Stormwater Management Program (SWMP)

Calendar Year 2018

Prepared pursuant to the Western Washington Phase II Municipal Stormwater Permit

City of Aberdeen Phase II Permit # WAR04-5026

By

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Contents

Section 1 - Introduction

1.1 Purpose

This document constitutes the City of Aberdeen 2018 Stormwater Management Program (SWMP) as required under condition S5 of the Western Washington Phase II Municipal stormwater permit (the Permit). The permit requires the creation and implementation of a SWMP to address five required program elements and Total Maximum Daily Load (TMDL) requirements when applicable. This SWMP will be attached to the Annual Compliance Report for the Permit for 2017, which is due to Ecology on March 31, 2018.

The goal of the SWMP is to reduce the discharge of pollutants from the City's municipal separate storm sewer system (MS4) to the maximum extent practicable and to protect the water quality of local streams and rivers, which receive stormwater runoff from the MS4.

Together with the City's Comprehensive Stormwater Management Plan, the SWMP is used as an aid in the planning, funding, and implementation of a comprehensive program to address various stormwater issues.

1.2 Background

In 1972, the United States Congress passed the Clean Water Act (CWA), which established water quality goals for the surface waters of the United States. Congress amended the CWA in 1987 to address stormwater, which resulted in the creation of the National Pollutant Discharge Elimination System (NPDES) permit program, administered by the Environmental Protection Agency. The agency delegated responsibility to administer the NPDES permit program to most states, including Washington State via the Department of Ecology.

The NPDES was created with the goal of restoring water quality in surface waters (rivers, lakes, streams, bays, etc.) in order to support "beneficial uses" such as fishing and swimming. Permits and compliance codes were created to regulate wastewater or water discharges into surface waters by private and governmental entities. Failure to comply with these regulations may result in fines and other penalties.

The CWA established a two-phase permit program. Phase I focused on large and medium-sized municipalities and counties, construction sites greater than or equal to five acres, and major industrial sources. Phase II, finalized in 2000, applied to "small" municipalities (jurisdictions with population less than 100,000) located within, or partially within, an urbanized area that operate a municipal separate storm sewer system which discharges to a water of Washington state.

1.3 The Western Washington Phase II Municipal Stormwater Permit

Aberdeen has a population of less than 100,000, is in Western Washington, and is an operator of a regulated small MS4. Thus, its Stormwater program must comply with the conditions in the Western Washington Phase II Municipal Stormwater Permit. The Permit was issued on August 1, 2012 with an effective date of August 1, 2013. Originally, the Permit was scheduled to remain in effect until July 31, 2018. However, in 2017, Ecology announced an extension of the current Permit to remain in effect until July 31, 2019.

When adhered to, The Permit, allows the Permittee (City of Aberdeen) to discharge stormwater from the municipal separate storm sewer system (MS4) into "waters of the state" such as rivers, lakes, and streams. The Permittee is required to implement programs and activities that reduce pollutants in stormwater to the maximum extent practicable (MEP), using all known, available, and reasonable methods of prevention, control and treatment (AKART). Requirements are established in the following program areas:

- Public Education and Outreach
- Public Involvement and Participation

- Illicit Discharge Detection and Elimination
- Controlling Runoff from New Development, Redevelopment and Construction Sites
- Municipal Operations and Maintenance
- Monitoring and Assessment
- Total Maximum Daily Load (TMDL) Requirements

The SWMP must be prepared and submitted annually and contain the planned actions and activities that will be used in the following year to gain compliance with the Permit. In addition, the Permit requires the City to submit an Annual Compliance Report by March 31 of each year that details actions taken in the previous year to achieve compliance. The full text for the Phase II Permit, the latest SWMP, and the latest Annual Compliance Report is available at: http://www.aberdeenwa.gov or can be viewed upon request by contacting the City of Aberdeen at 360-537-3215.

1.4 The Surface Water Management Utility – Other Activities

This SWMP details activities that are planned and that fall under the purview of the Permit. Stormwater management is one part of the City's overall surface water management strategy. The Surface Water Utility administers programs that reduce flooding and protect and improve water quality. Although not directly required, flood reduction efforts can often further stormwater management goals. For details on Surface Water Utility activities not addressed in this SWWP, contact the NPDES Phase II permit manager at 360-537-3215.

1.5 Stormwater Management Administration

The City will develop and implement a SWMP and annually prepare written documentation of the SWMP Plan for the coming year for submittal to Ecology by March 31 of each year. The purpose of a SWMP is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, meet state AKART requirements, and protect water quality. The program is to include the actions and activities described in Sections 2 through 7 of this SWMP Plan.

The City will submit annual compliance reports (for the previous calendar year) beginning in 2015 to Ecology by March 31 every year. The reports are to summarize SWMP implementation status and present information from assessment and evaluation activities conducted during the reporting period. The will coordinate among departments within each jurisdiction to eliminate barriers to compliance with the terms of the Permit.

The City currently implements activities and programs that meet the Permit requirements. The City will continue to implement these programs and activities as new and/or increased requirements in the 2013-19 Permit are implemented. The City will need to update current efforts in order to maintain compliance as the new requirements are phased in over the 6-year Permit term (2013-19). Actions recommended for continued compliance with stormwater management administration include:

- Developing an overall strategy for code updates required by individual Permit components.
- Tracking and reporting of citywide NPDES expenses for implementing the 2013–19 Permit.
- Developing a database for citywide compliance reporting and documentation under the new Permit.
- Summarizing SWMP administration activities and programs for Compliance Report submittals.

1.6 The Permit as Document Map

The remainder of this document details the required elements of the SWMP as noted in condition S5.C of the permit, and notes current and planned compliance activities. The subsection of condition S5.C associated with each section is noted in parentheses in the section on Permit Requirements.

Section 2 - Public Education and Outreach

This section describes Permit requirements related to Public Education and Outreach (E&O), lists the continuing and/or current programs and activities that meet Permit requirements and identifies the planned activities recommended for continued compliance with the current 2013-19 Permit.

2.1 Permit Requirements

The Permit (Section S5.C.1) requires the City to:

- Implement an E&O program designed to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts and encourage the public to participate in stewardship activities. The program shall be designed to educate target audiences (e.g., the general public, businesses, homeowners, students, developers, City employees, etc.) about the stormwater problem and provide specific actions they can take to minimize the problem.
- Create stewardship opportunities to encourage participation in activities such as stream teams, storm drain marking, volunteer monitoring, riparian plantings, and education activities.
- Measure the understanding and adoption of the targeted behaviors for at least one targeted audience in at least one subject area to use in directing E&O sources more effectively, as well as to evaluate changes in adoption of the targeted behaviors. Use the resulting measurements to direct E&O resources no later than February 2, 2016. This requirement can be met individually or as a member of a regional group.
- Track and maintain records of Public E&O activities.

The Permit (Appendix 2 Total Maximum Daily Load Requirements) requires the City to:

- Develop a public education and outreach involvement plan that targets the reduction of fecal coliform pollution by increasing public awareness and effecting behavior change. The plan includes stated goals, target audiences, messages, possible formats as well as distribution and evaluation methods. The plan shall be implemented prior to the expiration of the permit and include the following elements:
    - Targeting of the residents of the three high priority water bodies identified in the 2007-2012 NPDES permit.
    - Use mailings, door hangers or similar outreach tools.
    - Reach 4th through 6th grade students.
- Conduct two public education surveys gauging resident's knowledge of the sources of bacteria and prevention of bacteria pollution. One survey should measure the knowledge prior to outreach and the other their knowledge after outreach.

2.2 Continuing/Current Activities

The City currently implements activities and programs that meet the Permit requirements. The City will continue to implement these programs and activities as new and/or increased requirements in the 2013-19 Permit are implemented. The current compliance activities associated with the above Permit requirements include:

- The City conducts numerous education and outreach activities that address stormwater management and directly target the general public, residents/homeowners, businesses, developers, contractors, engineers, and industries. These activities include but are not limited to:
    - Car wash kits for fundraiser carwashes and related outreach and education.
    - Storm drain stenciling/marking of public storm drains.
    - Construction surface water pollution prevention plan technical assistance.
    - General outreach and communication at public festivals.

- Administration of the City of Aberdeen Stream Team.
- Stormwater maintenance and BMPs technical outreach through the municipal stormwater operations and maintenance.
- Public E&O on hazards associated with illicit discharges.

- Continued training of public works maintenance workers on erosion control BMP's and identifying and reporting of illicit discharges.

2.3 Planned Activities

The City has an education and outreach program but will need to update current efforts in order to maintain compliance as the new requirements are phased in over the 6-year Permit term (2013-19). Actions recommended for continued compliance include:

- Collaborating with other NPDES municipalities to identify appropriate program evaluation techniques.
- Conduct a stormwater education program at Elementary schools focusing on 6th grade students.
- Developing a strategy/process to evaluate understanding and adoption of target behaviors and use the measurements to direct future E&O efforts.
- Refining E&O program as needed to address new Permit elements, such as low-impact development. (LID).
- Website based education for City of Aberdeen citizens.
- Summarizing Public E&O activities and programs for the Annual Reports.

Table 2-1 is the work plan for the 2018 SWMP Public E&O activities.

Table 2-1. 2018 Education and Outreach Work Plan

Task ID #	Task Description	Due Date	Notes
EDUC-1	Schedule, advertise, and conduct public meeting regarding 2018 SWMP	March 2018	Coordinate with regularly scheduled March city-council meeting
EDUC-2	Update stormwater website	March 2018	Include 2018 SWMP, and 2017 annual report
EDUC-3	Schedule and conduct Education and Outreach with Grade 6 students in the Aberdeen School District	June 2018	Schedule with the schools TBD.
EDUC-4	Community Outreach – SPLASH Festival, and Aberdeen Art Walk	July 2018	FINN the Fish, illicit discharge and pet waste.
EDUC-5 & IDDE-7	Educational Utility Bill Insert	December 2018	Fecal Coliform, Illicit Discharge, Low Impact Development, Measurement of Understanding Survey
EDUC-6	Community Outreach – Chehalis Watershed Festival	October 2018	Illicit discharge and pet waste
EDUC-7	Schedule, advertise, and conduct public meeting regarding 2018 SWMP	December 2018	Coordinate with regularly scheduled December city-council meeting.

Section 3 - Public Involvement and Participation

This section describes Permit requirements related to Public Involvement and Participation, lists the continuing and/or current programs and activities that meet Permit requirements and identifies the planned activities recommended for continued compliance with the new 2013-19 Permit.

3.1 Permit Requirements

The Permit (Section S5.C.2) requires the City to:

- Provide ongoing opportunities for Public Involvement and Participation through advisory boards and commissions, public hearings, and watershed committees; participation in developing rate structures and budgets; or other similar activities. The public must be able to participate in the decision-making processes involving the development, implementation, and update of the SWMP.
- Make the SWMP Plan and Annual Compliance Report available to the public, including posting on the City's Web site. Make other documents required to be submitted to Ecology in response to permit conditions available to the public.

The Permit (Appendix 2 Total Maximum Daily Load Requirements) requires the City to:

- Design and implement a Stream Team program where a second Stream Team is formed to participate in stewardship activities.

3.2 Current Activities

The City organizes, schedules and participates in the Aberdeen Stream Team, where we are available to take comments and suggestions relating to the development and implementation of the SWMP. The public is also encouraged to comment through email on the stormwater website. The following is a partial list of public involvement and participation opportunities that have been provided.

- Numerous presentations have been made to the City council about a variety of stormwater issues. Aberdeen is unique in that the City Council consists of 12 members who are elected from 6 wards throughout the City. Due to size and geographic distribution of our City council it is a much broader representation of the citizens of our community than would be found in a typical city. Also at each council meeting there are representatives from two local radio stations and the local newspaper, as a result whatever is reported to the council is often repeated through the news media to the general population.
- The City of Aberdeen will submit the updated 2018 SWMP and 2017 annual report to ecology prior to March 31, 2018 deadline and post both on the City of Aberdeen stormwater website prior to May 31, 2018.
- The City of Aberdeen has created the Aberdeen Stream Team and participates in 3 organized stewardship opportunities per year where the City supports volunteers with labor, equipment, supplies, and organization.
- The City will advertise and conduct a public meeting to give citizens an opportunity to comment on the 2018 Stormwater Management Plan
- City Sponsored Watershed Cleanups
    - Fry Creek
    - Alder Creek

3.3 Planned Activities

Public involvement can promote awareness of and foster a sense of responsibility for the health of the affected watersheds. The City of Aberdeen NPDES Phase II SWMP will include ongoing opportunities for public involvement through some or all of the following forums:

The City plans to stay in compliance with the permit conditions by doing the following:

- Continuing existing public hearing procedures and practices.
- Posting the 2018 SWMP and 2017 Annual Report on the City website after it has been submitted to the Washington State Department of Ecology.
- Encouraging input on the SWMP and stormwater outreach program through public meeting, online advertisement and participation with the Aberdeen Stream Team.
- Presentation of the current status of the SWMP to the City council as needed.
- Solicit comments and suggestions at the outreach activities planned for 2018 stated in the Education & Outreach section above.
- Continued participation in the Aberdeen Stream Team with 3 annual stewardship events in 2018.

Table 3-1 is the work plan for the 2018 SWMP Public Involvement and Participation Work Plan.

Table 3-1. 2018 Public Involvement and Participation Work Plan			
Task ID #	**Task Description**	**Due Date**	**Notes**
PI-1	Schedule, advertise, and conduct public meeting regarding 2018 SWMP	March 2017	Coordinate with regularly scheduled March city-council meeting
PI-2	Fry Creek Cleanup	March 2017	City sponsored community creek cleanup. (Spring)
PI-3	Alder Creek Cleanup	October 2017	City sponsored community creek cleanup. (Fall)
PI-4	Schedule, advertise, and conduct public meeting regarding 2018 SWMP	December 2017	Coordinate with regularly scheduled December city-council meeting
PI-5	Continued partnering with GH Stream Team, CleanStreamsandMemes, and any other public involvement which works towards common goals.	Ongoing	Provide refuse disposal, technical guidance, etc…

Section 4 - Illicit Discharge Detection and Elimination

This section summarizes the Permit requirements for illicit discharge detection and elimination (IDDE), describes current activities the City has underway, and presents activities the City plans to undertake to keep its current program in compliance with the Permit requirements and scheduled efforts through the end of the permit cycle.

4.1Permit Requirements

The Permit (Section S5.C.3) requires the City to:

- Maintain a storm sewer system map that includes stormwater system information identified in the Permit (e.g., MS4, outfalls, receiving waters, etc.).
- Implement an ordinance or other regulatory mechanism to prohibit non-stormwater, illicit discharges into the MS4.
- Implement a compliance strategy that includes compliance actions and enforcements provisions necessary to help detect and address illicit discharges.
- The ordinance or other regulatory mechanism shall be in effect (if needed to meet Permit requirements) no later than February 2, 2018.
- Implement and maintain an ongoing program to detect and identify non-stormwater discharges and illicit connections, and address illicit discharges to the MS4 (IDDE Program).
- Develop procedures for and complete field screenings of at least 40 percent of the MS4 no later than June 30, 2018, and on average 12 percent each year thereafter.
- Publicly list and publicize a hotline or other local telephone number for public reporting of spills and other illicit discharges. Track through closeout illicit discharge reports and actions taken in response, including enforcement actions.
- Maintain an ongoing training program for City staff that may come into contact with or respond to illicit connections or discharges. Train program staff on proper IDDE response procedures and processes and train municipal field staff to recognize and report illicit discharges.
- Inform public employees, businesses, and general public of hazards associated with illegal discharges and improper disposal of waste.
- Summarize all illicit discharges and connections reported to the City and include a description of the response actions taken for each illicit discharge and connection according to the Permit – specified timeline, including enforcement actions, in the Compliance Report

The Permit (Appendix 2 Total Maximum Daily Load Requirements) requires the City to:

- Design and implement a program which notifies residents, in a timely manner, when bacteria pollution that poses a public health concern reaches the MS4.
- Install and maintain pet waste dispenser units and explanatory signage in public areas with dog use.
- Designate areas within the MS4 that discharge to points 501, 510 & 514 as high priority areas for illicit discharge detection and elimination efforts.

4.2 Current Activities

The City currently implements activities and programs that meet the Permit requirements. The City will continue to implement these programs and activities as new and/or increased requirements in the 2013-19 Permit are implemented. The current compliance activities associated with the above Permit requirements include:

- The City maintains a map of the MS4 in ArcGIS software that meets the requirements of section S5.C.3 of the Phase II Permit. The map is updated with new facilities or corrected for inconsistencies based on field verification.

- The City reviews and modifies its IDDE program to ensure consistent citywide implementation of the Permit requirements.

- The City amends city codes, SOPs, and construction standards as needed in order to implement the Permit's illicit discharge and escalating enforcement requirements.

- The City continues the stormwater outfall illicit discharge screening and source control program requirements. This includes performing a storm drainage outfall reconnaissance inventory annually.

- The City prioritizes receiving waters for inspection, and implementing field screening and source control activities for prioritized receiving waters.

- The City continues with illicit discharge awareness and response training program for City staff.

- The City maintains a spill control supply shed for quick access by all City departments.

- The City has a 24-hour emergency response line for public reporting of spills and other illicit discharges (360-537-3393).

4.3 Planned Activities

The City currently has an IDDE program, but will need to update current efforts in order to maintain compliance as the new requirements are phased in over the 6-year Permit term (2013-19). Actions recommended for continued compliance include:

- Updating storm system map to address data gaps in the MS4 including all City-owned properties, permitted stormwater facilities and tributary conveyances.
- Updating City ordinance and enforcement mechanisms as needed to address new or modified Permit requirements for the IDDE program.
- Revising the IDDE program, processes and procedures to implement new IDDE requirements, including those for documenting and reporting illicit discharges and connections and those for the IDDE Field Screening Program.
- Updating IDDE training for all municipal field staff.
- Summarizing IDDE activities and programs for the Compliance Report submittals

Table 4-1 is the work plan for the 2018 SWMP IDDE activities.

Table 4-1. 2018 Illicit Discharge Detection & Elimination Work Plan			
Task ID #	**Task Description**	**Due Date**	**Schedule Notes**
IDDE-1	MS4 Mapping update	Ongoing	Permit S5.C.3.a
IDDE-2	Submit illicit discharge reports with 2017 Annual Compliance Report	March 2018	
IDDE-3	Municipal field staff training on IDDE and erosion and sediment control	Annually May	Coordinate with start of construction season
IDDE-4	Review ordinance language (illicit discharge)	June 2018	Permit S5.C.3.b, AMC 13.70.200
IDDE-5	Annual IDDE field screening	June 2018	Permit S5.C.3.c
IDDE-6	Review and update City IDDE Program	April 2018	Permit S5.C.4.c & d
IDDE-7 & EDUC-5	Utility Insert (illicit discharge)	Spring 2018	Permit S5.C.3.c.iv

Section 5 - Controlling Runoff from New Development, Redevelopment, and Construction Sites

This section describes the Permit requirements related to Controlling Runoff from New Development, Redevelopment, and Construction Sites, lists the continuing and/or current programs and activities that meet Permit requirements and identifies the planned activities recommended for continued compliance with the current 2013-19 Permit.

5.1 Permit Requirements

The Permit (Section S5.C.4) requires the City to:

- Continue all current activities. Implement and enforce an updated program to reduce pollutants in stormwater runoff (i.e., illicit discharges) to the MS4 from new development, redevelopment, and construction site activities no later than June 30, 2018. The program must apply to both private and public projects, including roads, and address all construction/development-associated pollutant sources.
- Adopt new stormwater development regulations (codes and standards), including completion of updated plan review, inspection, and escalating enforcement processes and procedures necessary to implement the program in accordance with Permit conditions, including the minimum technical requirements in Appendix 1 of the Permit by June 30, 2018.
- Adopt regulations (codes and standards) and provide provisions to verify adequate long-term operations and maintenance (e.g., post-construction) of new, private, permanent stormwater facilities and BMPs (i.e., private drainage system inspections) in accordance with Permit conditions, including an annual inspection frequency and/or approved alternative inspection frequency and maintenance standards for private drainage systems as protective as those in Chapter IV of the 2012 Ecology Manual by June 30, 2018.
- Perform annual inspections of all stormwater treatment and flow control BMPs/facilities discharging to the MS4 permitted in accordance with the Permit requirements effective January 1, 2010.
- Provide copies of the Notice of Intent (NOI) for construction or industrial activities to representatives of proposed new development and redevelopment.
- Provide training to staff on updated codes, standards, and SOPs. Develop and define a process to document construction inspections and enforcement actions by staff for inclusion in the Annual Compliance Report.
- Review and revise the citywide land use and development-related policies, codes, and standards or other enforceable documents to implement LID principles that minimize impervious surfaces and native vegetation loss by June 30, 2018. The range of issues outlined in Integrating LID into Local Codes: A Guidebook for Local Governments (Puget Sound Partnership, 2012) is to be considered. A summary of the review and revision process results must be submitted with the fifth year annual report and shall include at a minimum, a list of participants, the codes, rules, standards, and other enforceable documents reviewed, and the revisions made to those documents which incorporate and require LID principles and LID BMPs. The summary shall include existing requirements for LID principles and LID BMPs in development related codes.

5.2 Continuing/Current Activities

The City currently implements activities and programs that meet the Permit requirements. The City will continue to implement these programs and activities as new and/or increased requirements in the 2013-19 Permit are implemented. The current compliance activities associated with the above Permit requirements include:

- The City implements a program to reduce pollutants in stormwater runoff to the MS4 from new development, redevelopment, and construction site activities. The City enforces this program though the City municipal code.
- The City amended city codes and revised standards to meet the first Permit's requirements for development, redevelopment, construction, and post-construction stormwater management.
- The City adopted the 2005 Ecology Stormwater Management Manual of Western Washington as the citywide stormwater standard for development, redevelopment, and construction projects as part of the code amendments.
- The City modifies its plan review, inspection, enforcement, and documentation procedures to address the first Permit's requirements.
- The City provides training to staff on the new regulations and processes and procedures required by the first Permit.
- The City continues to make information about and copies of Ecology's application forms for Construction NPDES and Industrial NPDES permits available to the public at the Permit Center.

5.3 Planned Activities

The City has a Controlling Runoff from New Development, Redevelopment, and Construction Sites program but will need to update current efforts in order to maintain compliance as the new requirements are phased in over the 6-year Permit term (2013-19). Actions recommended for continued compliance include:

- Adopt Ecology's amended 2012 Stormwater Management Manual for Western Washington.
- Update codes and standards to reflect the newly adopted Stormwater Management Manual and Permit requirements.
- Develop a Stormwater Quality Program to address Permit requirements in section S5.C.4.
- Develop new standardized plan review, inspection, enforcement, and compliance documentation and tracking processes and procedures to reflect the new manual and Permit requirements.
- Conduct staff training and public education and outreach on implementing new manual.
- Review and revise the process of City land use and development-related regulations to incorporate low impact development (LID) principles of minimizing impervious surfaces and native vegetation loss.
- Review and adopt new post-construction private drainage system maintenance standards.
- Summarize annual activities for the "Controlling Runoff from New Development, Redevelopment, and Construction Sites" component of the Annual Report (including the post-construction private drainage system inspection and maintenance requirements).

Table 5-1 is the work plan for the 2018 SWMP activities related to Controlling Runoff from New Development, Redevelopment, and Construction Sites.

Table 5-1. 2018 Controlling Run-off from New Development, Redevelopment, and Construction Sites Work Plan			
Task ID #	**Task Description**	**Due Date**	**Schedule Notes**
CTRL-1	Review and update ordinance or other enforceable mechanism language to address runoff from new development, redevelopment, and construction sites	June 2018	Permit S5.C.4.a.
CTRL-2	Develop Stormwater Quality Program to address Permit requirements	June 2017	Permit S5.C.4.b,c,d,e
CTRL-3	Develop program to verify adequate long-term O&M of stormwater treatment and flow control BMPs/facilities	June 2018	Permit S5.C.4.c
CTRL-4	Develop annual training program for staff whose primary duties are controlling run-off through permitting, plan review, inspections…	June 2018	Permit S5.C.4.e
CTRL-5	Develop LID code related requirements and adopt as ordinance into City’s municipal code	June 2018	Permit S5.C.4.f

Section 6 Municipal Operations and Maintenance

This section describes the new Permit requirements related to Municipal Operations and Maintenance (O&M), lists the continuing and/or current programs and activities that meet Permit requirements and identifies the planned activities recommended for continued compliance with the current 2013-19 Permit.

