct-16	ND	No Sheen	No Sheen	ND	ND	IA
	Nov-16	No Sheen	No Sheen	ND	ND	ND	IA
	Dec-16	No Sheen	No Sheen	ND	ND	ND	IA
	Jan-17	No Sheen	No Sheen	ND	ND	ND	IA
	Feb-17	No Sheen	No Sheen	ND	No Sheen	No Sheen	No Sheen
	Mar-17	No Sheen	No Sheen	ND	No Sheen	No Sheen	No Sheen
	Apr-17	No Sheen	No Sheen	ND	No Sheen	No Sheen	No Sheen
	May-17	ND	ND	ND	ND	ND	ND
	Jun-17	No Sheen	No Sheen	ND	No Sheen	No Sheen	No Sheen
pH [min \ max] (s.u.)	Jul-16	ND	ND	ND	ND	IA	IA
	Aug-16	ND	ND	ND	ND	IA	IA
	Sep-16	ND	ND	ND	ND	ND	IA
	Oct-16	ND	6.86\ 7.94	6.66\ 7.56	ND	ND	IA
	Nov-16	7.26\ 7.83	7.27\ 7.82	ND	ND	ND	IA
	Dec-16	7.91\ 7.91	7.9\ 7.9	ND	ND	ND	IA
	Jan-17	8.24\ 8.24	8.23\ 8.23	ND	ND	ND	IA
	Feb-17	6.91\ 7.24	6.94\ 7.23	ND	6.34\ 7.08	6.46\ 7.30	6.82\ 7.19
	Mar-17	6.99\ 7.44	7.01\ 7.46	ND	6.70\ 7.30	6.84\ 7.22	6.9\ 7.36
	Apr-17	7.49\ 7.49	7.43\ 7.43	ND	7.09\ 7.09	7.4\ 7.4	7.28\ 7.28
	May-17	ND	ND	ND	ND	ND	ND
	Jun-17	7.68\ 7.68	7.70\ 7.70	ND	7.39\ 7.39	7.34\ 7.34	7.60\ 7.60
Turbidity Background <=50 NTU (NTU)	Jul-16	ND	ND	ND	ND	IA	IA
	Aug-16	ND	ND	ND	ND	IA	IA
	Sep-16	ND	ND	ND	ND	ND	IA
	Oct-16	ND	1	0	ND	ND	IA
	Nov-16	2.5	0.2	ND	ND	ND	IA
	Dec-16	0.1	0	ND	ND	ND	IA
	Jan-17	2	0	ND	ND	ND	IA
	Feb-17	2	16	ND	0.6	6.8	0.38
	Mar-17	2.6	0.4	ND	1.5	0	0.3
	Apr-17	0	1.1	ND	0	8	0
	May-17	ND	ND	ND	ND	ND	ND
	Jun-17	1.5	0.4	ND	0	1.2	0
Turbidity Background >50 NTU (%)	Jul-16	ND	ND	ND	ND	IA	IA
	Aug-16	ND	ND	ND	ND	IA	IA
	Sep-16	ND	ND	ND	ND	ND	IA
	Oct-16	ND	NA	NA	ND	ND	IA
	Nov-16	NA	NA	ND	ND	ND	IA
	Dec-16	NA	NA	ND	ND	ND	IA
	Jan-17	NA	NA	ND	ND	ND	IA
	Feb-17	NA	NA	ND	NA	0	0
	Mar-17	NA	NA	ND	NA	NA	NA
	Apr-17	NA	NA	ND	NA	NA	NA
	May-17	ND	ND	ND	ND	ND	ND
	Jun-17	NA	NA	ND	NA	NA	NA

Notes:

mgd = million gallons per day

mg/l = milligrams per liter

s.u. = standard units

ntu = nephelometric turbidity units

ND = No Discharge

NA = Not Applicable

IA = Inactive