6.1 Permit Requirements

The Permit (Section S5.C.5) requires the City to:

- Implement an O&M program with the ultimate goal of preventing or reducing pollutants in stormwater runoff from MS4 and municipal O&M activities.
- Implement maintenance standards for the MS4 that are at least as protective as those specified in the 2012 Ecology Stormwater Management Manual, no later than June 30, 2018.
- Perform inspections of stormwater flow control and treatment facilities and catch basins in accordance with Permit requirements, unless previous inspection data show that a reduced frequency is justified.
- Have SOPs in place to reduce stormwater impacts associated with runoff from all lands maintained by the City and from municipal O&M activities, including but not limited to streets, parking lots, roads, or highways owned or maintained by the City.
- Train staff to implement the modified processes and procedures and document all training.
- Maintain Stormwater Pollution Prevention Plans (SWPPPs) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the City.
- Summarize annual activities for the “Municipal Operations and Maintenance” component of the Compliance Report, including any updates to the SWMP Plan.

6.2 Continuing/Current Activities

The City currently implements activities and programs that meet the Permit requirements. The City will continue to implement these programs and activities as new and/or increased requirements in the 2013-19 Permit are implemented. The current compliance activities associated with the above Permit requirements include:

- The City complies with required municipal stormwater facility inspection frequencies.
- The City reviews its O&M program and implemented procedures to reduce stormwater impacts from the operation and maintenance of stormwater and surface water systems, streets, parking lots, roads, and lands owned or maintained by the City.
- Review and update SWPPPs for City facilities as needed.
- Continue program for annual inspection of City-owned flow control and runoff treatment facilities, once-per-Permit-term inspection of municipal catch basins, and for performing identified maintenance within prescribed Permit timelines.
- Continue the O&M training program to provide ongoing citywide pollution prevention training for municipal field staff based on the updated and/or new SOPs developed to reduce stormwater runoff from construction, operation, and maintenance of municipal facilities and lands.

6.3 Planned Actions

The City has a Municipal Operations and Maintenance program but will need to update current efforts in order to maintain compliance as the new requirements are phased in over the 6-year Permit term (2013-19). Actions recommended for continued compliance include:

- Adopting maintenance standards identified in the latest 2012 Ecology Stormwater Manual.

- Inspecting and maintaining stormwater ponds and vaults annually.
- Implementing stormwater runoff control measures for all lands owned by the City.
- Updating SWPPPs as needed when conditions change at City facilities.

Table 6-1 is the work plan for the 2018 SWMP O&M for Municipal Operations activities.

Table 6-1. 2018 Municipal Operations & Maintenance Work Plan

Task ID #	Task Description	Due Date	Schedule Notes
Muni O&M-1	Develop maintenance standards that are as protective or more protective, of facility function than those specified in Chapter 4 of Volume V of the 2012 *Stormwater Management Manual for Western Washington*	June 2018	Permit S.5.C.5.a
Muni O&M-2	Inspection of municipally owned or operated permanent stormwater treatment and flow control facilities	Annually	Permit S.5.C.5.b
Muni O&M-3	Spot checks of permanent stormwater treatment and flow control facilities after major storm events	After 24 hour storm with a >10 year recurrence interval	Permit S.5.C.5.c
Muni O&M-4	Inspection of all catch basins and inlets owned or operated by the City	December 2017	Permit S.5.C.5.d
Muni O&M-5	Review SOP's to reduce stormwater impacts associated with runoff from all lands owned or maintained by the City	Annually	Permit S.5.C.5.f
Muni O&M-6	Schedule training for employees of the City whose primary construction, operations or maintenance job functions may impact stormwater quality.	Annually May	Permit S.5.C.5.g
Muni O&M-7	Review SWPPP for heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the City which do not require coverage under General Permit	Annually May	Permit S.5.C.5.h

SECTION 7 MONITORING AND ASSESSMENT

This section describes the new Permit requirements related to water quality Monitoring and Assessment, lists the continuing and/or current programs and activities that meet Permit requirements and identifies the planned activities recommended for continued compliance with the current 2013-19 Permit.

7.1 Permit Requirements

The Permit (Section S8) requires the City to:

- Conduct sampling or testing required for characterizing illicit discharges pursuant to the Program's IDDE conditions.
- Pay into a collective fund to implement the RSMP effectiveness study due to Ecology annually beginning August 15, 2014. (Aberdeen cost per Ecology: $6693)
- Pay into a collective fund to implement the RSMP Source Identification Information Repository (SIDIR) due to Ecology annually beginning August 15, 2014. (Aberdeen cost per Ecology: $621)
- Provide a description of stormwater monitoring or studies conducted by the City during the reporting period. If stormwater monitoring was conducted on behalf of the City, or if studies or investigations conducted by other entities were reported to the City, a brief description of the type of information gathered or received shall be included in the Compliance Report.

The Permit (Appendix 2 Total Maximum Daily Load Requirements) requires the City to:

- Design and implement a program which notifies residents, in a timely manner, when bacteria pollution that poses a public health concern reaches the MS4.
- Designate areas within the MS4 that discharge to points 501, 510 & 514 as high priority areas for illicit discharge detection and elimination efforts.
- Complete field screening prior to December 31, 2014, investigations must include activities for both the dry season (May through October) and the wet season (November through April)
- Conduct twice monthly wet weather sampling of the discharge points 501, 510 & 514 to determine if specific discharges from Aberdeen MS4 exceed the water quality criteria for fecal coliform bacteria.

7.2 Continuing/Current Activities

The City currently implements activities and programs that meet the Permit requirements. The City will continue to implement these programs and activities as new and/or increased requirements in the 2013-19 Permit are implemented. The current compliance activities associated with the above Permit requirements include:

- Review QAPP for the sampling and testing component of the permit.
- The City conducts twice monthly wet weather sampling at the pre-determined discharge points.
- The City conducts sampling or testing required for characterizing illicit discharges pursuant to the Permit's IDDE program conditions.
- The City reviews water quality monitoring data and/or reports conducted by or for the City to determine if potential water quality violations are identified.
- The City reports potential water quality violations to Ecology within 30 days of becoming aware of the potential violations per the Permit's Compliance with Standards condition S4F.

7.3 Planned Activities

The City has a Monitoring and Assessment program but will need to update current efforts in order to maintain compliance as the new requirements are phased in over the 6-year Permit term (2013-19). Actions recommended for continued compliance include:

- Making annual payments to Ecology for continued participation in the Regional Stormwater Monitoring Program.
- Continue to conduct sampling and testing required for characterizing illicit discharges pursuant to the Permit's IDDE program conditions in regional and state monitoring forums.
- Continue to conduct twice monthly wet weather sampling at the pre-determined discharge points for two wet seasons in accordance with the QAPP
- Submit collected data for the Compliance Report submittals

Table 7-1 is the work plan for the 2018 SWMP Monitoring and Assessment activities.

Table 7-1. 2018 Monitoring and Assessment Work Plan

Task ID #	Task Description	Due Date	Schedule Notes
M&A-1	Review QAPP	Annually	
M&A-2	Provide a description of any stormwater monitoring studies conducted in 2017	With Annual Report March 2018	
M&A-3	Ensure all records related to Permit and SWMP are available to public at reasonable times during business hours.		Permit S9.C.1.C

Abbreviations and Definitions

The following definitions and abbreviations are taken directly from the Phase II Permit or from this SWMP Plan and are reproduced here for the reader's convenience.

40 CFR means Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the U.S. federal government.

AKART means all known, available, and reasonable methods of prevention, control, and treatment. See also State Water Pollution Control Act, Revised Code of Washington (RCW) Chapters 90.48.010 and 90.48.520.

Applicable TMDL means a total maximum daily load (TMDL) that has been approved by EPA on or before the issuance date of this Permit, or prior to the date that Ecology issues coverage under this Permit, whichever is later.

Beneficial uses means uses of waters of the state that include but are not limited to use for domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.

BMP means best management practice.

Bypass means the diversion of stormwater from any portion of a stormwater treatment facility.

Component or Program Component means an element of the Stormwater Management Program listed in S5 Stormwater Management Program for Cities, Towns, and Counties or S6 Stormwater Management Program for Secondary Permittees, S7 Compliance with Total Maximum Daily Load Requirements, or S8 Monitoring of this Permit.

CWA means Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.).

Ecology means the Washington State Department of Ecology.

Entity means a governmental body, or a public or private organization.

E&O means education and outreach.

EPA means the U.S. Environmental Protection Agency.

General Permit means a permit that covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.

Groundwater means water in a saturated zone or stratum beneath the surface of the land or below a surface water body. Refer to Washington Administrative Code (WAC) Chapter 173-200.

Hazardous substance means any liquid, solid, gas, or sludge, including any material, substance, product, commodity, or waste, regardless of quantity, that exhibits any of the physical, chemical, or biological properties described in WAC 173-303-090 or WAC 173-303-100.

Heavy equipment maintenance or storage yard means an uncovered area where any heavy equipment, such as mowing equipment, excavators, dump trucks, backhoes, or bulldozers are washed or maintained, or where at least five pieces of heavy equipment are stored on a long-term basis.

Highway means a main public road connecting towns and cities.

Hyperchlorinated means water that contains more than 10 milligrams/liter chlorine.

IDDE means Illicit Discharge Detection and Elimination.

Illicit connection means any infrastructure connection to the MS4 that is not intended, permitted, or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this Permit

(S5.C.3 and S6.D.3). Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the MS4.

Illicit discharge means any discharge to an MS4 that is not composed entirely of stormwater or of non-stormwater discharges allowed as specified in this Permit (S5.C.3 and S6.D.3).

Impervious surface means a non-vegetated surface area that either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A non-vegetated surface area that causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, rooftops, walkways, patios, driveways, parking lots or stormwater areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces that similarly impede the natural infiltration of stormwater.

Land-disturbing activity means any activity that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land-disturbing activities include, but are not limited to, clearing, grading, filling, and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered land-disturbing activity. Vegetation maintenance practices, including landscape maintenance and gardening, are not considered land-disturbing activity. Stormwater facility maintenance is not considered land-disturbing activity if conducted according to established standards and procedures.

Low-impact development (LID) means a stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration by emphasizing conservation, use of onsite natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

Low-impact development best management practices (LID BMP) means distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation, and transpiration. LID BMPs include, but are not limited to, bio-retention/rain gardens, permeable pavements, roof downspout controls, dispersion, soil quality and depth, vegetated roofs, minimum excavation foundations, and water reuse.

Material storage facilities means an uncovered area where bulk materials (liquid, solid, granular, etc.) are stored in piles, barrels, tanks, bins, crates, or other means.

Maximum extent practicable (MEP) refers to paragraph 402(p)(3)(B)(iii) of the federal Clean Water Act, which reads as follows: Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.

MEP means maximum extent practicable.

Municipal separate storm sewer system (MS4) means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

I. Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of Washington State.

II. Designed or used for collecting or conveying stormwater.

III. Which is not a combined sewer;

IV. Which is not part of a publicly owned treatment works (POTW) as defined at 40 CFR 122.2.; and

v. Which is defined as "large" or "medium" or "small" or otherwise designated by Ecology pursuant to 40 CFR 122.26.

National Pollutant Discharge Elimination System (NPDES) means the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington Department of Ecology.

Native vegetation means vegetation comprising plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and that reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas Fir, western hemlock, western red cedar, alder, big-leaf maple; shrubs such as willow, elderberry, salmonberry, and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

New development means land-disturbing activities, including Class IV General Forest Practices that are conversions from timber land to other uses; structural development, including construction or installation of a building or other structure; creation of hard surfaces; and subdivision, short subdivision, and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects meeting the definition of redevelopment shall not be considered new development. Refer to Appendix 1 for a definition of hard surfaces.

New Permittee means a city, town, or county that is subject to the Western Washington Municipal Stormwater General Permit and was not subject to the Permit prior to August 1, 2013.

New Secondary Permittee means a Secondary Permittee that is covered under, a municipal stormwater general permit and was not covered by the Permit prior to August 1, 2013.

Notice of Intent (NOI) means the application for, or a request for coverage under a General Permit pursuant to WAC 173-226-200.

Notice of Intent for Construction Activity means the application form for coverage under the Construction Stormwater General Permit.

Notice of Intent for Industrial Activity means the application form for coverage under the General Permit for Stormwater Discharges Associated with Industrial Activities.

O&M means operations and maintenance.

Outfall means point source as defined by 40 CFR 122.2 at the point where a discharge leaves the MS4 and discharges to waters of the State. Outfall does not include pipes, tunnels, or other conveyances that connect segments of the same stream or other surface waters and are used to convey primarily surface waters (i.e., culverts).

Permittee unless otherwise noted, the term "Permittee" includes city, town, or county Permittee, Co-Permittee, New Permittee, Secondary Permittee, and New Secondary Permittee.

Physically interconnected means that one MS4 is connected to another storm sewer system in such a way that it allows for direct discharges to the second system. For example, the roads with drainage systems and municipal streets of one entity are physically connected directly to a storm sewer system belonging to another entity.

Project site means that portion of a property, properties, or rights-of-way subject to land-disturbing activities, new hard surfaces, or replaced hard surfaces. Refer to Appendix 1 for a definition of hard surfaces.

QAPP means Quality Assurance Project Plan.

Qualified personnel means someone who has had professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee. Qualified personnel may be staff members, contractors, or volunteers.

Quality Assurance Project Plan (QAPP) means a document that describes the objectives of an environmental study and the procedures to be followed to achieve those objectives.

RCW means the Revised Code of Washington State.

Receiving waters means bodies of water or surface water systems to which surface runoff is discharged via a point source of stormwater or via sheet flow. Receiving waters may also be groundwater to which surface runoff is directed by infiltration.

Redevelopment means, on a site that is already substantially developed (i.e., has 35 percent or more of existing hard surface coverage), the creation or addition of hard surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation, or expansion of a building or other structure; replacement of hard surface that is not part of a routine maintenance activity; and land-disturbing activities. Refer to Appendix 1 for a definition of hard surfaces.

Regional Stormwater Monitoring Program (RSMP) means, for all of western Washington, a stormwater-focused monitoring and assessment program consisting of these components: status and trends monitoring in small streams and marine nearshore areas, SWMP effectiveness studies, and a Source Identification Information Repository (SIDIR). The priorities and scope for the RSMP are set by a formal stakeholder group. For this Permit term, RSMP status and trends monitoring will be conducted in the Puget Sound basin only.

Regulated small municipal separate storm sewer system means a municipal separate storm sewer system (MS4) that is automatically designated for inclusion in the Phase II stormwater permitting program by its location within an urbanized area, or by designation by Ecology and is not eligible for a waiver or exemption under S1.C.

RSMP means Regional Stormwater Monitoring Program.

Runoff is water that travels across the land surface and discharges to water bodies either directly or through a collection and conveyance system. See also "Stormwater."

Secondary Permittee is an operator of a regulated small MS4 that is not a city, town, or county. Secondary Permittees include special purpose districts and other public entities that meet the criteria in S1.B.

Shared water bodies means water bodies, including downstream segments, lakes, and estuaries that receive discharges from more than one Permittee.

SIDIR means Source Identification Information Repository.

Significant contributor means a discharge that contributes a loading of pollutants considered to be sufficient to cause or exacerbate the deterioration of receiving water quality or instream habitat conditions.

Small municipal separate storm sewer system means an MS4 that is not defined as "large" or "medium" pursuant to 40 CFR 122.26(b)(4) and (7) or designated under 40 CFR 122.26 (a)(1)(v).

SOP means standard operating procedure.

Source control BMP means a structure or operation that is intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. The 2012 Ecology Manual separates source control BMPs into two types. Structural source control BMPs are physical, structural, or mechanical devices, or facilities that are intended to prevent pollutants from entering stormwater. Operational BMPs are non-structural practices that prevent or reduce pollutants from entering stormwater. See Volume IV of the 2012 Ecology Manual for details.

Stormwater means runoff during and following precipitation and snowmelt events, including surface runoff, drainage, or interflow.

Stormwater associated with industrial and construction activity means the discharge from any conveyance that is used for collecting and conveying stormwater, which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant, or associated with clearing, grading and/or excavation, and is required to have an NPDES permit in accordance with 40 CFR 122.26.

Stormwater Management Program (SWMP) means a set of actions and activities designed to reduce the discharge of pollutants from the MS4 to the MEP and to protect water quality, and comprising the components listed in S5 (for cities, towns and counties) or S6 (for Secondary Permittees) of this Permit and any additional actions necessary to meet the requirements of applicable TMDLs pursuant to S7 Compliance with TMDL Requirements, and S8 Monitoring and Assessment.

Stormwater treatment and flow control BMPs/facilities means detention facilities, treatment BMPs/facilities, bio-retention, vegetated roofs, and permeable pavements that help meet Appendix 1 Minimum Requirements 6 (treatment), 7 (flow control), or both.

SWPPP means Stormwater Pollution Prevention Plan.

Total maximum daily load (TMDL) means a water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the water body can be used for the purposes the state has designated. The calculation must also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes. They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs.

Tributary conveyance means pipes, ditches, catch basins, and inlets owned or operated by the Permittee and designed or used for collecting and conveying stormwater.

UGA means Urban Growth Area.

Urbanized area is a federally designated land area comprising one or more places and the adjacent densely settled surrounding area that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile. Urbanized areas are designated by the U.S. Census Bureau based on the most recent decennial census.

Vehicle maintenance or storage facility means an uncovered area where any vehicles are regularly washed or maintained, or where at least 10 vehicles are stored.

Water Quality Standards means Surface Water Quality Standards, Chapter 173-201A WAC, Ground Water Quality Standards, Chapter 173-200 WAC, and Sediment Management Standards, Chapter 173-204 WAC.

Waters of the state include those waters as defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State and "waters of the state" as defined in Chapter 90.48 RCW, which includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and water courses within the jurisdiction of the state of Washington.

City of Aberdeen- Internal Coordination Mechanisms

1. PURPOSE

The City of Aberdeen manages stormwater and maintains compliance with the City's Phase II Stormwater NPDES Permit through the collaboration and integrated work of various City departments. The Phase II Permit contains 6 core program components with required permit conditions.

- **A. Public Education & Outreach**
- **B. Public Involvement & Participation**
- **C. Illicit Discharge Detection and Elimination**
- **D. Controlling Runoff from New Development, Redevelopment & Construction Sites**
- **E. Municipal Operations & Maintenance**
- **F. Monitoring and Assessment**

2. APPLICABILITY

These components cover a wide variety of stormwater issues and require coordination and communication between departments to remain informed and compliant with permit conditions. The following sections describe how various City of Aberdeen departments coordinate to meet and satisfy permit conditions S5.A.5.b.

3. STANDARD OPERATING PROCEEDURE

A. Public Education & Outreach

This component aims to implement a public education program that actively provides education materials, learning opportunities and activities regarding stormwater management to the community. More specifically, the program focuses on distributing significant stormwater messages and information to various audiences including: the general public, businesses, school age children, homeowners, engineers, contractors and City Staff. The stormwater topics conveyed as required by the Phase II permit include: general impacts of stormwater, LID principles and BMPs, Illicit discharges and how to report them, stewardship opportunities, erosion control, stormwater treatment and flow control BMPs, equipment maintenance, pet waste disposal, etc.

The City of Aberdeen manages this component through the Public Works Department which oversees the creation and distribution of educational materials and messages to targeted audiences. The City of Aberdeen Stormwater Supervisor manages the City's Hotline and either responds to reported stormwater incidents or assigns to others within the department. The

Public Works Department and Community Development department work together to create stewardship opportunities. The City's Stormwater Management Plan (SWMP) explains more in depth the various educational programs the City offers.

B. Public Involvement & Participation

This program component requires that the City develop a public involvement and participation program that allows for the public to participate in the decision making process related to the City's Stormwater Management Plan (SWMP).

The City posts the NPDES Annual Report and SWMP as required on the City of Aberdeen Website. The public is able to provide comments related to the SWMP through the City's website, in person or via phone. The public also has the opportunity to provide comments related to stormwater management at the City's Council meetings and through participation in the City of Aberdeen Stream Team.

City Council is updated throughout the term of the Permit at various council and committee meetings relating to new Permit conditions.

C. IDDE Program

This component is designed to identify and eliminate pollutant sources of contamination. The City's IDDE Program investigates local stormwater pollution incidents with the intent of resolving and eradicating the cause of the source. The Permit requirements include mapping and ordinance mechanisms to assist with locating and eliminating pollutants from the City's MS4 system.

The City of Aberdeen Public Works Department and Fire Department represent the personnel identified to respond to IDDE incidents. However, a variety of field staff are trained to identify and report an illicit discharge including, Public Works, Police, Wastewater Treatment Facility and Parks Department. Incidents are reported to the Public Works Department for documentation. Investigations and remediation occurs through the coordination of the Public Works Department. The City's Waste Water Treatment personnel conduct site visits at a variety of local businesses and identify waste management issues and/or IDDE incidents.

The Public Works Department manages and maintains the City's Utility maps. Ordinances and enforcement activities are managed through the City's Legal and Community Development (Code Enforcement) Departments with direction from the City of Aberdeen Public Works Department.

D. Controlling Runoff from New Development, Redevelopment & Construction Sites

Compliance with this permit component requires the City to develop, implement and enforce a program to reduce pollutants in stormwater runoff to the municipal stormwater infrastructure from any new development, redevelopment or construction site activity that results in land disturbance or development.

The City of Aberdeen has a permit process for site development that involves: Public Works, Fire Department and Community Development. The Public Works Department conducts the site plan review and verifies compliance with the Stormwater Management Manual of Western Washington and City Code/Standards. Inspectors within the Public Works Engineering Department conduct construction inspections throughout development of a site and report if there are issues with the erosion control efforts and BMP's. If enforcement is necessary, the Public Works Department follows the SOP for stormwater enforcement actions

E. Municipal Operations & Maintenance

This component requires the City to develop and implement a Maintenance and Operations program, including a training segment that has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. The Phase II Permit requires the development and implementation of Stormwater Pollution Prevention Plans for all heavy equipment maintenance or storage yards and proper inspection and maintenance of stormwater BMPs.

The Public Works Department manages and maintains the City's Stormwater infrastructure and is responsible for following established operation and maintenance standards. The Public Works Engineering Department maintains as built drawings and GIS Mapping. When formal inspection records are required they are submitted by Public Works Engineering Department personnel and are kept with the project files.

F. Monitoring

Twice monthly wet weather sampling is conducted on an ebbing tide at 3 stormwater sites (501, 510, and 514). Sample locations for this study are the same as the locations used in the Aberdeen TMDL study for Grays Harbor (Grays Harbor Fecal Coliform Bacteria Monitoring to Characterize Water Quality in Urban Stormwater Drains, 2010)

Standard Ecology Program protocols will be used for sample collection. Field sampling and measurement protocols will follow those described in Ecology's Stormwater Sampling Manual (Publication No. 15-03-044).

The project manager will coordinate sampling dates, laboratory identification numbers, and methods with the City of Aberdeen Laboratory QA/QC manual (2013) using standard Ecology protocol. The samples shall be delivered to the Aberdeen WWTP Laboratory using chain of custody protocol.

The project manager will ensure proper training for anyone who is assisting with field work. This will include discussion of quality assurance and contamination prevention.

Data management, review, and reporting will follow the procedures outlined in the City of Aberdeen Laboratory QA/QC manual (2013). Laboratory staff will be responsible for internal quality control verification, proper data transfer, and reporting data to the project manager.

The project manager is responsible for reporting the preparing the monitoring data for submittal in the SWMP as well as the annual permit.

City of Aberdeen
Stormwater Record Keeping SOP

1. PURPOSE

To allow the COA to gather, track, and maintain consistent stormwater records for compliance with the NPDES Phase II Stormwater permit.

2. APPLICABILITY

Records of all stormwater monitoring information, inspections and visual observations, certifications, corrective actions and follow-up activities, and copies of all reports will be kept and retained for a period of at least five years.

3. STANDARD OPERATING PROCEDURE

A. Stormwater Plan Review

a) All plans reviewed by the COA are entered into the City's permitting program, SmartGOV.
b) If the proposed development require an Engineering/Stormwater review they shall be reviewed by the Engineering Department and properly entered into SmartGOV.
c) All stormwater plan review documents shall remain with the project files in the COA Building department during construction and filed in the projects address file upon completion.

B. Construction Stormwater Inspections Forms

a) Completed *Construction Site Inspection Report* originals shall be filed with the plan review documents as listed above in Stormwater Plan Review.
b) A copy of the completed *Construction Site Inspection Report* shall be stored in the Engineering Department for use in the annual SWMP update.

C. Stormwater Enforcement Actions

a) All stormwater enforcement actions are to be logged in the *Record of Enforcement Actions* that is kept by the NPDES Phase II permit manager.
   - A completed *Notice of Correction* original shall be filed with the plan review documents as listed above in Stormwater Plan Review.
   - A completed *Order to Correct Violation* original shall be filed with the plan review documents as listed above in Stormwater Plan Review.
   - A completed *Stop Work Order* original shall be filed with the plan review documents as listed above in Stormwater Plan Review.
   - A completed *Notice of Civil Violation* original shall be filed with the plan review documents as listed above in Stormwater Plan Review.

D. Municipal Maintenance Inspections

a) Completed *Municipal Facility Stormwater Reports* shall be submitted to the NPDES Phase II permit manager for inclusion in the annual SWMP update.

E. IDDE Program

a) An Illicit Discharge Incident Report shall be filled out and followed for all illicit discharges identified.

b) Completed illicit discharge forms shall be copied with the original being submitted to the NPDES Phase II permit manager and the copy being kept by the department that filled out the original form. At year's end forms original forms in the possession of the shall be copied for the annual SWMP update and then transferred to the stormwater files located in the vault on the second floor of city hall.

c) Completed Outfall Reconnaissance inventory forms shall be kept in the office of the NPDES Phase II permit manager for use in the annual SWMP update. When annual update has been completed the files shall be transferred to the stormwater files located in the vault on the second floor of city hall.

City of Aberdeen
Education and Outreach SOP

1. PURPOSE

Under the City of Aberdeen's (COA) current National Pollutant Discharge Elimination System (NPDES) Phase II Permit # WAR04-5026, the COA is required to develop an education and outreach standard operating procedure (SOP) for the development of the COA Education and Outreach program. The purpose of the education program is to educate residents, businesses, industries, elected officials, policy makers, planning staff, and other employees of the COA. This Standard Operating Procedure (SOP) shall establish uniform procedures pertaining to the preparation for, the performance of, and the reporting of the Education and Outreach program.

2. APPLICABILITY

The policies and procedures of the SOP are applicable to all personnel involved in the planning, coordination, preparation, conducting, and reporting of Education and Outreach.

3. STANDARD OPERATING PROCEEDURE - Education

A. Planning of Education Activities

a) Topics of the 4 quarterly education activities are to be determined with one topic addressed to each of the following sub-groups
   - General public
   - General public, businesses, including home-based and mobile businesses
   - Homeowners, landscapers and property managers
   - Engineers, contractors, developers, review staff and land use planners

b) Mailings, brochures, handouts, meetings, etc. May be used to convey the stormwater message.

c) Consideration shall be given to the undertaking of an elementary education program for area fourth, fifth, and sixth graders on an annual basis.

B. Participation of Education Activities

a) Stormwater Maintenance Supervisor shall be in charge of activity.

b) Adequate staff shall be scheduled to carry out activity.

C. Documentation

a) The COA shall track and maintain records of Public education and outreach activities in the *Education and Outreach Activity Log*

b) Upon completion, activity is changed in the *Education and Outreach Log* from pending to complete and a summary of the activity is written.

4. STANDARD OPERATING PROCEEDURE - Outreach

A. Planning of Outreach Activities

a) During the first quarter of the calendar year, COA employees shall meet to discuss outreach activities.
b) A minimum of two activities are to be decided upon.
c) When activities have been determined, they are to be added to the *Education and Outreach Activities Log* and status is stated as pending.
d) Activities are to be scheduled and advertised on the COA Stormwater website and mailings when possible and appropriate.

B. Participation of Outreach Activities

a) Stormwater Maintenance Supervisor shall be in charge of activity.
b) Adequate staff shall be scheduled to carry out activity.

C. Post Activity

a) Site is to be cleaned up and supplies put away in an organized manner in the Stormwater supply closet

D. Documentation

a) Staff shall track handouts and brochures that were distributed.
b) Staff shall document approximate number of people that Outreach opportunity has contacted.
c) The COA shall track and maintain records of Public education and outreach activities in the *Education and Outreach Activity Log*
d) Upon completion, activity is changed in the *Education and Outreach Log* from pending to complete and a summary of the activity is written.

City of Aberdeen-Public Education, Outreach and Involvement Plan: Fecal Coliform

1. PURPOSE

Under the City of Aberdeen's (COA) current National Pollutant Discharge Elimination System (NPDES) Phase II Permit # WAR04-5026, the COA is required to develop a public education, outreach and involvement plan (PEOIP) for the reduction of fecal coliform bacteria pollution. The purpose of the PEOIP is to raise public awareness which will effect behavior changes. This plan shall establish uniform procedures pertaining to the preparation for, the performance of, and the reporting of the program.

2. APPLICABILITY

The policies and procedures of the PEOIP are applicable to all staff personnel involved in the planning, coordination, preparation, conducting, and reporting of Education and Outreach. Additionally, the PEOIP should be used as a guild in determining the programs overall direction once the baseline knowledge of the target audience has been determined.

3. PLAN COMPONENTS

A. Public Education, Outreach and Involvement - Goals

a) Educate community residents of dangers and pollution potential from pet waste.
b) Encourage community members to reduce fecal coliform pollution through outreach.
c) Develop an education program directed towards elementary age children.
d) Design and implement a program which notifies residents, in a timely manner when bacteria pollution poses a public health concern.
e) Measure resident's knowledge of sources of bacteria and preventing bacteria pollution through two public education surveys. One before outreach and the other after outreach.
f) Design and implement an Aberdeen Stream Team program to participate in stewardship programs.
g) Purchase, install and maintain pet waste bag dispenser units with explanatory signs in public areas with dog usage.
h) Develop an inventory of facility sources that have potential for bacteria runoff.
i) Develop a targeted manure management educational plan to annually notify facility owners.

B. Public Education, Outreach and Involvement - Target Audiences

a) Emphasis Group - Community residents of the three high priority water bodies identified under the 2007-2012 permit.
b) Emphasis Group - Elementary students in 4th through 6th grade.
c) Emphasis Group - Pet owners who use public green areas.
d) Comprehensive Group - City of Aberdeen citizens

C. Public Education, Outreach and Involvement – Messages

The exact message is yet to be determined. The context of the message will be built around informing and effecting removal of fecal coliform primarily amongst our target audiences but also the City as a whole. Message format will be determined by staff discussion. Public input shall be considered and the message will be discussed and approved with the newly formed Aberdeen Stream Team prior to implementation.

D. Public Education, Outreach and Involvement – Format

The program information shall be organized and circulated in one of the following distribution formats

a) Signage: Signs placed in strategic locations are a low-cost, low-effort way of educating community members about the fecal coliform pollution generated from pets.

b) Community Newsletters: Newsletters provide community members and businesses with specific information about the development and implementation of the program. Because newsletters can be focused specifically on the fecal coliform pollution issues, they usually provide more specific information than you can put in a news article or advertisement in a local or regional newspaper. Newsletters are also relatively inexpensive to produce and distribute.

c) Inserts and Flyers: Inserts and flyers are another low-cost method of spreading information. They consist of a simple message and are easily distributed to households and businesses in the community. Allows for quick and easy information distribution to everyone living in the community. In addition, putting information in writing is useful because community members can keep and refer to the information when needed.

d) Meetings, Briefings and Presentations: Meetings, briefings and presentations can be used throughout the planning and public education process to keep local officials, agencies, and other interested groups informed about the program. These public education tools not only provide information, but also provide a way for groups to express opinions and concerns regarding the program.

e) School Activities and Events: Educating students about fecal coliform pollution and prevention helps develop a positive attitude among both students and parents regarding the issues. It encourages community involvement that will contribute to the success of our program. Since children will ultimately be the decision makers for the community, teaching personal responsibility for fecal coliform pollution early on can only benefit the community in later years.

f) Special Events: A primary source of getting the message out will be through the continued participation in the Fourth of July Splash festival and Aberdeen Art Walk event. These events enable staff to talk directly with the target audience and get immediate feedback. Getting community groups and organizations involved in the event will make it more successful and encourage more participation.

E. Public Education, Outreach and Involvement - Distribution Methods

Materials shall be distributed through mailings, handouts, door hangers or similar outreach tools.

F. Public Education, Outreach and Involvement - Evaluation Methods

Initial baseline knowledge of fecal coliform bacteria pollution will be determined by use of a pre-program survey conducted in July 2015. Additionally, a post program survey will be conducted prior to permit expiration to gauge program results. Additional program evaluation methods, if any, shall be determined at a later date.

G. Public Education, Outreach and Involvement - Documentation

Program documentation shall follow the format stated in the Education and Outreach documentation SOP.

City of Aberdeen- Public Notification of Bacterial Pollution SOP

1. PURPOSE

To allow the COA to notify residents, in a timely manner, when bacteria pollution that poses a public health concern reaches the MS4.

2. APPLICABILITY

A public health concern for stormwater is understood to be; anytime a bacteria pollution test result is recorded which if taken at the WWTP would initiate self-reporting for the City of Aberdeen with Ecology. When appropriate, public notice will be given to residents of the City of Aberdeen in the event of potential health concerns as a result of bacterial pollution.

3. STANDARD OPERATING PROCEEDURE

A. In the event of bacterial pollution discharged to the MS4 verified by laboratory analysis (or)

B. In the event of bacterial pollution discharged to the MS4 visually witnessed by COA staff,

The following procedures will be administered:

1. Immediate notification to Stormwater Program Manager or IDDE Program Manager
   a. Stormwater Program Manager – Kyle Fisher, 360-537-3215 or 360-580-0890
   b. IDDE Program Manager – Jeff Springer – 360-537-3388 or 360-580-6138
   c. Public Works Director – Rick Sangder – 360-537-3228 or 360-581-5055

Procedure for Stormwater Program Manager or IDDE Program Manager

1. Immediate notification of the following agencies:
   a. Department of Ecology – 360-407-6300
   b. Department of Health (Shellfish) – 360-236-3330
   c. Grays Harbor County Environmental Health – 360-249-4222

2. Consult with Public Works Director for notification of the following:
   a. Local Media
   b. City of Aberdeen Social Media Accounts
   c. Public notice posted at/near the discharge outfall
   d. Door to door notification if necessary

City of Aberdeen
Stormwater Inspection SOP

1. PURPOSE

Under the City of Aberdeen's (COA) current National Pollutant Discharge Elimination System (NPDES) Phase II Permit # WAR04-5026, the COA is required to develop an inspection standard operating procedure (SOP) for the inspection of new public and private development and significant redevelopment.

The purpose of this Standard Operating Procedure (SOP) is to establish uniform procedures pertaining to the preparation for, the performance of, and the reporting of stormwater inspections as performed by City of Aberdeen personnel. Stormwater inspections are performed as a means of ensuring that construction sites are implementing the measures indicated in the SWPPP and evaluating the completeness and effectiveness of specified Best Management Practices (BMPs) that are implemented.

The inspector may deviate from these procedures when necessary due to unexpected or unique problems that may occur in the field. Any deviation must be discussed in the report.

2. APPLICABILITY

The policies and procedures of the SOP are applicable to all personnel involved in the planning, coordination, preparation, conducting, and reporting of stormwater inspections.

3. STANDARD OPERATING PROCEEDURE – Construction Inspections

A. Prior to Inspection

a) Contact Contractor Site Superintendent or Project Manager.
b) Review previous inspection reports to determine reoccurring problems.
c) Fill out project information on *Construction Site Inspection Report*
d) Bring equipment
    1) Hard Hat
    2) Safety Vest
    3) Camera
    4) Project File
    5) Inspection forms

B. Onsite meeting with Superintendent prior to inspection

a) Verify that SWPPP, NOI and permit are on site and accessible.
b) Review SWPPP changes from last inspection.
c) Review status of any corrective actions or deficiencies listed from prior inspections.
d) Discuss any complaints or incidents that have occurred prior to the previous inspection.
e) Review contractor's records of weekly storm water inspections (or bi-weekly with inspections within 24hrs of previous storm 0.5 inches or more).

C. Site Inspection

a) Verify structural controls are installed correctly and maintained per SWPPP.
b) Number the structural and non-structural BMPs identified in the SWPPP on the site map and list them under the site specific BMPs section of the *Construction Site Inspection Report.*
c) Describe corrective actions initiated, date completed, and note the person that completed the work in the corrective action section.
d) Assess the general site issues in the *Overall Site Issues* section.
e) Take photographs of good and bad examples. Keep photo log.

D. Onsite meeting with Superintendent after inspection

a) Discuss effectiveness of current controls and whether controls need to be modified on the CSWPPP.
b) Discuss deficiencies and issue corrective notices, order to correct violation, stop work orders, or notice of civil violation as per the *Stormwater Inspection and Enforcement Procedures*.
c) Inspector and Superintendent should sign the completed inspection form at the completion of the inspection.

E. Post Inspection Activities including filing

a) Review form, complete and clarify as needed.
b) Fax copy of completed form to contractor (if copies were not provided during site visit).
c) File original inspection form in project file located at City Hall.
d) File copy of inspection form in City of Aberdeen Stormwater files in Stormwater Department for use in annual SWMP update.
e) Document history of inspection in tracking spreadsheet.
f) Follow-up on corrective issues in timeframe given to contractor.

4. STANDARD OPERATING PROCEDURE – Municipally Owned and Operated Stormwater Facility Inspections.

A. Prior to Inspection

a) Schedule time for inspections with Deputy Public Works Director.
b) Review previous inspection reports.
c) Fill out project information on *Municipal Facility Stormwater Inspection Report,* including date, time, and inspector name.
d) Bring equipment
    6) Hard Hat
    7) Safety Vest
    8) Camera
    9) Project File
    10) Inspection forms

B. Site Inspection

a) If facility has a SWPPP, verify facility is being maintained per its requirements.
b) Inspect facility thoroughly verifying each item inspected on the *Municipal Facility Stormwater Inspection Report.*
c) Assess the general site issues and describe corrective actions required or initiated in the summary of the report.

d) Take photographs of site

C. Post Inspection Activities including filing

a) Review form, complete and clarify as needed.
b) Deliver copy of completed report to Street Maintenance Supervisor if maintenance is required.
c) File original inspection form in project file located in the office of the Deputy Public Works Director.
d) Follow-up on corrective issues with Deputy Public Works Director as needed.

City of Aberdeen
TMDL Summary

1. PURPOSE

To allow the COA to gather, track, and maintain consistent stormwater records for compliance with the NPDES Phase II Stormwater TMDL requirements.

2. TMDL Permit Requirements (2013-2019):

a. Develop a public education and outreach involvement plan that targets the reduction of fecal coliform pollution by increasing public awareness and effecting behavior change. The plan includes stated goals, target audiences, messages, possible formats as well as distribution and evaluation methods. The plan shall be implemented prior to the expiration of the permit and include the following elements:

   1) Targeting of the residents of the three high priority water bodies identified in the 2007-2012 NPDES permit.
   2) Use mailings, door hangers or similar outreach tools.
   3) Reach 4th through 6th grade students.

b. Design and implement a program which notifies residents, in a timely manner, when bacteria pollution that poses a public health concern reaches the MS4. (Completed 2015)

c. Conduct two public education surveys gauging resident's knowledge of the sources of bacteria and prevention of bacteria pollution. One survey should measure the knowledge prior to outreach and the other their knowledge after outreach. (Completed 2015)

d. Design and implement a Stream Team program to participate in stewardship activities. (Completed 2015)

e. Install and maintain pet waste dispenser units and explanatory signage in public areas with dog use. (Completed 2015)

f. Develop an inventory of sources that have potential for bacteria runoff. (Completed 2016) Develop a targeted manure management educational plan for those facility owners delivering one presentation or letter annually.

g. Implement a regulatory mechanism to control pet waste.

h. Designate areas within the MS4 that discharge to points 501, 510 & 514 as high priority areas for illicit discharge detection and elimination efforts. (Completed 2015)

i. Complete field screening prior to December 31, 2014, investigations must include activities for both the dry season (May through October) and the wet season (November through April) (Completed 2015)

j. Conduct twice monthly wet weather sampling of the discharge points 501, 510 & 514 to determine if specific discharges from Aberdeen MS4 exceed the water quality criteria for fecal coliform bacteria. (Completed 2016)

3. Activities to Date:

i. The City of Aberdeen is in beginning of the fifth year of permit requirements. All permit requirements must be in compliance prior to expiration of the permit.

ii. The TMDL Public Education, Outreach and Involvement plan was updated for 2018.

iii. The City purchased 30 Dogipot pet stations and the supplies needed to operate them in 2014 and installed them in 2015. The Dogipots are still in operation.

iv. The City reviewed commercial properties with the intent of developing an inventory of sources that have the potential for bacteria runoff. Two such sites were deemed to exist. The two sites are the Aberdeen PAWS organization and the City of Aberdeen Animal Control Building.

v. Field Screening of all outfalls was preformed prior to December 31, 2015 deadline. Outfalls are inspected annually by City crews.

vi. The City began its twice monthly wet weather sampling requirements at the pre-determined discharge points prior to the October 31, 2014 deadline and continued through 2016. All sample analysis is conducted by an accredited laboratory.

vii. The City conducted a survey gauging resident's knowledge of the sources of bacteria and prevention of bacteria pollution. The survey took place through direct interaction with residents by City employees at the annual 4th of July Splash Festival, annual Chehalis River Festival, and the annual Aberdeen Art Walk. 237 surveys were conducted prior to fecal coliform bacteria pollution outreach began in order to gauge the pre-outreach understanding level.

viii. Formed the Aberdeen Stream Team program for additional volunteer stewardship opportunities. Conducted three outreach activities in 2016 and 2017. Fry Creek community clean-up, and Alder Creek (2x) community clean-up. Events are typically attended by 30-40 volunteers.

4. Activities Planned for 2018

i. Two community clean-ups (Alder Creek and Fry Creek), utility billing insert (illicit discharge), three community outreach events (City of Aberdeen Splash, Aberdeen Artwalk, and Chehalis Watershed Festival.

ii. Administer a grade school education program with the message of IDDE and fecal coliform bacteria pollution. The intent is to reach all 6th graders prior to the end of the 2018 academic year.

Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)		
Call Taken By:	Call Date: 2-24-17	Call Time: 9:45 A.M.
Reporter Information		
Incident Time: N/A	Incident Date N/A	
Caller Contact Information:		Organization:
Precipitation (inches) past 24 / 48 hours .08		

Incident Location	
Stream Address or Outfall #: WILSON CREEK	Latitude and Longitude
Closest Street Address:	Nearby Landmark: LOG PAVILION

Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☒ Along banks
☐ Upland Area (Land not adjacent to stream)	☐ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	

Narrative description of location: BRIDGE @ LOG PAVILION

Upland Problem Indicator Description

☒ Dumping	☐ Oil / solvents / chemicals	☐ Sewage
☐ Wash water, suds, ect.	☐ Other:	

Stream Corridor Problem Indicator Description

Odor	☒ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☒ Normal	☐ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☒ Other: Describe in "Narrative" section	

Narrative description of problem indicators: (2) 50 LB BAGS WOOD PELLETS DUMPED ON BANK NEAR LOG PAVILION BRIDGE & WALK WAY

Suspected Violator (name, personal or vehicle description, license plate number, ect.) N/A

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3393
Non Emergency Situation Small / Medium amount of known substance (generally 1 drop to 5 gallons and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3285 Department of Health - Sewage 360-236-3330

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

\# 1.2.24.2017 Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation SPRINGER / IRION

Site Investigated by: SPRINGER / IRION

Date: 2-24-17 Time: 9:52 A.M.

Investigation Results:

- [ ] No Investigation Made
  Reason:
- [ ] Referred to different department or agency
  Contact information
  Reason:
- [ ] Investigated - No Action Required
  Reason:
- [x] Investigated - Action Required
  Complete next section

Narrative description of site assessment: CLEANED AREA DISPOSED OF PELLETS

Environmental Remediation Action Plan

N/A

Enforcement Actions (if any)

N/A

Correspondence

Agency	Contact Person	Date / Time	Phone Number
1 City of ABERDEEN	JEFF SPRINGER	2-24-17 9:52 A.M.	580-6138
2	KYLE SCOTT	2-24-17 10:45 A.M.	
3			
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Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)

Call Taken By: RON COWALL	Call Date: 3-3-17	Call Time: 8:30 A.M.

Reporter Information

Incident Time:	Incident Date 3-2-17
Caller Contact Information: CASCADE GAS	Organization: GASCADE GAS
Precipitation (inches) past 24 / 48 hours	

Incident Location

Stream Address or Outfall #: K#	Latitude and Longitude 123°48'57"W 46°58'14"N
Closest Street Address: 101 W. WISHKAH	Nearby Landmark: PIZZA HUT

Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☒ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	

Narrative description of location: ALLEY BEHIND PIZZA HUT

Upland Problem Indicator Description

☐ Dumping	☐ Oil / solvents / chemicals	☐ Sewage
☐ Wash water, suds, ect.	☐ Other:	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☐ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☐ Other: Describe in "Narrative" section	

Narrative description of problem indicators: SUMP PUMP PUMPING TO ALLEY

Suspected Violator (name, personal or vehicle description, license plate number, ect.) PIZZA HUT PROPERTY MANAGEMENT

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3393
Non Emergency Situation Small / Medium amount of known substance (generally 1 drop to 5 gallons and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3286 Department of Health - Sewage 360-236-3330

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number	(Assign tracking numbers according to sequential order for year and date of occurrence)	
# 2.3.3.2017	Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011	
Site Assessment / Investigation Ron Covall		
Site Investigated by: Ron Covall		
Date: 3-3-17	Time:	

Investigation Results:

- [ ] No Investigation Made
  - Reason:
- [ ] Referred to different department or agency
  - Contact information
  - Reason:
- [ ] Investigated - No Action Required
  - Reason:
- [x] Investigated - Action Required
  - Complete next section

Narrative description of site assessment: SUMP PUMP PUMPING TO ALLEY

Environmental Remediation Action Plan

SUMP PUMP NOW RUNNING TO UTILITY SINK IN BASEMENT. DISCHARGING TO SANITARY SEWER

Enforcement Actions (if any)

Correspondence

Agency	Contact Person	Date / Time	Phone Number
1 CITY OF ABERDEEN	JEFF SPRINGER	3/3/17 12:30 P.M.	360-580-6138
2			
3			
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Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)			
Call Taken By: Bill Sidor		Call Date: 3-6-17	Call Time: 10:37
Reporter Information			
Incident Time: N/A		Incident Date N/A	
Caller Contact Information:			Organization: City of Aberdeen
Precipitation (inches) past 24 / 48 hours			
Incident Location			
Stream Address or Outfall #: K 55		Latitude and Longitude	
Closest Street Address:		Nearby Landmark: Bowling Alley	
Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☒ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	
Narrative description of location: Alley behind Bowling Alley			

Upland Problem Indicator Description			
☐ Dumping	☐ Oil / solvents / chemicals	☐ Sewage	
☐ Wash water , suds, ect.	☒ Other: Cooking Grease		
Stream Corridor Problem Indicator Description			

Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☒ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☒ Other: Describe in "Narrative" section	

Narrative description of problem indicators: Cooking Grease barrel had filled with Rain water and was spilling over into Alley

Suspected Violator (name, personal or vehicle description, license plate number, ect.) Teriyaki Restraunt

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3393
Non Emergency Situation Small / Medium amount of known substance (generally 1 drop to 5 gallons and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3285 Department of Health - Sewage 360-236-3330

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

\# 3.8.7.2017 Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation: Bill Sidor, Ron Carroll, Steve Randich

Site Investigated by: " "

Date: 3-6-17 | Time: 10:37 - 11:00 A.M.

Investigation Results:

- [ ] No Investigation Made
  - Reason:
- [ ] Referred to different department or agency
  - Contact information
  - Reason:
- [ ] Investigated - No Action Required
  - Reason:
- [x] Investigated - Action Required
  - Complete next section

Narrative description of site assessment: block off near C.B.'s Sand Alley & SWEEP.

Environmental Remediation Action Plan

Sand Alley and sweep. Cleaned C.B. in Alley

Enforcement Actions (if any)

Refered to Code Enforcement

Correspondence

Agency	Contact Person	Date / Time	Phone Number
1 City of Aberdeen	Jeff Springer	3/7/17 1:00P.M.	360-580-6138
2			
3			
4			
5			
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8			
9			
10			

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

4.3.13.2017 Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation

Site Investigated by: Covill, Montoure, Matisons

Date: 3-13-17 Time: 12:45 PM

Investigation Results:

- [ ] No Investigation Made
  Reason:
- [ ] Referred to different department or agency
  Contact information
  Reason:
- [ ] Investigated - No Action Required
  Reason:
- [x] Investigated - Action Required
  Complete next section

Narrative description of site assessment: At 12:23 PM we were called to the Aberdeen Fire Dept. at 700 W. Market for a Grays Harbor Transit Bus that broke down in front of the station.

Environmental Remediation Action Plan

Before we got to the site, Fire Dept. personnel made a berm around the catch basin with their spill cleanup material to stop the fuel spilled from the bus. We got there and put down absorbent booms around the catch basin and the Grays Harbor Transit had people come down to put more booms & pads on the spill. The Transit mechanic that came there said it had a fuel line problem that leaked diesel on the ground. We estimated no more than a couple of cups of fuel spilled. We brought the Vactor down and sucked the basin while hosing down the spill area. We dumped the Vactor at our Vactor dump site

Enforcement Actions (if any)

Correspondence

Agency	Contact Person	Date / Time	Phone Number
1			
2			
3			
4			
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9			
10			

Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)			
Call Taken By: AED	Call Date: 5-19-2017		Call Time: 1:00 P.m.
Reporter Information			
Incident Time: 5-19-17	Incident Date 12:45 P.m.		
Caller Contact Information: 911			Organization: City of Aberdeen
Precipitation (inches) past 24 / 48 hours ∅			
Incident Location			
Stream Address or Outfall #: Washington	Latitude and Longitude		
Closest Street Address: Park & Market	Nearby Landmark: Fire Dept.		
Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☒ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	

Narrative description of location: Gutter line near storm drain

Upland Problem Indicator Description		
☐ Dumping	☒ Oil / solvents / chemicals	☐ Sewage
☐ Wash water, suds, ect.	☐ Other:	

Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☐ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☐ Other: Describe in "Narrative" section	

Narrative description of problem indicators: 55 Gal Drum in gutter line

Suspected Violator (name, personal or vehicle description, license plate number, ect.) N/A

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3393
Non Emergency Situation Small / Medium amount of known substance (generally 1 drop to 5 gallons and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3285 Department of Health - Sewage 360-236-3330

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number	(Assign tracking numbers according to sequential order for year and date of occurrence)
# 5.5.19.2017	Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011
Site Assessment / Investigation	Springer, Irion, Montrue
Site Investigated by: "	"
Date: 5-19-17	Time: 1:05 P.M.

Investigation Results:

- [ ] No Investigation Made
  Reason:
- [ ] Referred to different department or agency
  Contact information
  Reason:
- [ ] Investigated - No Action Required
  Reason:
- [x] Investigated - Action Required
  Complete next section

Narrative description of site assessment: 55 gal drum in gutter line.

Environmental Remediation Action Plan

Clean up and remove drum. Drain drum @ Vactor dump site.

Enforcement Actions (if any)

Correspondence

	Agency	Contact Person	Date / Time	Phone Number
1	City of Aberdeen	Jeff Springer	5/19/17	360-580-6138
2				
3				
4				
5				
6				
7				
8				
9				
10				

Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)

Call Taken By: Steve Randich	Call Date: 6-1-17	Call Time: 2:00 P.M.

Reporter Information

Incident Time: N/A	Incident Date 6-1-17
Caller Contact Information: 911	Organization:
Precipitation (inches) past 24 / 48 hours .14	

Incident Location

Stream Address or Outfall #: B St	Latitude and Longitude 46° 58' 46 N 123° 48' 33 W
Closest Street Address:	Nearby Landmark: B St 7-11

Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☐ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	

Narrative description of location: Small paint spill

Upland Problem Indicator Description

☐ Dumping	☐ Oil / solvents / chemicals	☐ Sewage
☐ Wash water, suds, ect.	☒ Other: PAINT	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☐ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☐ Other: Describe in "Narrative" section	

Narrative description of problem indicators:

Suspected Violator (name, personal or vehicle description, license plate number, ect.) N/A

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3391
Non Emergency Situation Small / Medium amount of known substance (generally 1 cup to 5 gallons) and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3285 Department of Health - Sewage 360-236-3330

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

6.6.1.2017 — Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation: Springer

Site Investigated by: Springer

Date: 6-1-2017 | Time: 2:15 P.M.

Investigation Results:

- [ ] No Investigation Made
  Reason:
- [ ] Referred to different department or agency
  Contact information
  Reason:
- [ ] Investigated - No Action Required
  Reason:
- [x] Investigated - Action Required
  Complete next section

Narrative description of site assessment: Small paint spill tracked from Alley to Stop sign @ 3rd & Market

Environmental Remediation Action Plan

Sweep up remaining paint

Enforcement Actions (if any)

Correspondence

	Agency	Contact Person	Date / Time	Phone Number
1	City of Aberdeen	Jeff Springer		360 580-6138
2				
3				
4				
5				
6				
7				
8				
9				
10				

Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)			
Call Taken By: MIKE RANDKH		Call Date: 7-19-17	Call Time: 12:20 P.M.
Reporter Information			
Incident Time: 12:00 P.M.		Incident Date 7-9-17	
Caller Contact Information:			Organization: City of Aberdeen
Precipitation (inches) past 24 / 48 hours Ø			
Incident Location			
Stream Address or Outfall #: Duffy St.		Latitude and Longitude	
Closest Street Address:		Nearby Landmark:	
Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☐ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	
Narrative description of location: Duffy St. Storm line			
Upland Problem Indicator Description			
☐ Dumping	☐ Oil / solvents / chemicals	☐ Sewage	
☐ Wash water, suds, ect.	☒ Other: CDF		

Stream Corridor Problem Indicator Description				
Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☐ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☐ Other: Describe in "Narrative" section	

Narrative description of problem indicators: Broken Storm line CDF around pipe none discharged

Suspected Violator (name, personal or vehicle description, license plate number, ect.) City of Aberdeen

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3393
Non Emergency Situation Small / Medium amount of known substance (generally 1 drop to 5 gallons and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3285 Department of Health - Sewage 360-236-3330

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

7.7.19.2017 Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation Wintrip, Springer

Site Investigated by: " "

Date: 7-19-2017 Time: 12:45

Investigation Results:

- [ ] No Investigation Made
  Reason:
- [ ] Referred to different department or agency
  Contact information
  Reason:
- [ ] Investigated - No Action Required
  Reason:
- [x] Investigated - Action Required
  Complete next section

Narrative description of site assessment: Line needs repaired

Environmental Remediation Action Plan

Repair Line

Enforcement Actions (if any)

Correspondence

Agency	Contact Person	Date / Time	Phone Number
1 City of Aberdeen			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Illicit Discharge Incident Report Sheet

Responder Information (for hotline incidents only)

Call Taken By:		Call Date:		Call Time:	

Reporter Information

Incident Time:	10:30am	Incident Date	10/12/2017		
Caller Contact Information:	Rick Sangder			Organization:	COA
Precipitation (inches) past 24 / 48 hours	Minimal				

Incident Location

Stream Address or Outfall #:		Latitude and Longitude	
Closest Street Address:	F St. & 1st Ave.	Nearby Landmark:	

Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☑ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	

Narrative description of location: Concrete street along the slide repair at 1st Ave

Upland Problem Indicator Description

☐ Dumping	☐ Oil / solvents / chemicals	☑ Sewage
☐ Wash water , suds, ect.	☐ Other:	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☐ Oil Sheen	☐ Cloudy	☑ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☐ Other: Describe in "Narrative" section	

Narrative description of problem indicators: Turbid water leaving the construction site and running down the hill into a catch basin.

Suspected Violator (name, personal or vehicle description, license plate number, ect.) City of Aberdeen

Required Notifications (Record in correspondence section of sheet two)

Spill Type	Examples	Call / Notify All Listed
Emergency Situation	Sewage Main Break	911
	Gasoline Tank Rupture	Ecology SW Regional Office
An immediate and severe threat to	Spill with overwhelming chemical odor	360-407-6300
human health or the environment	Gas / Oil spill in a stream, lake or river	Department of Health - Sewage
	Gas / Oil spill flowing into a catch basin	360-236-3330
Spills of gas, oil and hazardous	Gas / Oil spill into a ditch	Aberdeen Public Works
substances in any amount	Motor oil spill flowing into a catch basin	360-537-3393
Non Emergency Situation	Leaking septic system	Aberdeen Street Department
	broken side sewer	360-537-3241
Small / Medium amount of known	Oil or vehicle fluids on pavement or gravel	Aberdeen Sewer Department
substance (generally 1 drop to 5	Concrete washout	360-537-3285
gallons and the responder is	Muddy construction site runoff	Department of Health - Sewage
able to handle the situation	Suds	360-236-3330
	Paint	

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

\# 8.10.12.2017 Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation

Site Investigated by: Rick Sangder

Date: 10/12/2017 Time: 10:30am

Investigation Results:

- ☐ No Investigation Made
  - Reason:
- ☐ Referred to different department or agency
  - Contact information
  - Reason:
- ☐ Investigated - No Action Required
  - Reason:
- ☑ Investigated - Action Required
  - Complete next section

Narrative description of site assessment: The Contractor was attempting to cleanup the road and was using garden house to move material. The catch basins on site were protected by inserts and the water hose water carried sediment laden water downhill to an unprotected catch basin.

Environmental Remediation Action Plan

I directed the contractor to stop using the hose. I called the Street department and had a vactor truck, sweeper and tanker truck diverted to the site. I directed the vacume sweeper operator to sweep the site for sediment and the had the vactor set up at the down stream catch basin. The catch basin was blocked and the I directed the flusher truck to hose down the road while the vactor truck sucked up the turbid water. Little water entered the system prior to my arrival and I would estimate 15-20 gallons of turbid water entered the system during cleanup. Directed the contractor on proper cleanup proceedures.

Enforcement Actions (if any)

none. Contractor working for the City on a T&M basis

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 1 Fry Creek	
Today's date: 8/11/17		Time (Military): 0900	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 48°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°58'9 N	Longitude: 123°51'6 W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☒ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ PVC ☒ Steel ☐ Other: ______	☐ CMP ☐ HDPE	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 72"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☒ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☒ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #2 Division St.	
Today's date: 8-11-17		Time (Military): 0905	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 48°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46' 57' 51' N	Longitude: 123° 49' 44 W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ PVC ☐ Steel ☐ Other: ____	☐ CMP ☐ HDPE	☐ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 42"	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle	☑ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #3 WWTP PLANT
Today's date: 8-11-17	Time (Military): 0908
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 48° Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 57' 50" N Longitude: 123° 49' 44" W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☒ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ PVC ☒ Steel ☐ Other: ______	☐ CMP ☐ HDPE	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 18	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☒ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☒ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #4 Lincoln St.
Today's date: 8-11-17	Time (Military): 0915
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 48° · Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°57'56' N · Longitude: 123°49'29 W	GPS Unit: · GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ____
- Known Industries: ____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 48°	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #5 Washington St.
Today's date: 8-11-17	Time (Military): 0918
Investigators: MONTOURE, SPRINGER	Form completed by: SPRINGER
Temperature (°F): 48° / Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 57′ 59′ N / Longitude: 123° 49′ 21′ W	GPS Unit: / GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☑ Other: ____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 24	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___′ ___″	Ft, In	Tape measure
	Measured length	___′ ___″	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 6 Jefferson St.	
Today's date: 8-11-17		Time (Military): 0921	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 48°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 10' N	Longitude: 123° 49' 7' N	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ Steel ☐ Other: ____	☐ CMP ☐ HDPE	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 24"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 7 K St	
Today's date: 8-11-17		Time (Military): 0925	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 14' N	Longitude: 123° 48' 57' W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ____
- Known Industries: ____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 24	In Water: ☐ No ☐ Partially ☒ Fully With Sediment: ☐ No ☒ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes	☑ No	*If No, Skip to Section 5*		
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 8 H II	
Today's date: 8-11-17		Time (Military): 0930	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 20' N	Longitude: 123° 48' 43' W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ____
- Known Industries: ____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☑ Other: Concrete	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 36"	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #9 River St.
Today's date: 8-11-17	Time (Military): 0935
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50° Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 58' 28' N Longitude: 123° 48' 37' W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 8"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 10 State St.
Today's date: 8-11-17	Time (Military): 0940
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50° Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°51'31'N Longitude: 123° 48' 40'W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 8"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 11 Heron St West
Today's date: 8-11-17	Time (Military): 0945
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50° — Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°58'36'N — Longitude: 123°48'44'W	GPS Unit: — GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 12"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #12 Wishkah St.	
Today's date: 8-11-17		Time (Military): 0950	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°58' 37' N	Longitude: 123° 48' 44' W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 12"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely	☐ Potential (presence of two or more indicators)	☐ Suspect (one or more indicators with a severity of 3)	☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #13 E SS
Today's date: 8-11-17	Time (Military): 0955
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50 / Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 58° 40° N / Longitude: 123° 48' 43' W	GPS Unit: / GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 30	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 14 D SI
Today's date: 8-11-17	Time (Military): 1000
Investigators: Manteure, Springer	Form completed by: Springer
Temperature (°F): 50 / Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°58'42' N / Longitude: 123°48'41' W	GPS Unit: / GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP	☐ CMP	☑ Circular	☐ Single	Diameter/Dimensions: 24	In Water: ☐ No ☐ Partially ☑ Fully
	☐ PVC	☐ HDPE	☐ Elliptical	☐ Double		With Sediment: ☑ No ☐ Partially ☐ Fully
	☐ Steel		☐ Box	☐ Triple		
	☐ Other: ______		☐ Other: ______	☐ Other: ______		
☐ Open drainage	☐ Concrete		☐ Trapezoid		Depth: ______	
	☐ Earthen		☐ Parabolic		Top Width: ______	
	☐ rip-rap		☐ Other: ______		Bottom Width: ______	
	☐ Other: ______					
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☐ Yes	☑ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 15 BS	
Today's date: 8-11-17		Time (Military): 1010	
Investigators: Mantoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°58'46'N	Longitude: 123°48'33'W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ____
- Known Industries: ____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP	☐ CMP	☑ Circular	☐ Single	Diameter/Dimensions: 10"	In Water: ☑ No ☐ Partially ☐ Fully
	☐ PVC	☐ HDPE	☐ Eliptical	☐ Double		
	☑ Steel		☐ Box	☐ Triple		
	☐ Other: ____		☐ Other: ____	☐ Other: ____		With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete		☐ Trapezoid		Depth: ____	
	☐ Earthen		☐ Parabolic		Top Width: ____	
	☐ rip-rap		☐ Other: ____		Bottom Width: ____	
	☐ Other: ____					
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #16 Chicago St.	
Today's date: 8-11-17		Time (Military): 1020	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 54' N	Longitude: 123° 48' 22 'W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☑ PVC ☐ HDPE ☐ Steel ☐ Other: ______	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 8''	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	______' ______"	Ft, In	Tape measure
	Measured length	______' ______"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #17 Stilton St
Today's date: 8-11-17	Time (Military): 1020
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50°	Rainfall (in.): Last 24 hours: Last 48 hours:
Latitude: 46°58'57' N Longitude: 123° 48' 18'W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

UNABLE TO INSPECT

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: ______	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: ______	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	______' ______"	Ft, In	Tape measure
	Measured length	______' ______"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☐ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #18 Arthur St.	
Today's date: 8-8-17		Time (Military): 0800	
Investigators: Monture, Springer		Form completed by: Springer	
Temperature (°F): 50°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°59'5'N	Longitude: 123° 48' 32'W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☒ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ PVC ☐ Steel ☒ Other: Concrete	☐ CMP ☒ HDPE	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ___	☐ Single ☐ Double ☐ Triple ☐ Other: ___	Diameter/Dimensions: 24" 18" Pumps	In Water: ☐ No ☒ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ___		☐ Trapezoid ☐ Parabolic ☐ Other: ___		Depth: ___ Top Width: ___ Bottom Width: ___	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☐ Yes	☒ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No			
2. If yes, collected from:	☐ Flow	☐ Pool			
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type:	☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 19 5th Ave
Today's date: 8-8-17	Time (Military): 0845
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50° / Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 59' 18' N / Longitude: 123° 48' 47" W	GPS Unit: / GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☑ Other: Concrete	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 36"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☑ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight: origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely	☐ Potential (presence of two or more indicators)	☐ Suspect (one or more indicators with a severity of 3)	☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #20 6th Ave.	
Today's date: 8-8-17		Time (Military): 0850	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 59' 20" N	Longitude: 123° 48' 47" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- [ ] Industrial
- [ ] Ultra-Urban Residential
- [x] Suburban Residential
- [ ] Commercial
- [ ] Open Space
- [ ] Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
[x] Closed Pipe	[ ] RCP [ ] PVC [x] Steel [ ] Other: ______	[ ] CMP [ ] HDPE	[x] Circular [ ] Eliptical [ ] Box [ ] Other: ______	[ ] Single [ ] Double [ ] Triple [ ] Other: ______	Diameter/Dimensions: 12"	In Water: [x] No [ ] Partially [ ] Fully With Sediment: [x] No [ ] Partially [ ] Fully
[ ] Open drainage	[ ] Concrete [ ] Earthen [ ] rip-rap [ ] Other: ______		[ ] Trapezoid [ ] Parabolic [ ] Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
[ ] In-Stream	(applicable when collecting samples)					
Flow Present?	[x] Yes	[ ] No	*If No, Skip to Section 5*			
Flow Description (If present)	[x] Trickle	[ ] Moderate	[ ] Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
[ ] Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
[ ] Flow #2	Flow depth		In	Tape measure
	Flow width	______' ______"	Ft, In	Tape measure
	Measured length	______' ______"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #21 Young St.	
Today's date: 8-8-17		Time (Military): 0910	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°59'6" N	Longitude: 123°48'18"W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ Steel ☐ Other: ______	☐ CMP ☐ HDPE	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 24"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______		☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 22 Newell St.
Today's date: 8-8-17	Time (Military): 0925
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50 / Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°58'45"N / Longitude: 123° 48"28"W	GPS Unit: / GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☒ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☒ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☒ Other: ______	☒ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☒ No ☐ Partially ☐ Fully With Sediment: ☒ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☒ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☒ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS

PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #23 HARBOR St.	
Today's date: 8-8-17		Time (Military): 0930	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 44" N	Longitude: 123° 48' 33" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☑ PVC ☐ HDPE ☐ Steel ☐ Other: ______	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ______	☑ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: ______	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	______' ______"	Ft, In	Tape measure
	Measured length	______' ______"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 24 Kansas St.	
Today's date: 8-8-17		Time (Military): 0940	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°58'37"N	Longitude: 123°48'41"W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 15"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 25 Heron St (East)
Today's date: 8-8-17	Time (Military): 0950
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50 Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°58'36"N Longitude: 123°48'41"W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☑ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 18"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS

PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehis River		Outfall ID: #26 R.R. Ditch	
Today's date: 8-8-17		Time (Military): 1000	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 54	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 31" N	Longitude: 123° 48' 34" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

MISSING TIDEGATE

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 22 Benn St.	
Today's date: 8-8-17		Time (Military): 1005	
Investigators: Montoure		Form completed by: Springer	
Temperature (°F): 54°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°53' 30" N	Longitude: 123° 48' 19" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☑ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP	☐ CMP	☑ Circular	☑ Single	Diameter/Dimensions: 15"	In Water: ☑ No ☐ Partially ☐ Fully
	☐ PVC	☐ HDPE	☐ Eliptical	☐ Double		
	☑ Steel		☐ Box	☐ Triple		
	☐ Other: ______		☐ Other: ______	☐ Other: ______		With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete		☐ Trapezoid		Depth: ______	
	☐ Earthen		☐ Parabolic		Top Width: ______	
	☐ rip-rap		☐ Other: ______		Bottom Width: ______	
	☐ Other: ______					
☐ In-Stream	**(applicable when collecting samples)**					
Flow Present?	☑ Yes	☑ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	______' ______"	Ft, In	Tape measure
	Measured length	______' ______"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #28 GATEWAY MALL	
Today's date: 8-8-17		Time (Military): 0700	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 33" N	Longitude: 123° 48' 6" N	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☑ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 18"	In Water: ☑ No ☐ Partially ☐ Fully; With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #29 Morrison PARK	
Today's date: 8-8-17		Time (Military): 0710	
Investigators: Montare, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 33" N	Longitude: 123° 48' 6" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ Steel ☐ Other: ____	☐ CMP ☐ HDPE	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 24"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No			
2. If yes, collected from:	☐ Flow	☐ Pool			
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type:	☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #30 Sargent Blvd. #1	
Today's date: 8-8-17		Time (Military): 0720	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 52°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 37" N	Longitude: 123° 47' 56" N	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #31 Sargent Blvd #2	
Today's date: 8-8-17		Time (Military): 0725	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 52°	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°58'37"N	Longitude: 123° 47' 47"W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ____
- Known Industries: ____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☑ Circular ☐ Elliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 18	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes ☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No	
2. If yes, collected from:	☐ Flow	☐ Pool	
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #32 Sargent Blvd. #3
Today's date: 8-8-17	Time (Military): 0730
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 52° Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46°58'38''N Longitude: 123° 47' 43''W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

☐ Industrial
☐ Ultra-Urban Residential
☐ Suburban Residential
☑ Commercial
☐ Open Space
☐ Institutional
Other: ____
Known Industries: ____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ Steel ☐ Other: ____	☐ CMP ☐ HDPE	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 24''	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____''	Ft, In	Tape measure
	Measured length	____' ____''	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No		
2.	If yes, collected from:	☐ Flow	☐ Pool		
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #33 Huntley St
Today's date: 8-8-17	Time (Military): 0745
Investigators: Mentwre	Form completed by: Springer
Temperature (°F): 50° Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 57' 33" N Longitude: 123° 49' 5" W	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- [x] Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
[x] Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel [x] Other: Alum.	[x] Circular ☐ Eliptical ☐ Box ☐ Other: ____	[x] Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 30"	In Water: [x] No ☐ Partially ☐ Fully; With Sediment: [x] No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes [x] No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: # 34 SAGINAW	
Today's date: 8-9-17		Time (Military): 0800	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°57'58" N	Longitude: 123° 48' 46" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☑ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: ______	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 36"	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	______' ______"	Ft, In	Tape measure
	Measured length	______' ______"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: #35 Front. St.	
Today's date: 8-9-17		Time (Military): 0810	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46°58'9" N	Longitude: 123°48'32" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☐ Steel ☑ Other: Conc.	☐ CMP ☐ HDPE	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ___	☑ Single ☐ Double ☐ Triple ☐ Other: ___	Diameter/Dimensions: 24"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ___		☐ Trapezoid ☐ Parabolic ☐ Other: ___		Depth: ___ Top Width: ___ Bottom Width: ___	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☐ Yes	☑ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: # 36 Shannon Slough
Today's date: 8-9-17	Time (Military): 0825
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 52	Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 58' 26" N	Longitude: 123° 47' 42" W	GPS Unit:	GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ______	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☑ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: 54"	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☐ No ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______	☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____ ' ____ "	Ft, In	Tape measure
	Measured length	____ ' ____ "	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #37 Wood St.
Today's date: 8-9-17	Time (Military): 0835
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50 — Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 58' 22" N — Longitude: 123° 46' 59" N	GPS Unit: — GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ Steel ☐ Other: ______	☐ CMP ☐ HDPE	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 18	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☐ No Vegitation ☑ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☐ Yes	☑ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River		Outfall ID: Decatur St. #38	
Today's date: 8-9-17		Time (Military): 0845	
Investigators: Montoure, Springer		Form completed by: Springer	
Temperature (°F): 50	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude: 46° 58' 9" N	Longitude: 123° 46' 54" W	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☑ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ PVC ☑ Steel ☐ Other: ______	☐ CMP ☐ HDPE	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 60"	In Water: ☑ No ☐ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____		☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☑ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #39 Taylor St.
Today's date: 8-9-17	Time (Military): 0915
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50 / Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 57' 49"N / Longitude: 123° 46' 43"W	GPS Unit: / GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☑ Steel ☐ Other: ____	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 12"	In Water: ☑ No ☐ Partially ☐ Fully; With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes ☑ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Grey ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #40 Lee St.
Today's date: 8-9-17	Time (Military): 0925
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50 — Rainfall (in.): Last 24 hours:	Last 48 hours:
Latitude: 46° 57' 49" N — Longitude: 123° 46' 43" W	GPS Unit: — GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

- ☑ Industrial
- ☑ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ______
- Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☑ Other: Conc.	☑ Circular ☐ Eliptical ☐ Box ☐ Other: ____	☑ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 24"	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☑ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☐ Yes	☑ No	*If No, Skip to Section 5*		
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	___' ___"	Ft, In	Tape measure
	Measured length	___' ___"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1. Sample for the lab?	☐ Yes	☑ No		
2. If yes, collected from:	☐ Flow	☐ Pool		
3. Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed: Chehalis River	Outfall ID: #41 Wilson Crk.
Today's date: 8-9-17	Time (Military): 0945
Investigators: Montoure, Springer	Form completed by: Springer
Temperature (°F): 50	Rainfall (in.): Last 24 hours: Last 48 hours:
Latitude: 46° 58' 33" N Longitude: 123° 48' 6" N	GPS Unit: GPS LMK #:
Camera:	Photo #s:

Land Use in Drainage Area (Check all that apply):

☐ Industrial ☐ Open Space

☐ Ultra-Urban Residential ☐ Institutional

☐ Suburban Residential Other: ______

☐ Commercial Known Industries: ______

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☑ Closed Pipe	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☑ Other: ______	☐ Circular ☐ Elliptical ☑ Box ☐ Other: ____	☐ Single ☐ Double ☐ Triple ☐ Other: ____	Diameter/Dimensions: 72 x 72	In Water: ☐ No ☑ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ____	☐ Trapezoid ☐ Parabolic ☐ Other: ____		Depth: ____ Top Width: ____ Bottom Width: ____	
☐ In-Stream	(applicable when collecting samples)				
Flow Present?	☑ Yes	☐ No	*If No, Skip to Section 5*		
Flow Description (If present)	☐ Trickle	☑ Moderate	☐ Substantial		

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐ Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐ Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only
Are Any Physical Indicators Present in the flow? ☐ Yes ☑ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls
Are physical indicators that are not related to flow present? ☐ Yes ☑ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☑ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☑ No		
2.	If yes, collected from:	☐ Flow	☐ Pool		
3.	Intermittent flow trap set?	☐ Yes	☑ No	If Yes, type: ☐ OBM	☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?


N
W
E
S
BASICH POND #2
BASICH POND #1
Friedlander
Friedlander
Alden Rd @ Alden
380 190 0 380 Feet

City of Aberdeen - Stormwater Department
1101 W. Heron Street, Aberdeen, WA 98520

Facility No.	Basich Pond 1	Inspector:	Springer
Address / Location		Date:	1-10-17
Inspection Type	Annual Inspection ✓		
	Routine Maint. ___	Last Rainfall	< 24 Hours [NA]
	Public Concern ___		1-3 Days [ ]
	Follow Up ___		> 1 Week [ ]

Items Inspected		Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
I. Ponds				
A	Trash & Debris		✓	Clean as needed
B	Poisonous/Invasive Vegetation		✓	
C	Visible Pollution		✓	
D	Grass/Ground Cover		✓	Routine Mowing
E	Rodent Holes		✓	
F	Insects		✓	
G	Tree Growth		✓	2016 Removed overgrown Alders
H	Surface Erosion		✓	
I	Sediment		✓	
J	Emergency Spillway		✓	
K	Fencing		✓	
L	Gates		✓	
M	Access Road		✓	
N	Rock Filters		✓	
O	Tide Gate		✓	
P	Other		✓	
II. Closed Detention Systems (Pipes/Tanks/Vaults)				
A	Air Vents		NA	
B	Pipe Section/Tank		NA	
	1 Sediment			
	2 Cracks			
	3 Structural Damage			
C	Other			
III. Control Structure / Restrictor Tee				
A	Sediment < 1.25'		NA	
B	Structural Integrity		NA	
C	Cleanout Gate		NA	
	1 Operational			
	2 Chained			
D	Orifice Plate		NA	
	1 In Place			
	2 Obstruction Free			
IV. Catch Basins / Manholes				
A	Grate Clear		NA	
B	Sump < 1/3 Full			
C	Structural Integrity			
D	Vegetation			
E	Visible Polution			
F	Cover			
G	Ladder			
H	Other			

Items Inspected			Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
V.	Debris Barrier				
	A	Clear of Trash		NA	
	B	Bars			
	C	Other			
VI.	Energy Dissipators				
	A	Rock Pad		NA	
	B	Dispersion Trench			
		1 Accumulated Sediment			
		2 Concentrated Discharge			
		3 Pipe			
	C	Other			
VII.	Conveyance System				
	A	Pipes			
		1 Accumulated Sediment		✓	
		2 Vegetation		✓	
		3 Dented Pipe		✓	
	B	Open Ditches			
		1 Accumulated Sediment		✓	
		2 Trash / Debris		✓	
		3 Vegetation		✓	
		4 Rock Lining		✓	

Summary

Permission for entry granted by:

Inspectors Comments: Clean trash and debris as needed. Vegetation is mowed during spring & summer.

Refer To

Maintenance & Operation	
Code Enforcement	
Engineering	
Meets Standard	
Does not meet standards	

City of Aberdeen - Stormwater Department
1101 W. Heron Street, Aberdeen, WA 98520

Facility No.	Basin Pond 2	Inspector:	Springer
Address / Location		Date:	1-10-17
Inspection Type	Annual Inspection ✓	Last Rainfall	< 24 Hours: NA
	Routine Maint.		1-3 Days
	Public Concern		> 1 Week
	Follow Up		

Items Inspected		Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
I. Ponds				
A	Trash & Debris		✓	
B	Poisonous/Invasive Vegetation		✓	
C	Visible Pollution		✓	
D	Grass/Ground Cover		✓	
E	Rodent Holes		✓	
F	Insects		✓	
G	Tree Growth		✓	
H	Surface Erosion		✓	
I	Sediment		✓	
J	Emergency Spillway		✓	
K	Fencing		✓	
L	Gates		✓	
M	Access Road		✓	
N	Rock Filters		✓	
O	Tide Gate		✓	
P	Other		✓	
II. Closed Detention Systems (Pipes/Tanks/Vaults)				
A	Air Vents			NA
B	Pipe Section/Tank			
	1 Sediment			
	2 Cracks			
	3 Structural Damage			
C	Other			
III. Control Structure / Restrictor Tee				
A	Sediment < 1.25'			NA
B	Structural Integrity			
C	Cleanout Gate			
	1 Operational			
	2 Chained			
D	Orifice Plate			
	1 In Place			
	2 Obstruction Free			
IV. Catch Basins / Manholes				
A	Grate Clear			NA
B	Sump < 1/3 Full			
C	Structural Integrity			
D	Vegetation			
E	Visible Polution			
F	Cover			
G	Ladder			
H	Other			

Items Inspected			Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
V.	Debris Barrier				
	A	Clear of Trash			
	B	Bars			
	C	Other			
VI.	Energy Dissipators				
	A	Rock Pad			
	B	Dispersion Trench			
		1 Accumulated Sediment			
		2 Concentrated Discharge			
		3 Pipe			
	C	Other			
VII.	Conveyance System				
	A	Pipes			
		1 Accumulated Sediment			
		2 Vegetation			
		3 Dented Pipe			
	B	Open Ditches			
		1 Accumulated Sediment		✓	
		2 Trash / Debris	✓		Removed
		3 Vegetation		✓	
		4 Rock Lining		✓	

Summary

Permission for entry granted by:

Inspectors Comments: Trash & debris removed as needed. Vegetation is mowed during spring and summer.

Refer To

Maintenance & Operation	
Code Enforcement	
Engineering	
Meets Standard	
Does not meet standards	

City of Aberdeen - Stormwater Department
1101 W. Heron Street, Aberdeen, WA 98520

Facility No.	Basich Tank 1	Inspector:	Springer
Address / Location		Date:	1-10-17

Inspection Type

Annual Inspection	✓
Routine Maint.	
Public Concern	
Follow Up	

Last Rainfall

< 24 Hours	
1-3 Days	
> 1 Week	

Items Inspected		Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
I.	Ponds			
A	Trash & Debris		NA	
B	Poisonous/Invasive Vegetation			
C	Visible Pollution			
D	Grass/Ground Cover			
E	Rodent Holes			
F	Insects			
G	Tree Growth			
H	Surface Erosion			
I	Sediment			
J	Emergency Spillway			
K	Fencing			
L	Gates			
M	Access Road			
N	Rock Filters			
O	Tide Gate			
P	Other			
II.	Closed Detention Systems (Pipes/Tanks/Vaults)			
A	Air Vents		NA	
B	Pipe Section/Tank		NA	
	1 Sediment			
	2 Cracks			
	3 Structural Damage			
C	Other	✓		Visual Inspection
III.	Control Structure / Restrictor Tee			
A	Sediment < 1.25'		NA	
B	Structural Integrity			
C	Cleanout Gate			
	1 Operational			
	2 Chained			
D	Orifice Plate			
	1 In Place			
	2 Obstruction Free			
IV.	Catch Basins / Manholes			
A	Grate Clear		NA	
B	Sump < 1/3 Full		NA	
C	Structural Integrity		✓	
D	Vegetation	✓		
E	Visible Polution			None
F	Cover	✓		
G	Ladder		✓	
H	Other		✓	

Items Inspected			Maintenance		Observations / Comments
			Req'd	Not Req'd	
V.	Debris Barrier				
	A	Clear of Trash			
	B	Bars			
	C	Other			
VI.	Energy Dissipators				
	A	Rock Pad			
	B	Dispersion Trench			
		1 Accumulated Sediment			
		2 Concentrated Discharge			
		3 Pipe			
	C	Other			
VII.	Conveyance System				
	A	Pipes			
		1 Accumulated Sediment			
		2 Vegetation			
		3 Dented Pipe			
	B	Open Ditches			
		1 Accumulated Sediment			
		2 Trash / Debris			
		3 Vegetation			
		4 Rock Lining			

Summary

Permission for entry granted by: No Entry

Inspectors Comments: Visual inspection. Mow surrounding area during spring and summer. Keep clear of trash & debris.

Refer To

Maintenance & Operation	
Code Enforcement	
Engineering	
Meets Standard	
Does not meet standards	

City of Aberdeen - Stormwater Department
1101 W. Heron Street, Aberdeen, WA 98520

Facility No.	Basin Tank 2	Inspector:	Springer
Address / Location		Date:	1-10-17
Inspection Type	Annual Inspection ✓		
	Routine Maint.	Last Rainfall	< 24 Hours ☐
	Public Concern		1-3 Days ☐
	Follow Up		> 1 Week ☐

Items Inspected		Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
I. Ponds				
A	Trash & Debris		NA	
B	Poisonous/Invasive Vegetation			
C	Visible Pollution			
D	Grass/Ground Cover			
E	Rodent Holes			
F	Insects			
G	Tree Growth			
H	Surface Erosion			
I	Sediment			
J	Emergency Spillway			
K	Fencing			
L	Gates			
M	Access Road			
N	Rock Filters			
O	Tide Gate			
P	Other			
II. Closed Detention Systems (Pipes/Tanks/Vaults)				
A	Air Vents			
B	Pipe Section/Tank			
	1 Sediment			
	2 Cracks			
	3 Structural Damage			
C	Other		✓	Visual Inspection
III. Control Structure / Restrictor Tee				
A	Sediment < 1.25'		NA	
B	Structural Integrity			
C	Cleanout Gate			
	1 Operational			
	2 Chained			
D	Orifice Plate			
	1 In Place			
	2 Obstruction Free			
IV. Catch Basins / Manholes				
A	Grate Clear		NA	
B	Sump < 1/3 Full			
C	Structural Integrity		✓	
D	Vegetation		✓	
E	Visible Polution		✓	None
F	Cover		✓	
G	Ladder		✓	
H	Other		—	

Items Inspected			Maintenance		Observations / Comments
			Req'd	Not Req'd	
V.	Debris Barrier				
	A	Clear of Trash			
	B	Bars			
	C	Other			
VI.	Energy Dissipators				
	A	Rock Pad			
	B	Dispersion Trench			
		1 Accumulated Sediment			
		2 Concentrated Discharge			
		3 Pipe			
	C	Other			
VII.	Conveyance System				
	A	Pipes			
		1 Accumulated Sediment			
		2 Vegetation	✓		Area will be mowed
		3 Dented Pipe			
	B	Open Ditches			
		1 Accumulated Sediment			
		2 Trash / Debris			
		3 Vegetation			
		4 Rock Lining			

Summary

Permission for entry granted by: No Entry

Inspectors Comments: Vegetation will be mowed and removed

Refer To

Maintenance & Operation	
Code Enforcement	
Engineering	
Meets Standard	
Does not meet standards	

City of Aberdeen - Stormwater Department
1101 W. Heron Street, Aberdeen, WA 98520

Facility No. Basin Tank 3 Inspector: Springer
Address / Location Date: 1-10-17

Inspection Type
- Annual Inspection ______
- Routine Maint. ______
- Public Concern ______
- Follow Up ______

Last Rainfall
- < 24 Hours: NA
- 1-3 Days:
- > 1 Week:

Items Inspected		Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
I. Ponds				
A	Trash & Debris		NA	
B	Poisonous/Invasive Vegetation			
C	Visible Pollution			
D	Grass/Ground Cover			
E	Rodent Holes			
F	Insects			
G	Tree Growth			
H	Surface Erosion			
I	Sediment			
J	Emergency Spillway			
K	Fencing			
L	Gates			
M	Access Road			
N	Rock Filters			
O	Tide Gate			
P	Other			
II. Closed Detention Systems (Pipes/Tanks/Vaults)				
A	Air Vents			
B	Pipe Section/Tank			
	1 Sediment			
	2 Cracks			
	3 Structural Damage			
C	Other		✓	Visual Inspection
III. Control Structure / Restrictor Tee				
A	Sediment < 1.25'		NA	
B	Structural Integrity			
C	Cleanout Gate			
	1 Operational			
	2 Chained			
D	Orifice Plate			
	1 In Place			
	2 Obstruction Free			
IV. Catch Basins / Manholes				
A	Grate Clear		—	
B	Sump < 1/3 Full		—	
C	Structural Integrity		✓	
D	Vegetation		✓	
E	Visible Polution		✓	None
F	Cover		✓	
G	Ladder			
H	Other			

Items Inspected			Maintenance		Observations / Comments
			Req'd	Not Req'd	
V.	Debris Barrier				
	A	Clear of Trash			
	B	Bars			
	C	Other			
VI.	Energy Dissipators				
	A	Rock Pad			
	B	Dispersion Trench			
		1 Accumulated Sediment			
		2 Concentrated Discharge			
		3 Pipe			
	C	Other			
VII.	Conveyance System				
	A	Pipes			
		1 Accumulated Sediment			
		2 Vegetation			
		3 Dented Pipe			
	B	Open Ditches			
		1 Accumulated Sediment			
		2 Trash / Debris			
		3 Vegetation			
		4 Rock Lining			

Summary

Permission for entry granted by: No entry

Inspectors Comments: Clear vegetation in spring & summer. Removed old manhole casting and replaced with bolt down sewer lid 2016

Refer To

Maintenance & Operation	
Code Enforcement	
Engineering	
Meets Standard	
Does not meet standards	

City of Aberdeen - Stormwater Department
1101 W. Heron Street, Aberdeen, WA 98520

Facility No.: Basich Tank 4
Address / Location:
Inspector: Springer
Date: 1-10-17

Inspection Type:
- Annual Inspection ____
- Routine Maint. ____
- Public Concern ____
- Follow Up ____

Last Rainfall:
- < 24 Hours: NA
- 1-3 Days:
- > 1 Week:

Items Inspected		Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
I. Ponds				
A	Trash & Debris		NA	
B	Poisonous/Invasive Vegetation			
C	Visible Pollution			
D	Grass/Ground Cover			
E	Rodent Holes			
F	Insects			
G	Tree Growth			
H	Surface Erosion			
I	Sediment			
J	Emergency Spillway			
K	Fencing			
L	Gates			
M	Access Road			
N	Rock Filters			
O	Tide Gate			
P	Other			
II. Closed Detention Systems (Pipes/Tanks/Vaults)				
A	Air Vents			
B	Pipe Section/Tank			
	1 Sediment			
	2 Cracks			
	3 Structural Damage			
C	Other	✓		Visual Inspection
III. Control Structure / Restrictor Tee				
A	Sediment < 1.25'		NA	
B	Structural Integrity			
C	Cleanout Gate			
	1 Operational			
	2 Chained			
D	Orifice Plate			
	1 In Place			
	2 Obstruction Free			
IV. Catch Basins / Manholes				
A	Grate Clear		✓	
B	Sump < 1/3 Full			
C	Structural Integrity		✓	
D	Vegetation	✓		
E	Visible Polution		✓	
F	Cover		✓	
G	Ladder		✓	
H	Other		✓	

Items Inspected			Maintenance Req'd	Maintenance Not Req'd	Observations / Comments
V.	Debris Barrier				
	A	Clear of Trash			
	B	Bars			
	C	Other			
VI.	Energy Dissipators				
	A	Rock Pad			
	B	Dispersion Trench			
		1 Accumulated Sediment			
		2 Concentrated Discharge			
		3 Pipe			
	C	Other			
VII.	Conveyance System				
	A	Pipes			
		1 Accumulated Sediment			
		2 Vegetation			
		3 Dented Pipe			
	B	Open Ditches			
		1 Accumulated Sediment			
		2 Trash / Debris			
		3 Vegetation			
		4 Rock Lining			

Summary

Permission for entry granted by: No Entry

Inspectors Comments: Visual Inspection

Mow and clear debris during spring and summer

Refer To

Maintenance & Operation	
Code Enforcement	
Engineering	
Meets Standard	
Does not meet standards	

Illicit Discharge Detection and Elimination (IDDE) Program

City of Aberdeen Public Works

Created: August 2011

Updated: December 2017

Table of Contents

Appendices

Illicit Discharge Detection and Elimination (IDDE) Program

Overview

An illicit discharge is generally any discharge, release, or pumping of a pollutant or polluted water into the City's municipal separate storm sewer system (MS4). The National Pollutant Discharge Elimination System (NPDES) regulates the discharge of stormwater under the authority of the Federal Clean Water Act. Washington State Department of Ecology (Ecology) has the designated authority to administer NPDES within the State of Washington. Under this authority, Ecology has issued NPDES permits regulating the discharge of stormwater. The City of Aberdeen is under regulation of the Western Washington Phase II Municipal Stormwater Permit (Phase II Permit) issued on September 1, 2012. The current Phase II permit will remain in effect until July 1, 2019, after which a new Phase II permit will be issued.

The Phase II permit mandates permittees to prepare and implement an Illicit Discharge Detection and Elimination (IDDE) Program. This plan and its implementation satisfies this requirement.

The goal of this plan is to prevent, identify, trace and eliminate illicit discharges into the MS4. Examples of illicit discharges include:

- Direct or indirect sanitary wastewater discharges to the MS4 or a watercourse, such as a shop floor drain connected to a storm drain, a cross-connection between the municipal sanitary sewer and storm sewer systems, a damaged sanitary sewer line that is leaking sewage into a cracked storm sewer line, or a failing septic system that is leaking into a water course.
- Materials (e.g.; used motor oil) that have been dumped illegally into a storm drain catch basin.
- Improper home or business owner activities such as washing paint brushes into a catch basin, washing new textured concrete driveways into a storm drain, draining swimming pools to the storm system (swimming pools have high pH and chlorine), excess use of fertilizers, or washing cars with chemicals that enter the storm drain system.

The Phase II Permit sets forth the following program elements that are required to be compliant. These elements are described throughout the remainder of this document.

- **a) Municipal Storm Sewer System Mapping**
- **b) Ordinance/Regulatory Mechanism (to effectively prohibit illicit discharges)**
- **c) Detect and Identify Illicit Discharges**
- **d) Address and Eliminate Illicit Discharges**
- **e) IDDE Staff Training**
- **f) IDDE Recordkeeping**

a) <u>Municipal Storm Sewer System Mapping</u>

MS4 Mapping

The City currently has the following stormwater related information in their geographic information system (GIS) database:

- Known MS4 outfalls and discharge points
- Receiving waters (other than groundwater)
- Stormwater treatment and flow control BMPs/facilities owned or operated by the City of Aberdeen
- Outfall tributary conveyance
- Authorized connections to the MS4
- Connections between City of Aberdeen MS4 and other municipalities or public entities
- Geographic areas served by the City MS4 that do not discharge stormwater to surface waters

The current storm sewer system mapping is compliant with the Phase II Permit requirements and was completed as part of the previous Phase II Permit requirements. Some of the more specific elements of the program as required by the permit are listed below:

1. A map of all structural BMPs owned, operated, or maintained by the City.
2. Tributary conveyances to all known outfalls and discharge points with a 24-inch nominal diameter and watercourse outfalls. The following attributes are mapped for each outfall: tributary conveyances (type, material, and size where known), associated drainage areas, and land use. Although most of the watercourses and pipes have a cross-sectional area less than a 24-inch-diameter pipe, the City has elected to map all of the known pipe outfalls 6 inches or greater and all flowing (dry weather) watercourses including seeps and drainages.

The City of Aberdeen is bisected by the Chehalis and Wishkah Rivers and there are numerous small streams and drainage channels that run through the City. The City has implemented an IDDE outfall screening process that includes annual physical inspections of all MS4 outfalls and discharge points.

b) <u>Ordinance/Regulatory Mechanism</u>

City Ordinance

Aberdeen Municipal Code Chapter 13.70 (Storm and Surface Water Management) prohibits illicit discharges and illicit connections (13.70.200 Illicit Discharges Prohibited – certain discharges allowed – conditions). All connections and discharges to the City's MS4 must be compliant to this section of code, otherwise they are to be eliminated. AMC Chapter 13.70 is included in the appendix for reference.

AMC 13.70.200 includes a list of allowable non-stormwater discharges and a list of conditionally allowed discharges. The City of Aberdeen will further address any of the allowable discharges in

AMC 13.70.200 if they are ever identified as significant sources of pollutants to waters of the State.

Escalating Enforcement Policy

This policy establishes a formal enforcement procedure to be implemented by the Public Works Director and Stormwater Inspectors when enforcement action is necessary on sites that do not comply with the COA stormwater regulations. Enforcement procedures are outlined below.

I. <u>Preventative Correction</u>

Preventative correction is required for those activities or conditions which have not yet resulted in degradation of surface water quality. These include lack of installation and maintenance of appropriate BMPs and failure to address minor deficiencies in existing BMPs, (Such as adding more straw mulch, repairing silt fence, re-covering stockpiles, etc.). Notices of Correction of minor violation may be verbal or written. The time period for implementing preventative corrections is less than one week or prior to the next precipitation event, whichever is less. A reasonable effort to obtain a voluntary correction should be pursued.

II. <u>Order to Correct Violation (OTCV)</u>

A written *Order to Correct Violation* notice is issued when the following conditions are identified:

- Inspector has pursued reasonable attempts to secure voluntary correction of minor violation; or
- Minor violation has not been corrected within the time set forth by the storm water inspector; or
- Evidence of prior degradation of surface water quality is observed; or
- Sediment, silt, turbid runoff or other non-stormwater discharges (as defined in SWMMWW) are being release from the site due to operator's activities, despite the implementation of BMPs.

III. <u>Stop Work Order (SWO)</u>

Upon issuance of the SWO, work on the site not directly related to correcting the degradation of surface water quality may be suspended as directed by the Public Works Director or City Engineer. A stop work order is issued when:

- The site does not have a valid approved storm water permit before starting the work; or
- Sufficient and appropriate BMPs have not been implemented, as set forth in the approved erosion and sediment control plan or SWPPP, to prevent degradation of surface water quality; or
- Contractor or owner fails to address an Order to Correct violation notice within the timeframe specified; or
- A third Correction Notice has been issued for the potential degradation of surface water quality due to Permittee's activities; or
- An accidental discharge of polluting matter (other than sediment) to the storm drains system or surface water course or a significant public nuisance exist; or
- A threat exists to the water of the State.

The stop work order shall:

- Be in writing;
- Specifically state the applicable Violation and the reason for SWO issuance;
- Be posted on the property in a conspicuous place;
- If practicable, be given to:
  - The person performing the Construction or committing the violation; and
  - To the owner of the property or the owner's agent.
- The stop-work order shall state the conditions under which Construction may be resumed.
- In no way limit the operation of penalties provided elsewhere in the AMC

IV. Notice of Civil Violation (NOCV)

A Notice of Civil Violation may be issued when:

- Contractor or owner fail to comply with a stop work order; or a repeat violation exist; or the violation creates a situation or condition that cannot be readily corrected (e.g. a pollutant spill that enters a stream, wetland or lake); or
- The contractor or owner knows, or reasonably should have known, that the action is in violation of laws, regulations, codes or permit conditions (e.g. an intentional discharge of polluting matter to the storm drainage system and/or surface waters).
- When any of the above circumstances exist, the City Stormwater Inspector immediately issues a SWO, notifies the Public Works Director, and provides documentation supporting the issuance of the NOCV.

Stormwater Compliance Strategy

The City implemented a Stormwater Compliance Strategy, as part of the Public Education and Outreach Program, with the goal of reducing illicit discharges to the City MS4 and providing stormwater information to the public.

The primary focus of the Stormwater Compliance Strategy is to provide property owners and contractors necessary stormwater regulatory documentation, technical assistance and educational material on the City's website (http://www.aberdeenwa.gov). The Compliance Strategy will rely upon brochures, print ads, website ads, drain markers, and fact sheets to make citizens aware of stormwater, water pollution, and inform them of the City's hotline for reporting on possible illegal dumping, connections, or discharges. There is an emphasis on target audiences with a high risk as a potential source, such as auto shops, mobile businesses, and commercial property owners/managers may receive specialized educational material.

The City has established a customer phone number (360-537-3393) for reporting of spills or illicit discharges.

c) Detect and Identify Illicit Discharges

Response to Suspected or Reported Illicit Charges

The City currently has a Surface and Stormwater Management Program to fulfill an illicit discharge detection and elimination (IDDE) program which includes: commercial property inspections, outreach and education, water quality monitoring and stormwater system operation and maintenance.

The City of Aberdeen maintains a hotline that citizens can call during business hours to report a suspected illicit discharge. Calls relative to illicit discharges can be received by several Public Works offices.

City of Aberdeen Phone Numbers:
Stormwater Hotline – (360) 537-3393
Street Department – (360) 537-3268
Sewer Department – (360) 537-3285
Engineering Department – (360) 537-3215

Calls to any of the above numbers will result in information being received and routed to the proper individuals.

<u>Prioritization Procedures</u>
In addition to maintaining a hotline for citizen complaints, the City is required to proactively conduct field assessments to identify illicit discharges and illegal connections to the City's stormwater system and receiving water bodies.

The first step of the proactive work is to prioritize those areas most likely to contain illicit discharges ("hot spots") based on an analysis of land use and other specific information. It is felt that the following types of areas are more likely to generate polluted discharges than others:

1. Locations where there have been repeated problems in the past. This could include areas with water quality data or where repeated complaints have been filed.
2. Older areas of a community typically have a higher percentage of illegal connections. Also, deteriorating sewer pipes can allow wastewater exfiltration from the sanitary lines into the surrounding environment.
3. Commercial and industrial areas tend to have a higher percentage of illicit discharges.
4. Areas with large and/or many storage vessels of hazardous solids or liquids.

Another consideration for Aberdeen is the proximity of the higher risk land uses (commercial/industrial) to receiving waters. These areas will have a short flow path and greater chance of adversely affecting a larger aquatic system in the event of an illicit discharge or spill.

<u>Designation of Priority Areas</u>
Based upon the criteria above and a prior monitoring study completed by the Department of Ecology in 2011 <u>*Grays Harbor Fecal Coliform Bacteria Monitoring to Characterize Water Quality in Urban Stormwater Drains*</u>, the following areas are designated as high priority areas for illicit discharge and elimination efforts. The City of Aberdeen shall complete field screenings of at least 40% of the MS4 by June 30th, 2018 with these points and their accompanying basins the first priority.

1. 501 – ABDIV, Located at the Division Street pump station

2. 510 – MST, Located at the M Street pump station

3. 514 – HST, Located at the H Street pump station

The Cities IDDE program also consists of the following:

- Sub-watershed Assessments: The City has prioritized sub-watersheds for IDDE risk based on four screening factors: total impervious area, wastewater infrastructure material and age, land use, and previous problems.
- Storm Facility Inspections: Public Works will identify and inspect private commercial, private residential and City maintained stormwater facilities throughout the City limits. Work on this has begun and is substantially complete.
- Fecal Coliform Receiving Water Trend Monitoring Program: Implement an ongoing water quality monitoring program. Monitoring focuses on outfalls to streams and river waters. The data will assist in prioritizing additional detailed system inspections. The sampling will be performed as required by Phase II guidelines.
- Outfall Reconnaissance: Will complete a document inspection program for the mapped outfalls annually. The inspection program will include outfall location and screening for illicit discharges.

General Field Assessment Procedures
The City of Aberdeen shall utilize the following manual for guidance in field screenings and source tracing methodology.

Illicit Discharge Detection and Elimination: A guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection, October 2004

Physical Parameters
During dry weather field inspections, a variety of physical parameters will be recorded at each site to assess conditions. At flowing outfalls this includes flow, odor, color, turbidity, and presence or absence of floatables. The information that is obtained from the physical characteristics observed are indicators and cannot be fully relied upon by themselves.

A qualitative observation of flow (none, trickle, moderate, or substantial) should be made. Flow rates can be estimated by one of the following simple methods:

1. Record the time required for the full flow to fill container of a known volume.
2. Multiply cross-sectional flow area by flow velocity. For most instances, flow area is based on an estimate of mean depth and width. Flow velocity is based on the time of travel for an object floating near the surface over a known length.

Odor is described by one of the following terms: sewage, rancid/sour, petroleum/gas, sulfide, or other. The severity of the odor should also be recorded in the field.

Color can be a description of color type and intensity. It is also a quantitative measurement expressed in cobalt-platinum units.

Turbidity can be a qualitative descriptor (clear, slight cloudiness, cloudy, or opaque).
The City will measure turbidity in the WWTP laboratory from samples collected, delivered, and analyzed per standard operating procedures. The City's WWTP lab is an accredited agency for performing turbidity analysis.

Floatables are the best physical indicator. The most common floatables are sewage, suds, and oil sheens. Floatables do not include trash. The observation of sewage at an outfall location indicates that there is a severe problem with the MS4 and should be looked at as to where the source for the sewage is emanating from. Suds can indicate a variety of things. Some suds are naturally formed by the movement of the water. If the suds are located at a water drop off and break up quickly, this may only be water turbulence related. If the suds have a fragrant odor, this can indicate the presence of laundry water or wash water in the water body. Oil sheens need to be looked at to try and determine the source of the oil sheen. Some oil sheens are common and occur naturally by instream processes. This occurs when iron bacteria form a sheet-like film. This can be determined by looking at the sheen and seeing if it cracks when disturbed. Synthetic oil sheens, on the other hand, will swirl when disturbed. If this occurs, then the sheen is from an oil source.

The City may select a few water quality parameters that can be measured at the WWTP laboratory. These include temperature, pH, ammonia, conductivity, chlorine, TSS, BOD and hardness.
There may be physical indicators of illicit discharges even if no flow is present. These include: outfall damage, deposits/stains, abnormal vegetation, poor quality of pooled water, benthic growth in pipe.

During a dry weather inspection, observed flows are considered non-stormwater related. The flow may or may not be the result of an illicit discharge. Also, the absence of a flow does not indicate the absence of an illicit discharge since these discharges can be intermittent or transitory. It is important to observe carefully during the dry weather inspection to determine if an intermittent or transitory pollution problem has occurred.

<u>Water Quality Sampling and Testing</u>
During dry weather inspections physical clues indicating a pollution problem often are not observable. Therefore, water quality sampling and testing will be an essential part of the City's IDDE program. Some parameters can be directly measured in the field using a portable instrument or test kit whereas others require laboratory analysis. Table 1 lists the parameters that must be sampled as well as suggested/optional parameters to be sampled to isolate an illicit discharge. The table also provides the analytical method used when samples are sent to an accredited laboratory and benchmark concentration that typically indicate when there is a problem. Note that these benchmark concentrations are based on samples collected from storm drains nationally. Therefore, benchmark concentrations would be lower for samples drawn from watercourses since the natural base flows would likely dilute any pollutants in water discharged from a contributing storm drainage system.

Table 1

Water Quality Parameter	Use	Analytical Method	Benchmark Concentrations
Specific conductance	B, I	SM 2510B	>2,000 _s/cm
Hardness	B, I	EPA 130.1/SM 2340B	<10 mg/L or >2,000 mg/L as CaCO3
Turbidity	B, I	SM 2130B	>1,000 NTU
Color	S, I	SM 2120 B	>500 units
Bacterial counts	B	SM 9222 D/SM 9223 B	>200/>50
Ammonia	R, I	EPA 350.2/SM4500-NH3	>50 mg/L
Surfactants (as MBAS)	R, I	EPA 425.1/SM5540C	>0.25 mg/L
pH	B, I	EPA 150.1/SM 4500H	< 5
Temperature	B	SM 2550 B	
Total chlorine	S	SM 4500-Cl G	
Fluoride	S	EPA 300.0	0.25 mg/L
Potassium	S, I	EPA 200.7	>20 mg/L
Optical brighteners (florescence)	S	Center for Watershed Protection 2004	
Dissolved oxygen	S	SM 4500-0 G	
Industrial (metals, metalloids, cyanide, oils, grease)	S (for industrial basins)	EPA 200.7/200.9 EPA 1664 Ecology NWTPH-Gx/Dx	
Other pollutants - nutrients, pesticides, automotive fluids	S	EPA 300.0 SM 2540 D	

Key:
B = basic parameter to be analyzed at all sites
R = key parameter to identify source of illicit discharge in a typical residential basin
S = possible supplemental parameter
I = key parameter to identify source of illicit discharge from an industrial/commercial area

d) Address and Eliminate Illicit Discharges

Immediate Response Procedures

The field crew should be prepared to take immediate action in the event of encountering one of the following situations:

- Individuals actively in the process of introducing possible illegal substances or materials to the storm drain system.
- Laboratory test results greater than 20,000 cfu/100ml fecal coliform.
- Very strong chemical odor emanating from storm drain system.
- Presence of fumes or smoke emanating from storm drain system.
- Visible significant stream of a controlled chemical or petroleum product flowing in storm system or downstream waters.
- Large chemical plume in stream or lake downstream of a City outfall.
- Any condition that poses or could pose an immediate threat to property, human health or safety, or aquatic life.

The crew should take the following steps if one of the above situations is encountered:

1. Follow the Public Notification of Bacterial Pollution SOP
2. Ensure crew and public safety by instructing people to stay clear of the area.
3. Call 911 to report active illegal dumping or potential fire or significant chemical incident, if applicable.
4. Call the City's customer response number at 360-537-3393 to report a possible illegal discharge.
5. The following offices must all be called if an unauthorized discharge of oil or hazardous material such as a spill has occurred:
   a) The National Response Center at 1-800-424-8802;
   b) Washington Emergency Management Division at 1-800-OILS-911; and
   c) Washington State Department of Ecology – Southwest Regional Office at 1-360-407-6300.
   d) Washington State Department of Health Shellfish – If immediate threat to aquatic life – 1-360-236-3330
   e) Grays Harbor County Health Department – 360-249-4922
6. If the spill involves sewage, the WWS Manager must be contacted immediately (360-537-3285 or 360-580-1191)
7. If a spill is encountered the following information should be recorded if possible:
   a) Where is the spill?
   b) What spilled?
   c) How much spilled?
   d) How concentrated is the spilled material?
   e) Who spilled the material?
   f) Is anyone cleaning up the spill?
   g) Are there resource damages (e.g. dead fish or oiled birds)?
   h) Who is reporting the spill?
   i) Your contact information?

8. If possible isolate or contain visible chemical pollution in the effected water body with any materials that are accessible. For small discharges earth dams, absorbent pads, and containers may be useful to contain part of the illicit discharge.
9. Take detailed notes and photos/video for subsequent investigation by City or other agencies.

At a minimum, follow-up work includes contacting the Washington State Department of Ecology – Southwest Office (see phone number above) to determine if any additional reporting or investigative actions are necessary.

For incidents not determined to be emergencies, the City should investigate or refer to the appropriate agency any complaints, reports, or monitoring information that indicates a potential illicit discharge, spill, or illegal dumping.

Isolating Illicit Discharges (Source Tracing)
The City's current hotline will continue to be an effective tool for locating illicit discharges. However, in situations where outfall screening identifies an illicit discharge several methods can be used to trace to the source of the illicit discharge. Tracing techniques include visual inspections of drainage structures and lines, dye testing, damming lines to isolate areas, video inspection, indicator monitoring, smoke testing, and optical brightener monitoring traps. Other more elaborate approaches include using remote sensing tools to identify soil moisture, water temperature, and vegetation anomalies associated with failing septic systems and tracking illegal dumping activities. The most common approach for the City will likely rely upon visual inspections of the catch basins in the storm line above the outfall in which an illicit discharge is suspected.

Several resources exist to assist in evaluating the likely source of an illicit discharge. Generally, the sources are washwater, sanitary sewer or septage, potable water leak, animal contamination, illegal dumping, or industrial discharge.

Investigation and Response Procedures
Once an illicit discharge or illegal connection has been located, details about the discharge connection should be documented. Photographs and video may be helpful to record the location and nature of an illicit connection. The City should determine the name and contact information of the property owner.

The response by the City will vary greatly depending on the type, location, frequency, severity, and source of illicit discharge. In general, the City will have several options available to address a specific discharge. In most cases where the violator is identified it is expected that they will voluntarily comply with any action required by the City to eliminate the potential for further illicit discharges. When the violation is the result of an illegal connection from a building, the property owner is anticipated to respond once they are made aware of the connection, the environmental consequences, the applicable regulations, and the recommended remedy.

If the violation is a failing septic system, the violation is transferred to the Grays Harbor County Health District for enforcement. Any transferred violations shall be monitored closely by the City to assure compliance with permit requirements.

The City will prepare a letter to be sent to the property owner for any illicit discharge or illegal connection. Depending on the circumstances the letter will describe the findings of the investigation, the required remedy, the required deadline for compliance, technical resources, and the enforcement actions, fines, and legal actions that could ensue for non-compliance. The letter should also describe the relevant codes and laws. The letter should specify who the property owner should contact for additional information and to notify the City when the required remedy has been completed.

The City will conduct a follow-up inspection following notification that the required remedy has been completed. Should the owner not remedy the discharge, the City may proceed to abate the violation as a public nuisance in accordance with established City nuisance abatement policies and procedures.

e) Staff Training

Training Lead
For those staff responsible for implementing the IDDE program, on the job training will be managed by the City's IDDE program manager. The program manager will manage and assign training as described below and shown in the Training Summary Table below.

Detailed Training
Detailed training will be assigned to those individuals specifically involved in the immediate response procedures, source tracking of potential illicit discharges and sampling.

General Training
General training targets City field staff that may potentially see an illicit discharge including staff from the following departments: Street, Department of Community Development, Facilities Maintenance, Traffic, Sewer and Stormwater Maintenance and Parks. General training will be via PowerPoint presentation and printed material distributed to staff at staff meetings. DVD, print or webcast material may be distributed if the need arises as the program develops.

f) Reporting and Recordkeeping

Tracking (Spills, Inspections, and Public Comment/Feedback)
Tracking, documentation and inspections of suspected violations is a required part of the IDDE program (section S5.C.3.e.) and will be recorded on the appropriate form (see Appendix B).

Public comment/feedback will be conveyed to the IDDE program manager to ensure that the program is responsive to citizen complaints. The public will be directed to either the program manager directly or the hotline if they have general comments they would like to make on the City's IDDE program.

Appendix A – AMC Chapter 13.70

Chapter 13.70
STORM AND SURFACE WATER MANAGEMENT

Sections:

13.70.010 Purpose.

The purpose of this chapter is to protect, maintain, and enhance the public health, safety, and general welfare by establishing minimum requirements and procedures to control the adverse impacts associated with increased storm and surface water runoff. Proper management of storm and surface water runoff will minimize damage to public and private property, reduce the effects of development on land and stream channel erosion and sedimentation, assist in the attainment and maintenance of water quality standards, reduce local flooding, and maintain post-development, as nearly as possible, the predevelopment runoff characteristics, while meeting the Stormwater Management Manual for Western Washington as adopted by the Department of Ecology. This chapter also establishes a Storm and Surface Water System as a utility service of the city.

(Ord. 6503, Added, 08/25/2010)

13.70.020 Definitions.

For the purposes of this chapter, the following definitions describe the meaning of the terms used in this chapter:

A. “Adverse impact” means any deleterious effect on water or wetlands, including their quality, quantity, surface area, species composition, aesthetics or usefulness for human or natural uses which are or may potentially be harmful or injurious to human health, welfare, safety or property, to biological productivity, diversity or stability, or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation.

B. “Agricultural land management practices” means those methods and procedures used in the cultivation of land in order to further crop production and conservation of related soil and water resources.

C. “Applicant” means any person, firm or governmental agency who executes the necessary forms to procure official approval of a project or a permit to carry out construction of a project.

D. “Aquifer” means a porous water-bearing geologic formation generally restricted to materials capable of yielding an appreciable supply of water.

E. “City engineer” means the city of Aberdeen Public Works Director or his or her designee.

F. “Clearing” means the removal of trees and brush from the land, but shall not include the ordinary mowing of grass.

G. “Detention structure” means a permanent structure designed to store runoff for discharge at rates approximating what would have occurred under predevelopment conditions.

H. “Develop land” means to change the runoff characteristics of a parcel of land in conjunction with residential, commercial, industrial or institutional construction or alteration.

I. “Developer” means a person, group or company engaged in land or property development or proposed development.

J. “Director” or “Public Works Director” means the city of Aberdeen Public Works Director or his or her designee.

K. “Drainage area” means that area contributing runoff to a single point measured in a horizontal plane which is enclosed by a ridge line.

L. “Engineer” means a civil engineer or civil engineering firm that has been retained or employed by the city to perform engineering services.

M. “Easement” means a grant or reservation by the owner of land for the use of such land by others for specific purpose(s), and which must be included in the conveyance of land affected by such easement.

N. “Exemption” means those land development activities that are not subject to the storm and surface water management requirements contained in this chapter.

O. “Flow attenuation” means detaining or retaining runoff to reduce the peak discharge.

P. “Grading” means any act by which soil is cleared, stripped, stockpiled, excavated, scarified, filled or any combination thereof.

Q. “Infiltration” means the passage or movement of water into the soil surface.

R. “Off-site storm and surface water management” means the design and construction of a facility necessary to control storm and surface water from more than one development.

S. “On-site storm and surface water management” means the design and construction of systems necessary to control storm and surface water within an immediate development.

T. “Retention structure” means a permanent structure that provides for the storage of runoff by means of a permanent pool of water or infiltration.

U. “Sediment” means soils or other surficial materials transported or deposited by the action of wind, water, ice or gravity as a product of erosion.

V. “Site” means any tract, lot or parcel of land or combination of tracts, lots or parcels of land which are in one ownership, or are contiguous and in diverse ownership where development is to be performed as part of a unit, subdivision or project.

W. “Stabilization” means the prevention of soil movement by any of various vegetative and/or structural means.

X. “Storm and surface water management” means:

1. For quantitative control, a system of vegetative and structural measures that control the increased volume and rate of surface runoff caused by manmade changes to the land; and

2. For qualitative control, a system of vegetative, structural and other measures that reduce or eliminate pollutants that might otherwise be carried by surface runoff.

3. For “Low Impact Development Approaches (LIDA)” combining quantitative and qualitative controls, a stormwater management and land development strategy applied at the parcel and subdivision scale that aims to mimic natural hydrology and processes by using smallscale, decentralized practices that infiltrate, evaporate, and transpire rainwater. LIDA should: minimize impervious surfaces; disconnect hydrologic elements (roofs, downspouts, parking areas); maintain/increase flow paths and times; and utilize decentralized treatment practices.

Y. “Storm drainage plan” means a set of drawings or other documents submitted by a person as a prerequisite to obtaining a storm drainage permit, which contains all of the information and specifications pertaining to storm and surface water management.

Z. “Stripping” means any activity which removes the vegetative surface cover, including tree removal, clearing, grubbing and storage, or removal of topsoil.

AA. “Variance” means the modification of the minimum storm and surface water management requirements for specific circumstances where strict adherence of the requirements would result in unnecessary hardship and not fulfill the intent of this chapter.

BB. “Watercourse” means any natural or artificial stream, river, creek, ditch, channel, swale, conduit, culvert, drain, or ravine, in and including any area adjacent thereto which is subject to inundation by reason of overflow or flood water.

CC. “Watershed” means the total drainage area contributing runoff to a single point.

DD. “Wetlands” means an area that has saturated soils or periodic high groundwater levels and vegetation adapted to wet conditions and periodic flooding.

▶ *Prior to the adoption of 6526 on 01/25/2012, Section 13.70.020 read as follows.*

For the purposes of this chapter, the following definitions describe the meaning of the terms used in this chapter:

A. “Adverse impact” means any deleterious effect on water or wetlands, including their quality, quantity, surface area, species composition, aesthetics or usefulness for human or natural uses which are or may potentially be harmful or injurious to human health, welfare, safety or property, to biological productivity, diversity or stability, or which unreasonably interfere with the enjoyment of life or property, including outdoor recreation.

B. “Agricultural land management practices” means those methods and procedures used in the cultivation of land in order to further crop production and conservation of related soil and water resources.

C. “Applicant” means any person, firm or governmental agency who executes the necessary forms to procure official approval of a project or a permit to carry out construction of a project.

D. “Aquifer” means a porous water-bearing geologic formation generally restricted to materials capable of yielding an appreciable supply of water.

E. “City engineer” means the city of Aberdeen Public Works Director or his or her designee.

F. “Clearing” means the removal of trees and brush from the land, but shall not include the ordinary mowing of grass.

G. “Detention structure” means a permanent structure designed to store runoff for discharge at rates approximating what would have occurred under predevelopment conditions.

H. “Develop land” means to change the runoff characteristics of a parcel of land in conjunction with residential, commercial, industrial or institutional construction or alteration.

I. “Developer” means a person, group or company engaged in land or property development or proposed development.

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K. “Drainage area” means that area contributing runoff to a single point measured in a horizontal plane which is enclosed by a ridge line.

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U. “Sediment” means soils or other surficial materials transported or deposited by the action of wind, water, ice or gravity as a product of erosion.

V. “Site” means any tract, lot or parcel of land or combination of tracts, lots or parcels of land which are in one ownership, or are contiguous and in diverse ownership where development is to be performed as part of a unit, subdivision or project.

W. “Stabilization” means the prevention of soil movement by any of various vegetative and/or structural means.

X. “Storm and surface water management” means:

1. For quantitative control, a system of vegetative and structural measures that control the increased volume and rate of surface runoff caused by manmade changes to the land; and

2. For qualitative control, a system of vegetative, structural and other measures that reduce or eliminate pollutants that might otherwise be carried by surface runoff.

Y. “Storm drainage plan” means a set of drawings or other documents submitted by a person as a prerequisite to obtaining a storm drainage permit, which contains all of the information and specifications pertaining to storm and surface water management.

Z. “Stripping” means any activity which removes the vegetative surface cover, including tree removal, clearing, grubbing and storage, or removal of topsoil.

AA. “Variance” means the modification of the minimum storm and surface water management requirements for specific circumstances where strict adherence of the requirements would result in unnecessary hardship and not fulfill the intent of this chapter.

BB. “Watercourse” means any natural or artificial stream, river, creek, ditch, channel, swale, conduit, culvert, drain, or ravine, in and including any area adjacent thereto which is subject to inundation by reason of overflow or flood water.

CC. “Watershed” means the total drainage area contributing runoff to a single point.

DD. “Wetlands” means an area that has saturated soils or periodic high groundwater levels and vegetation adapted to wet conditions and periodic flooding.

(Ord. 6526, Amended, 01/25/2012; Ord. 6503, Added, 08/25/2010)

13.70.030 Utility established.

For the purpose of carrying out the provisions of this chapter there is created and established a storm and surface water drainage utility for the city of Aberdeen pursuant to chapters 35.67, 35.92, 90.03, and 90.54 RCW, and by Article 11, Section 11, of the constitution of the state of Washington. The primary purpose of this utility shall be the planning, design, construction, maintenance, administration, and operation of all city storm and surface water facilities and for overseeing the design, construction, and maintenance of improvements on private property where these may affect storm and surface water management. The utility shall be administered by the public works director. The city council is authorized to make funds available to the utility by appropriation, borrowing, or by other means in accordance with laws of Washington state, for the establishment maintenance, and operation of this utility.

(Ord. 6503, Added, 08/25/2010)

13.70.040 Transfer of property.

All properties, property rights, and interests of every kind or nature owned or held by the city, however acquired, insofar as they relate to or concern storm or surface water facilities, are hereby transferred to the Storm and Surface Water Utility, including by way of examples and not limitation, all properties, rights and interest acquired by adverse possession or by prescription in and to the drainage and storage of storm or surface waters over and under lands, watercourses, streams, ponds, and estuaries to the full extent of inundation caused by the largest storm or flood condition.

(Ord. 6503, Added, 08/25/2010)

13.70.050 Storm and surface water fund created.

A. Pursuant to state law, the city hereby declares its intention to designate the city's storm and surface water system as a utility and enterprise activity of the city to be supported all or in part by the imposition of user charges on all parcels of property within the city which discharge stormwater to the city's storm drainage facilities or are otherwise served by the city's storm drainage facilities.

B. The city hereby establishes a special fund within the city's fiscal system to be known as "The Storm and Surface Water Fund", hereinafter referred to as the fund.

C. All revenues from storm drainage user charges and other storm drainage related fees and charges as may be adopted by resolution shall be deposited to the fund.

D. Expenditures from the Fund shall be limited to those expenditures for the improvement, repair, operation, maintenance, and administration of the storm drainage facility as defined by the public works director of the city of Aberdeen. The fund may also transfer funds to the general fund of the city that represent the reasonable and proportionate share of the cost of general city government support of the utility not covered by direct payments from the fund.

(Ord. 6503, Added, 08/25/2010)

13.70.060 Setting of fees and charges.

A. The city council shall by resolution establish a system of user charges for all parcels in the city.

B. To the extent practicable, user charges shall be based on each parcel's expected rate and volume of stormwater runoff from a parcel.

C. The city council may by resolution establish a charge for the connection of any parcel to the city's storm drainage facilities to reflect that parcel's fair share of the cost of the existing city storm drainage facilities serving the parcel.

D. The public works director shall establish appropriate fees for the review and inspection of storm drainage facilities proposed and constructed by private development.

(Ord. 6503, Added, 08/25/2010)

13.70.070 Applicability.

It is not intended that this chapter repeal, abrogate, or impair any existing regulations, easements, covenants, or deed restrictions. The provisions of this chapter shall be held to be minimum requirements in their interpretation and application and shall be liberally construed to serve the purposes of this chapter. When any provision of any other chapter of the city regulations conflicts with this chapter, that which provides more environmental protection shall apply unless specifically provided otherwise in this chapter.

(Ord. 6503, Added, 08/25/2010)

13.70.080 Review and approval of storm and surface water drainage plans.

A storm and surface water drainage plan or application for a variance shall be submitted to the city engineer by the developer for review and approval for any proposed development, unless otherwise exempted. The storm and surface water drainage plan shall be accompanied by supporting computations, drawings and sufficient information describing the manner, location and type of measures in which storm and surface water runoff will be managed from the entire development. The information supplied by the developer shall be in conformance with the Stormwater Management Manual for Western Washington as prepared by the Department of Ecology. The developer is responsible for submitting a storm and surface water management plan which meets the design requirements provided by this chapter. No person shall develop any land for residential, commercial, industrial or institutional uses without having provided for appropriate storm and surface water management measures that control or manage runoff from such developments. A storm and surface water drainage plan or application for a variance shall be submitted to the city engineer by the developer for review and approval for any proposed development, unless otherwise exempted. The storm and surface water drainage plan shall be accompanied by supporting computations, drawings and sufficient information describing the manner, location and type of measures in which storm and surface water runoff will be managed from the entire development. The information supplied by the developer shall be in conformance with the Stormwater Management Manual for Western Washington as prepared by the Department of Ecology. The developer is responsible for submitting a storm and surface water management plan which meets the design requirements provided by this chapter. No person shall develop any land for residential, commercial, industrial or institutional uses without having provided for appropriate storm and surface water management measures that control or manage runoff from such developments.

(Ord. 6503, Added, 08/25/2010)

13.70.090 Exemptions.

A. The following development activities are exempt from the provisions of this chapter and the requirements of providing storm and surface water management.

1. Agricultural land management activities;

2. Additions or modifications to existing single-family detached residential structures;

3. Developments that do not disturb over five thousand square feet of land area; or

4. City of Aberdeen owned facilities and streets.

(Ord. 6503, Added, 08/25/2010)

13.70.100 Variances.

The city engineer may grant a written variance from any requirement of this chapter if there are exceptional circumstances applicable to the site such that strict adherence to the provisions of this chapter will result in unnecessary hardship and not fulfill the intent of this chapter. A written request for variance shall be provided to the city engineer and shall state the specific variances sought and reasons for their granting. The city shall not grant a variance unless and until sufficient specific reasons justifying the variance are provided by the person developing land.

(Ord. 6503, Added, 08/25/2010)

13.70.110 Permits - plan approval required.

A grading/fill permit, building permit, or other development permit may not be issued for any parcel or lot unless a storm and surface water drainage plan has been approved by the city engineer. The approved plan shall be become part of the permit and be enforced as an element of any development permit issued by the city.

(Ord. 6503, Added, 08/25/2010)

13.70.120 Plan approval - conditions.

In granting the plan approval, the city engineer may impose such conditions thereto as may be deemed necessary to ensure compliance with the provisions of this chapter and the preservation of public health and safety. Any grading/filling permit, building permit, or other development permit issued by the city may be suspended or revoked, after written notice is given to the permittee, for any violations of the approved storm and surface water drainage plan.

(Ord. 6503, Added, 08/25/2010)

13.70.130 Minimum control and management requirements.

The minimum storm and surface water control and management requirements shall be in accordance with standards adopted by the city and included in the Stormwater Management Manual for Western Washington. Low Impact Development Approaches (LIDA) may be substituted for structural standards in the Stormwater Management Manual where the LIDA is developed by a licensed professional in accordance with accepted industry practices.

▶ *Prior to the adoption of 6526 on 01/25/2012, Section 13.70.130 read as follows.*

The minimum storm and surface water control and management requirements shall be in accordance with standards adopted by the city and included in the Stormwater Management Manual for Western Washington.

(Ord. 6526, Amended, 01/25/2012; Ord. 6503, Added, 08/25/2010)

13.70.140 Design criteria.

Storm and surface water systems shall be designed and constructed in accordance with the standards and specifications as set forth in the Standard Specifications for Road, Bridge and Municipal Construction published by the American Public Works Association (APWA) and the Washington State Department of Transportation, and Stormwater Management Manual for Western Washington published by the Washington State Department of Ecology.

(Ord. 6503, Added, 08/25/2010)

13.70.150 Maintenance agreement.

Prior to issuance of a storm and surface water utility permit, the city shall require the applicant to execute an inspection and maintenance agreement binding on all subsequent owners of land served by the private storm and surface water drainage system. The maintenance agreement shall be recorded by the city. Such agreement shall provide for access to the system at reasonable times for regular inspection by the city or its authorized representative to ensure that the facility is maintained in proper working condition to meet design standards and any provisions established. The agreements shall include the right of the city to access the system to take such action as necessary to protect the public safety and health in any instance where the owner fails to make the appropriate correction. Such agreement may contain provisions for regular or special assessments.

(Ord. 6503, Added, 08/25/2010)

13.70.160 Inspection.

A. The developer will submit to the city a proposed construction schedule ten days prior to commencing construction. The city engineer shall conduct inspections and file reports for periodic inspections necessary during construction of storm and surface water management systems to ensure compliance with the approved plans. The developer shall notify the city upon completion of the project when a final inspection will be conducted.

B. Any portion of the work which does not comply with city regulations will be promptly corrected by the developer, after written notice from the city. The notice shall set forth the nature of corrections required and the time within which corrections will be made.

C. A final inspection shall be conducted by the city upon completion of the elements of the storm and surface water drainage plan to determine if the completed work is constructed in accordance with approved plan and this chapter. The developer shall supply an "as-built" certification by a registered professional engineer licensed in the state of Washington to certify that the facility has been constructed as shown in the "as-built" plans and meets approved plans and specifications. The city will provide the developer with a written notification of the results of the final inspection.

(Ord. 6503, Added, 08/25/2010)

13.70.170 Preventive maintenance.

A. It shall be the responsibility of the developer or property owner to maintain all infiltration systems, retention, detention or other storm and surface water drainage structures

as contained in the storm and surface water utility permit.

B. The city shall annually inspect all infiltration systems, retention, detention or other storm and surface water drainage structures.

C. If the inspection indicates improper maintenance, unsafe conditions, or danger to public health or safety, the city shall so inform the developer or property owner of those conditions as well as a schedule for remediation. The cost of such remediation is the cost of the developer or property owner. In any instance where the developer or property owner fails to make the appropriate correction, the city will take such action as necessary to protect the public health and safety. Any cost incurred by the city shall be recovered from the developer or property owner.

A. It shall be the responsibility of the developer or property owner to maintain all infiltration systems, retention, detention or other storm and surface water drainage structures

as contained in the storm and surface water utility permit.

B. The city shall annually inspect all infiltration systems, retention, detention or other storm and surface water drainage structures.

C. If the inspection indicates improper maintenance, unsafe conditions, or danger to public health or safety, the city shall so inform the developer or property owner of those conditions as well as a schedule for remediation. The

cost of such remediation is the cost of the developer or property owner. In any instance where the developer or property owner fails to make the appropriate correction, the city will take such action as necessary to protect the public health and safety. Any cost incurred by the city shall be recovered from the developer or property owner.

(Ord. 6503, Added, 08/25/2010)

13.70.180 Penalties.

A. Any person convicted of violating the provisions of this chapter shall be guilty of a gross misdemeanor. Each day that the violation continues shall be a separate offense.

B. In addition to, or as an alternative to any criminal prosecution or other penalty or billable cost of abatement or inspection as provided by ordinance or statute, any responsible person who violates a provision of this chapter, or order of the director issued pursuant to this chapter, may be assessed a civil penalty under chapter 1.12 AMC.

C. In addition to imposition of a civil penalty, the director shall have the authority to order any responsible person to stop work if the work does not conform to the permit requirements and the severity is determined to be sufficient to warrant such action. The stop work order shall be issued in accordance with the procedures set forth in 1.12 AMC for notices and orders. Failure to comply with the terms of a stop work order shall result in enforcement actions including, but not limited to, the issuance of a civil penalty.

C. In addition, the city may institute injunctive, mandamus or other appropriate action or proceedings at law or equity for the enforcement of this chapter or to correct violations of this chapter, and any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent, injunctions or other appropriate forms of remedy or relief.

D. Any person who, through an act of commission or omission, aids or abets in the violation shall be considered to have committed a violation.

(Ord. 6503, Added, 08/25/2010)

13.70.190 Cross connections prohibited.

The installation or maintenance of any cross connection, meaning a connection between any storm and surface water drainage system and any sanitary sewer system, is prohibited. Any such cross connections now existing, or hereafter installed, are declared to be public nuisances and shall be abated by the Director in the manner provided by chapter 8.08 AMC.

(Ord. 6503, Added, 08/25/2010)

13.70.200 Illicit discharges prohibited - certain discharges allowed - conditions.

A. The stormwater system of the city of Aberdeen, natural and artificial, may only be used to convey stormwater runoff and discharges meeting the permit conditions within a current National Pollutant Discharge Elimination System Permit approved by the Washington State Department of Ecology. Except as provided in subsections B and C below, no person shall throw, drain or otherwise discharge, cause or allow others under it s control to throw, drain or otherwise discharge into the stormwater system any materials other than stormwater.

B. The following discharges into the stormwater system are permitted provided the following conditions are met:

1. *Discharges from potable water sources, including waterline flushing, hyper chlorinated waterline flushing, fire hydrant system flushing and pipeline hydrostatic test water.* Planned discharges shall be dechlorinated to a concentration of 0 1 ppm or less, pH adjusted, if necessary (to meet water quality standards) and volumetrically and velocity controlled to prevent re-suspension of sediments in the stormwater system. As an option to dechlorinating, planned discharges from potable water sources may be discharged directly to the municipal sanitary sewer system in a manner approved by the Director. Planned discharges of waterline and hydrant system flushing need not be dechlorinated at the point of discharge is the discharge methods, location, or dilution will result in a pH concentration less than 0.1 ppm at the point the water would enter a natural drainage channel.

2. *Discharges from lawn watering and other irrigation runoff.* Reasonable steps shall be taken to minimize runoff including limiting duration and over-spray.

3. *Dechlorinated swimming pool discharges.* The discharges shall be dechlorinated to a concentration of 0.1 ppm or less, pH adjusted, and re-oxygenized if necessary, and volumetrically and velocity controlled to prevent re-suspension of sediments in the stormwater system and the property owner shall obtain permission from the Director. Swimming pool cleaning waste water and filter backwash shall not be discharged to the stormwater system.

4. *Street and sidewalk wash water, water used to control dust, and routine external building wash down that does not use detergents.* To avoid washing pollutants into the stormwater system, the discharge must minimize the amount of street wash and dust control water used. At active construction sites, street sweeping must be performed prior to washing the street.

5. *Other non-stormwater discharges.* The discharges shall be in compliance with the requirements of the stormwater pollution prevention plan for the discharges as reviewed and approved by the City.

6. *Any discharges from a construction site.* Discharges must be in conformance with the stormwater pollution prevention plan (SWPPP) reviewed by the City.

7. *Combined sewer overflow (CSO) discharges.* This discharge must be in conformance with a current National Pollution Discharge Elimination System Permit, approved by the Washington State Department of Ecology.

C. The following categories of non stormwater discharges are specifically allowed:

1. Diverted stream flows;

2. Rising ground waters;

3. Uncontaminated ground water infiltration (as defined at AMC 13.52.390);

4. Uncontaminated pumped ground water;

5. Foundation drains;

6. Air conditioning condensation;

7. Irrigation water from agricultural sources that is commingled with urban stormwater;

8. Springs;

9. Water from crawl space pumps;

10. Footing drains;

11. Flows from riparian habitats and wetlands;

12. Non stormwater discharges covered by another NPDES permit;

13. Discharges from emergency fire fighting activities in accordance with the city of Aberdeen Stormwater NPDES Phase II Permit Section S2 Authorized Discharges. The city's Stormwater NPDES Phase II Permit is available to view in the office of the Director.

D. Except as provided in this section, no person shall use the stormwater system, directly or indirectly, to dispose of any solid or liquid matter other than stormwater. No person shall make or allow any connection to the stormwater system which could result in the discharge of polluting matter. Connections to the stormwater system from the interiors of structures are prohibited. Connections to the stormwater system for any purpose other than to convey stormwater or groundwater are prohibited and shall be eliminated.

E. Stormwater discharge into the sanitary system is prohibited - exceptions.

1. No person shall discharge or cause to be discharged any stormwater, surface water, ground water, roof runoff, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters into any sanitary sewer, unless otherwise approved by the Director based on lack of feasible alternatives or unless the discharge meets the condition outlined in AMC 13.52.390.

2. No person shall make connection of roof downspouts, exterior foundation drains, area drains, or other sources of stormwater surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer, unless such connection is otherwise approved in writing by the Director based on lack of feasible alternatives or other appropriate factors.

F. Stormwater shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers, or to a natural outlet approved by the Director. Storm drainage from hard-surfaced or graded areas, such as parking lots, service station yards, and storage yards, shall enter the public storm sewer system or other outlet approved by the Director and as required by this Chapter and as such facilities are available. Such storm drainage shall not be connected to or allowed to enter a sanitary sewer, unless otherwise approved in writing by the Director based on lack of feasible alternatives or other appropriate factors

(Ord. 6503, Added, 08/25/2010)

13.70.210 Easements.

All public storm drainage systems shall be required to be located within a recorded public

storm drainage easement or public right-of-way. An unobstructed ingress/egress maintenance easement shall be provided for city access to said storm drainage facilities. The minimum width of the required drainage easement shall be adequate to encompass all facilities and include room for access and maintenance, as determined by the city.

(Ord. 6503, Added, 08/25/2010)

13.70.220 Appeals - filiing deadlines.

A. Any billing statement, charge, or other fee assessed under this chapter may be appealed to the Director. The appeal may be decided informally, without a hearing, or in the sole discretion of the Director an informal hearing may be held. The Director's decision shall be in writing. The Director's decision shall be the final determination unless a written notice of appeal is filed with the Finance Director within fourteen days of the Director's decision. Appeals from the Director's decision shall be heard by the city council. The city council's decision on appeal shall be the final determination of the city.

B. Any appeal from the refusal to approve a storm and surface water drainage plan shall be considered in the same manner as an appeal from the denial of the development permit being applied for.

C. Any civil enforcement action taken under this chapter, that does not fall within subsections A or B of this section, may be appealed to the Director in the same manner as provided for appeals under chapter 1.12 AMC.

(Ord. 6503, Added, 08/25/2010)

The Aberdeen Municipal Code is current through Ordinance 6613, passed September 27, 2017.

City Website: www.aberdeenwa.gov
City Telephone: (360) 537-3231
Code Publishing Company

Appendix B – Illicit Discharge Incident Reporting Forms

Illicit Discharge Incident Report Sheet

Responder Information

Call Taken By:	Call Date:	Call Time:
☐ Hotline Call		
☐ Reported by other Department or Agency		

Reporter Information

Incident Time:	Incident Date
Caller Contact Information:	
Organization:	
Precipitation (inches)	24 / 48 hours

Incident Location

Stream Address or Outfall #:	Latitude and Longitude
Closest Street Address:	Nearby Landmark:

Primary Location Description	Secondary Location Description		
☐ Stream Corridor (In or adjacent to stream)	☐ Outfall	☐ In-stream Flow	☐ Along banks
☐ Upland Area (Land not adjacent to stream)	☐ Near storm drain	☐ Near other water source (Stormwater pond, wetland, ect.)	

Narrative description of location:

Upland Problem Indicator Description

☐ Dumping	☐ Oil / solvents / chemicals	☐ Sewage
☐ Wash water , suds, ect.	☐ Other:	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid / Sour	☐ Petroleum (gas)
	☐ Sulfide	☐ Musky	☐ Other: Describe in "Narrative" section	
Appearance	☐ Normal	☐ Oil Sheen	☐ Cloudy	☐ Turbid
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None	☐ Sewage	☐ Litter	☐ Dead Fish
	☐ Algae	☐ Suds	☐ Other: Describe in "Narrative" section	

Narrative description of problem indicators:

Suspected Violator (name, personal or vehicle description, license plate number, ect.)

Tracking Number (from top of sheet 2) ______________________

Required Notifications (Record in correspondence section of sheet two)		
Spill Type	Examples	Call / Notify All Listed
Emergency Situation An immediate and severe threat to human health or the environment Spills of gas, oil and hazardous substances in any amount	Sewage Main Break Gasoline Tank Rupture Spill with overwhelming chemical odor Gas / Oil spill in a stream, lake or river Gas / Oil spill flowing into a catch basin Gas / Oil spill into a ditch Motor oil spill flowing into a catch basin	911 National Response Center 800-424-8802 WA. Emergency Management 800-OILS-911 Ecology SW Regional Office 360-407-6300 Department of Health - Sewage 360-236-3330 Aberdeen Public Works 360-537-3393
Non Emergency Situation Small / Medium amount of known substance (generally 1 drop to 5 gallons and the responder is able to handle the situation	Leaking septic system broken side sewer Oil or vehicle fluids on pavement or gravel Concrete washout Muddy construction site runoff Suds Paint	Aberdeen Street Department 360-537-3241 Aberdeen Sewer Department 360-537-3285 Department of Health - Sewage 360-236-3330

Appendix C – Outfall Reconnaissance Inventory Forms

Illicit Discharge Incident Investigation / Resolution Sheet

Tracking Number (Assign tracking numbers according to sequential order for year and date of occurrence)

Example: 1.1.20.2011 first incident of 2011 occuring Jan. 20, 2011

Site Assessment / Investigation

Site Investigated by:

Date: | Time: |

Investigation Results:

☐ No Investigation Made
Reason:

☐ Referred to different department or agency
Contact information
Reason:

☐ Investigated - No Action Required
Reason:

☐ Investigated - Action Required
Complete next section

Narrative description of site assessment:

Environmental Remediation Action Plan

Enforcement Actions (if any)

Correspondence

Agency	Contact Person	Date / Time	Phone Number
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Outfall Reconnaissance Inventory/ Sample Collection Field Sheet

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

- ☐ Industrial
- ☐ Ultra-Urban Residential
- ☐ Suburban Residential
- ☐ Commercial
- ☐ Open Space
- ☐ Institutional
- Other: ____________
- Known Industries: ____________

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL		SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ Closed Pipe	☐ RCP ☐ PVC ☐ Steel ☐ Other: ______	☐ CMP ☐ HDPE	☐ Circular ☐ Eliptical ☐ Box ☐ Other: ______	☐ Single ☐ Double ☐ Triple ☐ Other: ______	Diameter/Dimensions: ______	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ Open drainage	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: ______		☐ Trapezoid ☐ Parabolic ☐ Other: ______		Depth: ______ Top Width: ______ Bottom Width: ______	
☐ In-Stream	(applicable when collecting samples)					
Flow Present?	☐ Yes	☐ No	*If No, Skip to Section 5*			
Flow Description (If present)	☐ Trickle	☐ Moderate	☐ Substantial			

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		RESULT	UNIT	EQUIPMENT
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

City of Aberdeen
Stormwater Pollution Prevention Plan for Operations Facility, Vactor Solids Facility, and Charley Creek Dump Site

October 2012

Contents

BACKGROUND AND GENERAL REQUIREMENTS

The City of Aberdeen is covered as a permittee under the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater Permit (Phase II Permit). The NPDES program is a requirement of the federal Clean Water Act and is implemented by the Department of Ecology in Washington State. The Phase II Permit requires that all permittees develop a stormwater management program (SWMP) aimed at reducing the discharge of pollutants into the permittee's municipal separate storm sewer system (MS4).

A required component of the SWMP is the implementation of an operations and maintenance (O&M) program designed to prevent or reduce pollutant runoff from municipal operations and from municipally-owned stormwater facilities. One requirement of the O&M program is the development of a stormwater pollution prevention plan (SWPPP) for all City heavy equipment maintenance and storage yards, and material storage facilities.

This SWPPP has been developed to meet the O&M requirements outlined above. This SWPPP must be implemented at the current City of Aberdeen Operations facility located at 1101 West Heron Aberdeen, WA 98520, with certain elements applicable to the Vactor-solids facility, located at 1303 W Hood St. Aberdeen, WA 98520.

SWPPP AVAILABILITY

A copy of this SWPPP will kept at each applicable City of Aberdeen facility or within reasonable access to the facility. It will be made available to Ecology personnel on request. If requested, a copy of this SWPPP will be made available to the public within a reasonable time frame.

SWPPP UPDATE

This SWPPP will be updated periodically to reflect changed conditions.

OBJECTIVES OF THE SWPPP

This document serves as the Stormwater Pollution Prevention Plan (SWPPP) for the City of Aberdeen Public Works Operations Facility; a heavy equipment maintenance and storage yard, and material storage facility.

The objectives of this SWPPP are:

- To identify locations of all materials that could cause pollution if spilled or otherwise released into the environment;
- To identify all storm sewer conveyances, treatment facilities, and discharge points to aid in the isolation of contaminants should any be spilled into the system;

- To identify locations of spill containment equipment and materials;
- To implement and maintain best management practices (BMPs) that identify, reduce, eliminate, and/or prevent the discharge of stormwater pollutants;
- To prevent violations of State surface water quality, groundwater quality, and sediment management standards;
- To eliminate unpermitted discharges and other illicit discharges to separate storm drainage systems;
- And to provide information to staff on BMPs for the Operations yard.

This document describes the methods and procedures that City of Aberdeen personnel will implement in order to reduce and/or eliminate the contamination of stormwater runoff and discharges of pollutants from City of Aberdeen facilities.

This SWPPP contains BMPs that the Aberdeen Operations and Vactor Solids facilities implement to reduce or eliminate the release of pollutants to the MS4 and surface waters. The mechanisms for such a release may include the inadvertent contamination of stormwater from illicit discharges to the MS4 or from spills that reach the MS4.

This document includes the following information:

- Definition of SWPPP Coordinator requirements and responsibilities;
- Identification of Pollution Prevention Team personnel;
- Facility description and activities;
- Description of BMPs;
- Description of monitoring, inspection, and recordkeeping requirement.

NPDES PERMIT COVERAGE

The City's stormwater discharges are authorized under the terms and conditions of the Phase II Permit; effective February 16, 2007, through February 15, 2012, or as notified by Ecology. The City of Aberdeen is responsible for the operation and maintenance of the MS4, including all flow control and treatment stormwater BMPs located at its facilities.

INTEGRATION WITH OTHER COVERAGE

This SWPPP is required under the NPDES Municipal Phase II Permit. The Operations and Vactor Solids facilities are not subject to coverage under any other NPDES permits. Any construction or industrial activities that occur on these sites will be assessed for NPDES coverage requirements and integrated with this plan as appropriate.

FACILITY ASSESSMENT

The City of Aberdeen facilities requiring this SWPPP, according to NPDES Permit requirements, are:

1. The City of Aberdeen Operations Facility – an operations and maintenance facility that maintains and stores heavy equipment and stores materials used at City facilities and on City property.
2. The City of Aberdeen Vactor Solids Facility – a city-owned and operated facility used to sort, store, and dewater street-waste solids prior to placement at the Charley Creek Dump Site.
3. The City of Aberdeen Charley Creek Dump Site – a City owned dump site maintained and operated to dump and contain solid materials in a land fill application.

There are currently no other City-owned or operated facilities required to develop a SWPPP as part of the Phase II Permit requirements.

POLLUTION PREVENTION TEAM

The pollution prevention team is responsible for developing the SWPPP and assisting in its implementation, maintenance, and modification. The activities and responsibilities of the pollution prevention team address all aspects of this SWPPP.
The responsibilities include:

- Assigning one or more individuals by name and title to be responsible for developing the SWPPP and assisting the SWPPP Coordinator in its implementation, maintenance, and modification;
- Holding regular meetings to review the overall operation of the BMPs;
- Establishing responsibilities for inspections, O&M, and emergency situations
- Arranging the training of all team members in the operation, maintenance, and inspections of BMPs.

The pollution prevention team consists of management and facility operations personnel and includes a SWPPP Coordinator (the Facility Supervisor) at each facility and other identified individuals responsible for developing the plan and assisting the supervisor in its implementation. A list of team members, contact information, and a brief description of their primary area of responsibility regarding stormwater pollution is identified in Table 1.

Table 1. Pollution Prevention Team

Position	Name(s)	Phone Number(s)	Primary Responsibilities
SWPPP Coordinator	Rick Sangder – Deputy Public Works Director	(360) 537-3241	Ensure that each facility employee is in compliance with the ABERDEEN SWPPP regarding their operations; the Facility Supervisor must certify the completeness and accuracy of the SWPPP by signing a certification statement.
NPDES Phase II Coordinator	Rick Sangder – Deputy Public Works Director	(360) 537-3241	Manage NPDES permit requirements (including developing, implementing, maintaining, and revising the SWPPP) and assisting each facility with state and City of Aberdeen regulatory issues pertaining to stormwater pollution prevention.
Applicable Aberdeen Supervisors and Staff	Mike Randich (Water Systems Manager) Steve Randich (Street maintenance supervisor) Jeff Springer (Stormwater maintenance supervisor) Lenonard Graham (Water maintenance supervisor)	(360) 537-3273 (360) 537-3268 (360) 537-3393 (360) 537-3274	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted.

OPERATIONS AT CITY OF ABERDEEN FACILITIES

The primary uses of the Aberdeen Operations Center include storage and maintenance of: City vehicles, a City vehicle fueling station, Vactor truck & heavy equipment storage, mowing and landscape equipment storage, raw and solid materials storage, & liquid storage.

CITY OF ABERDEEN OPERATIONS FACILITY

Activities conducted at the City of Aberdeen Public Works Operations facility include:

- Washing and pressure washing of vehicles, equipment and building structures
- Loading and unloading of liquid or solid materials
- Fueling at dedicated stations
- Automotive repair and maintenance
- Painting of buildings
- Outdoor storage or transfer of solid raw materials, byproducts or finished products
- Outdoor portable container storage
- Storage of liquids in permanent aboveground tanks
- Parking lot maintenance and storage of vehicles and equipment
- Storage of emulsions in portable containers

Activities conducted at the City of Aberdeen Vactor solids facility include:

- Storage of bulk dirt, sand and rock
- Storage of collected street waste solids and other stormwater facility solids
- Dewatering of Vactor slurry

FACILITY PLANS AND MAPS

PUBLIC WORKS OPERATIONS FACILITY MAP & DRAINAGE PLANS

An Operations Facility map is included in Appendix A of this document. The Operations Facility map identifies the facility layout; building spill kit locations; stormwater drainage system; sanitary sewer system; heavy equipment maintenance and storage areas; and material storage areas.

VACTOR SOLIDS FACILITY MAP & DRAINAGE PLANS

A Vactor Solids Facility map is included in Appendix A of this document. The Vactor Solids Facility map identifies the facility layout; building spill kit locations; stormwater drainage system; sanitary sewer system; and material storage areas.

RECEIVING WATERS & WETLANDS

In general, stormwater runoff from the City of Aberdeen Public Works Operations Center facilities includes runoff from buildings, parking lots, a gravel storage yard, and other paved areas. The stormwater runoff discussed in this SWPPP is conveyed to the City's MS4, specifically once the stormwater leaves the facility it is conveyed one block to the northwest and then approximately 700 feet to the southeast where it enters the Chehalis River along the Lincoln Street stormline. A map is included in Appendix A that shows the receiving waters in relation to the Operations and Vactor Solids facilities. Facility locations and points of discharge to receiving waters are identified in Table 2.

Table 2. Facility and discharge locations

Facility	Address	Point(s) of Discharge (Latitude/Longitude)
City of Aberdeen Public Works Operations Center	1101 W Heron St. Aberdeen, WA 98520	(46.966606 / 123.827944)
City of Aberdeen Public Works Vactor Solids Facility	1303 W Hood St. Aberdeen, WA 98520	(46.966929 / 123.8311292)
City of Aberdeen Charley Creek Dump Site	Parcel #170921230010	(46.951550 / 123.820564)

POTENTIAL POLLUTANTS

Table 3 below lists activities conducted at the Operations and Vactor solids facilities that have the potential to generate pollution if not managed properly. Proper management requires utilization of the source control BMPs listed in the right column. These BMPs are from Volume IV, Chapter 2 of the 2005 Stormwater Management Manual for Western Washington (WA State Dept of Ecology, 2005). The BMP numbers correspond to the page within the SWMMWW on which the BMP can be found. Table 4 below summarizes each BMP. BMPs identified in Table 3 are included in Appendix B of this document.

Table 3. Potential pollution-generating activities and relevant BMPs

Facility Name	Pollution-generating Activity	Potential Pollutants	Source control BMP[1]
Public Works Operations 1101 West Heron Aberdeen, WA 98520	Washing and pressure washing of vehicles, equipment, and building structures	Soaps and detergents, oils and greases, suspended solids, metals	BMP 2-64
	Loading and unloading of liquid or solid materials	Fuels, hydraulic fluids, oils, bulk salt, granular de-icing material, mixed rubble	BMP 2-29
	Fueling at dedicated stations	Gasoline or Diesel Fuel	BMP 2-19
	Automotive repair and maintenance	Gasoline or diesel fuel, lubricating oils	BMP 2-34
	Landscaping and lawn and vegetation management	Pesticides, fertilizers	BMP 2-23
	Painting of buildings	Paint, solvents, metals	BMP 2-46
	Outdoor storage or transfer of solid raw materials, byproducts, or finished products	Street sweeping debris, clean asphalt, clean-screened soil, mixed rubble, clean green debris, crushed rock, bulk salt, granular de-icing salt, and sand	BMP 2-60
	Outdoor portable container storage	Crankcase oil, pesticides, lacquers, latex paint, ethyl ether, mercury, and PDBs	BMP 2-55
	Storage of liquids in portable above ground tanks	Crankcase oil, waste oil, mixed fuel	BMP 2-58
	Parking lot maintenance and storage of vehicles and equipment	Oils & greases, suspended solids, metals	BMP 2-48
Vactor Solids Facility 1303 W Hood St Aberdeen, WA 98520	Loading and unloading of liquid or solid materials	Fuels, hydraulic fluids, oils, bulk salt, granular de-icing material, mixed rubble	BMP 2-29
	Outdoor storage or transfer of solid raw materials, byproducts, or finished products	Street sweeping debris, clean asphalt, clean-screened soil, mixed rubble, clean green debris, crushed rock, bulk salt, granular de-icing salt, and sand	BMP 2-60

HISTORICAL SPILLS & LEAKS

The Aberdeen Operations Facility will retain spill history records and maintain a copy of their own spill records for a minimum of five years. A copy of the spill records will be produced if requested by Ecology. Records will include all of the significant spills or leaks of oils and toxic or hazardous pollutants that have occurred at areas either exposed to precipitation or that drain to a stormwater conveyance.

A significant spill or leak is defined as any quantity of contaminant that enters a storm drain or receiving water or contaminates soil and/or surface water at levels above state water quality standards. Also, any spill of oil or gas that exceeds the reportable quantity as described by the US Department of Energy is considered significant and will be documented and reported as necessary. Reportable quantities of chemicals used at each facility can be determined by entering the chemical name or chemical abstract service (CAS) number into the reportable quantity calculator on the US Department of Energy website (http://homer/ornl.gov/rq/).

There are no records of significant spills at the Operations, Vactor Solids facilities or Charley Creek Dump Site since the inception of the Phase II permit in 2007.

MONITORING PLAN

Stormwater monitoring is not required for discharges leaving the Aberdeen Public Works Operations or Vactor Solids facility. However, visual observation of stormwater effluent is included in all regular facility inspections.

ILLICIT DISCHARGES

The Public Works department manages the illicit discharge detection and elimination (IDDE) program for the City, which includes an illicit discharge ordinance, spill and illicit discharge hotline, business inspections, and illicit connection investigations.

The City of Aberdeen depends on its employees to implement spill prevention and to supply spill kit materials, clean up leaks and/or spills, and report spills. If the spill enters the separate storm drainage system, the Stormwater Section of Public Works at the City of Aberdeen shall be notified.

All spills must be cleaned up as per the City of Aberdeen Public Works IDDE Program. Additionally, all spills shall be reported to the SWPPP Coordinator and NPDES Coordinator as identified on the Pollution Prevention Team roster in Table 1. The Aberdeen Fire Department will be called for any spill or illicit discharge significant enough to endanger human health.

FACILITY BEST MANAGEMENT PRACTICES (BMPS)

BMPS FOR COMPLIANCE WITH THE NPDES PERMIT

The NPDES Permit requires the implementation of BMPs to comply with Ecology water quality standards; all known, available, and reasonable methods of prevention, control, and treatment (AKART); and federal technology-based treatment requirements will be applied. These standards and technology-based requirements have been adopted by Ecology as rules.

OPERATIONAL BMPS

Operational BMPs are defined by Ecology as a schedule of activities, prohibition of practices, maintenance procedures, employee training, good housekeeping, and other managerial practices to prevent or reduce the contamination of stormwater.

REQUIRED CITYWIDE BMPS

All facilities within the City must implement the following six City-wide operational source control BMPs:

BMP 1 - Eliminate illicit connections to storm drains

Every City facility must examine their plumbing systems to identify any illicit connections. Public Works manages the IDDE program for the City, which includes a spill and illicit discharge hotline, business inspections, and illicit connection investigation.

BMP 2 - Perform routine maintenance for stormwater drainage systems

Sediment and pollutants can accumulate over time in various components of stormwater collection, conveyance, and treatment systems, such as catch basins, ditches, storm drains, and oil/water separators. Regular maintenance of the stormwater drainage system decreases the amount of pollutants that are available to contaminate the stormwater. Routine cleaning of catch basins is one of the most important stormwater source control measures that a facility can implement. When catch basins are about 60 percent full of sediment, sediment removal efficiency drops; thus catch basins must be cleaned when sediment depth reaches 60% of capacity.

BMP 3 - Dispose of fluids and wastes properly

Every City facility must properly dispose of solid and liquid wastes, and contaminated stormwater. There are generally four options for disposal, depending on the type of waste:

- Municipal solid waste disposal facilities
- Hazardous waste treatment, storage, and disposal facilities
- Sanitary sewer

Many liquid wastes and contaminated stormwater (depending on the pollutants and associated concentrations) can be discharged to the sanitary sewer system, which is subject to approval by the King County Industrial Waste Program. If wastes cannot be legally discharged to a sanitary sewer, one of the three other disposal options must be used. Sumps or holding tanks may be useful for storing liquid wastes temporarily. Dangerous or hazardous wastes must be properly transported to an appropriate hazardous waste treatment, storage, and disposal facility, requiring appropriate documentation.

BMP 4 - Proper storage of solid wastes

City facilities must store wastes in suitable containers with leak-proof lids that are closed at all times. The waste storage area must be swept or otherwise cleaned frequently to collect all loose solids for proper disposal in a storage container. The area should not be hosed to collect or clean solids. Employees should be educated about the need to check for and replace leaking containers. Drains located near dumpsters, dumpster pads, and trash compactors should be connected to the sanitary sewer. Discharges to the sanitary sewer system are regulated by the City of Aberdeen WWTP. Accumulated waste should not be allowed to exceed the capacity of the storage container. If this occurs, another storage container should be obtained and used.

BMP 5 - Spill prevention and cleanup

A spill can be a one-time event, a continuous leak, or a frequent small leak. All three types of spills must be prevented. Leaks and spills of solid and liquid pollutants including oils, solvents, fuels, and dust from manufacturing operations on any exposed soil, vegetation, or paved area should be promptly contained and cleaned up. Spill cleanup kits should be available at activity locations where spills may occur. In order to reduce the potential for spills, the following practices should be implemented:

- Clearly label all containers that contain potential pollutants
- Store and transport liquid materials in appropriate containers with tight fitting lids
- Place drip pans underneath all containers, fittings, valves, where materials are likely to spill or leak
- Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied to capture any spilled materials
- Train employees on the safe techniques for handling materials that are used on the site and encourage them to check for leaks and spills
- Spill cleanup kits should be stored near areas with a high potential for spills, so that they are easily accessible in the event of a spill. The contents of the spill kit should be selected based on the types and quantities of materials stored or used at the facility and refilled when the materials are used

BMP 6 - Provide oversight and training for staff

All team members should be trained annually in the operation, maintenance, and inspections of BMPs. This training must be documented. Training staff about good housekeeping expectations is one of the most effective methods for keeping sediment and other pollutants out of stormwater and receiving waters.

Further actions include assigning one or more qualified individuals to be responsible for the oversight and training of staff regarding stormwater pollution control. Regular meetings should be held to review the overall operation of the BMPs, establish responsibilities for inspections and O&M, and determine responsibilities for emergency situations.

SCHEDULE FOR IMPLEMENTING ADDITIONAL OR ENHANCED BMP"S

If additional or enhanced BMPs are either ordered by Ecology or are necessary due to facility change or a self-inspection, a schedule for their implementation will be incorporated into this SWPPP within 30 days of the self-determination or Ecology order.

SOURCE-SPECIFIC STRUCTURAL SOURCE CONTROL BMPS

The table below provides source-specific structural source control BMPs for the City of Aberdeen Public Works Operations Center based on outdoor activities that could potentially impact stormwater quality. These are actions required in addition to the operational BMPs.

Table 4. Pollution Prevention BMP summaries

Pollution Generating	Source Control BMP	BMP Descriptions
Washing, pressure washing, and steam cleaning of vehicles, equipment, and building structures	BMP 2-64	• Conduct outside washing operation in a designated paved wash area • Convey the washwater to a sump (like a grit separator) and then to a sanitary sewer • The containment sump must have a positive control outlet valve for spill control • Collect the washwater from building structures and convey it to appropriate treatment such as a sanitary sewer
Loading and unloading of liquid or solid material	BMP 2-29	• Sweep outside, uncovered loading/unloading areas frequently to remove material that could otherwise be washed off by stormwater • Place drip pans at locations where leaks or spills may occur such as hose connections, hose reels and filler nozzles • Implement the PW Operations Emergency Spill Cleanup Plan
Fueling at dedicated station(s)	BMP 2-19	• Train employees on the proper use of fuel dispensers Post signs in accordance with the Uniform Fire Code (UFC) • Post "No Topping Off" signs • Cover fueling area • Dead-end sumps or other spill isolation system • Spill containment sill or berm around island (min. 4 inch in height) • Route stormwater from fueling island to sanitary sewer

Automotive repair and maintenance	BMP 2-34	• Inspect for leaks all vehicles, parts, and equipment stored temporarily outside and use drip pans as necessary • Remove batteries and liquids from vehicles in designated areas designed to prevent stormwater contamination • Store cracked batteries in a covered non-leaking secondary containment system • Empty oil and fuel filters before disposal • Provide for proper disposal of waste oil and fuel • Do not pour/convey washwater, liquid waste, or other pollutant into storm drains or to surface water • Do not connect maintenance and repair shop floor drains to storm drains or to surface water • Conduct all maintenance and repair of vehicles and equipment in a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated stormwater. • Do not hose down work areas. Use dry methods for cleaning leaked fluids • Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids,transmission fluids, and engine oils • Dispose of all chemicals, fuels, lubricants and other hazardous materials properly as per Fleet Services SOPs
Landscaping , lawn and vegetation management	BMP 2-23	• Implement integrated pest management plan • If pesticides/herbicides are used they must be carefully applied in accordance with label instructions • Do not dispose of collected vegetation into waterways or storm drainage systems • Use erosion control BMPs whenever soil is disturbed • Implement the PW Operations Emergency Spill Cleanup Plan • Maintain a list of selected pesticides and their specific uses; brands, formulations, application methods and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods • Mix pesticides/herbicides and clean the application equipment in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil. • Store pesticides in enclosed areas or in covered impervious containment • Ensure that pesticide contaminated stormwater or spills/leaks of pesticides are not discharged to storm drains • Store and maintain appropriate spill cleanup materials in a location known to all near the storage area • Clean up any spilled pesticides and ensure that the pesticide contaminated waste materials are kept in designated covered and contained areas

Painting, finishing, and coating of vehicles, buildings, and equipment	BMP 2-46	• Train employees in the careful application of paints, finishes, and coatings to reduce misuse and over spray • Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work • Wipe up spills with rags and other absorbent materials immediately • Do not hose down the area to a storm drain or receiving water or conveyance ditch to receiving water • Use a storm drain cover, filter fabric, or similarly effective runoff control device if dust, grit, or other pollutants may escape the work area and enter a catch basin • Use a ground cloth, pail, drum, drip pan, tarpaulin, or other protective device for activities such as paint mixing and tool cleaning outside or where spills can contaminate stormwater • Properly dispose of all wastes and prevent all uncontrolled releases to the air, ground or water • Clean brushes and tools covered with non-water-based paints, finishes, or other materials in a manner that allows collection of used solvents (e.g., paint thinner, turpentine, xylol, etc.) for recycling or proper disposal • Store toxic materials under cover during precipitation events and when not in use to prevent contact with stormwater • Enclose and/or contain all work while using a spray gun or conducting sand blasting • Do not conduct outside spraying, grit blasting, or sanding activities during windy conditions • Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain

Outdoor storage or transfer of solid raw materials, byproducts, or finished products	BMP 2-60	• Do not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or to a receiving water • Store bulk materials in a building or paved and bermed covered area • Place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent) over the material as necessary • Place curbs or berms along the perimeter of material • storage areas to prevent the run-on of uncontaminated stormwater and to collect and convey runoff to treatment • For large stockpiles that cannot be covered, implement containment practices at the perimeter of the site and at any catch basins as needed to prevent erosion and discharge of the stockpiled material offsite or to a storm drain • Ensure that contaminated stormwater is not discharged directly to catch basins without conveying through a • treatment BMP • Sweep paved storage areas regularly for collection and disposal of loose solid materials • Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers near the storage area

Outdoor portable container storage	BMP 2-55	• Store containers in impervious containment under a roof or other appropriate cover, or in a building and: • Place tight-fitting lids on all containers • Place drip pans beneath all mounted container taps and at all potential drip and spill locations during filling and unloading of containers • Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, overfills, and failure of piping systems • Check containers daily for leaks/spills. • Replace containers, and replace and tighten bungs in drums as needed • Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code (Appendix IV-D R.2) • Cover dumpsters, or keep them under cover such as a lean-to, to prevent the entry of stormwater and: • Replace or repair leaking garbage dumpsters • Drain dumpsters and/or dumpster pads to sanitary sewer • Keep dumpster lids closed • Keep containers with Dangerous Waste or other potential pollutant liquids inside a building unless this is impracticable due to site constraints or Uniform Fire Code requirements • Store containers in a designated area, which is covered, bermed or diked, paved and impervious in order to contain leaks and spills. The secondary containment shall be sloped to drain into a dead-end sump for the collection of leaks and small spills • For liquid wastes, surround the containers with secondary containment capable of holding 110 percent of the • volume contained in the largest container • For contaminated stormwater in the containment area, connect the sump outlet to a sanitary sewer or other approved treatment facility such as an API or CP oil/water separator, catch basin filter or other appropriate system • Equip the sump outlet with a normally closed valve to prevent the release of spilled or leaked liquids, especially flammables (compliance with Fire Codes), and dangerous liquids. This valve may be opened only for the conveyance of contaminated stormwater to treatment or to a tank truck or other appropriate vehicle for off-site treatment and/or disposal
Parking lot maintenance and storage of vehicles and equipment	BMP 2-48	• If washing of a parking lot is conducted, discharge the washwater to a sanitary sewer, if allowed by the local sewer authority, or other approved wastewater treatment system, or collect it for off-site disposal • Do not hose down the area to a storm drain or to a receiving water • Sweep parking lots, storage areas, and driveways, regularly to collect dirt, waste, and debris

REPORTING AND RECORD KEEPING

Records of all inspections, observations, and compliance records, as applicable, will be kept by the City of Aberdeen Public Works Operations facility on-site for a minimum of five years. Copies of these records shall be provided upon request.

INSPECTIONS

Staff identified in the pollution prevention team must regularly inspect all areas on City of Aberdeen-owned sites where heavy equipment maintenance or storage and material storage are exposed to stormwater and assess how well stormwater BMPs are operating. Complete, routine inspections must occur annually; a minimum of one additional inspection, preferably during the wet season (October through April) after trees have lost their leaves, is required to ensure that trash, debris, sediment, and/or vegetation is not blocking more than 10 percent of the inlet capacity.

It is recommended that additional inspections be performed as appropriate after major events (e.g., >1 inch of precipitation in 24 hours or environmental incident that causes contaminant release). Record the results of the inspections on the Public Works Utility Inspection forms.

If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the form for the extended repair schedule. In the interim, back-up measures must be implemented to ensure that stormwater quality is not diminished.

CONCLUDING STATEMENT

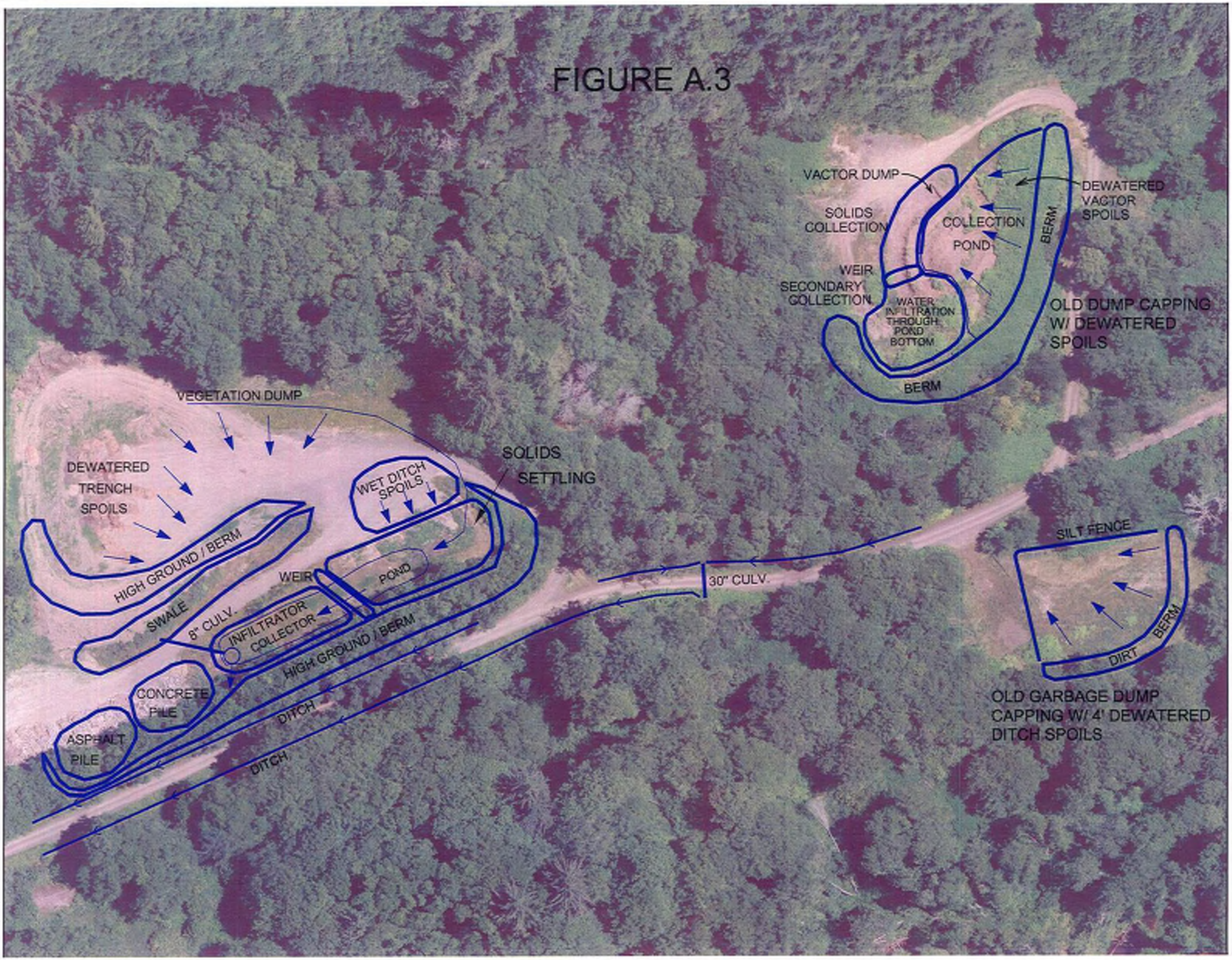
The intent of this SWPPP is to prevent the introduction of pollutants into stormwater at the Public Works Operations and Vactor Solids facilities. However, this SWPPP will not be effective at maximizing pollution reduction unless it is implemented fully.
Full implementation of this plan includes regular staff training as well as compliance checks to ensure that BMPs are being utilized consistently and correctly.

This document is considered a "living document", meaning that it can and should be updated as often as necessary to ensure that the State requirements of AKART (All Known And Reasonable Technology) and MEP (Maximum Extent Practicable) are employed to minimize the discharge of pollutants from these facilities.

APPENDIX A – FACILITY MAPS AND PLANS

Figure A.1 – Drainage Map; City of Aberdeen Operations and Vactor Solids Facilities

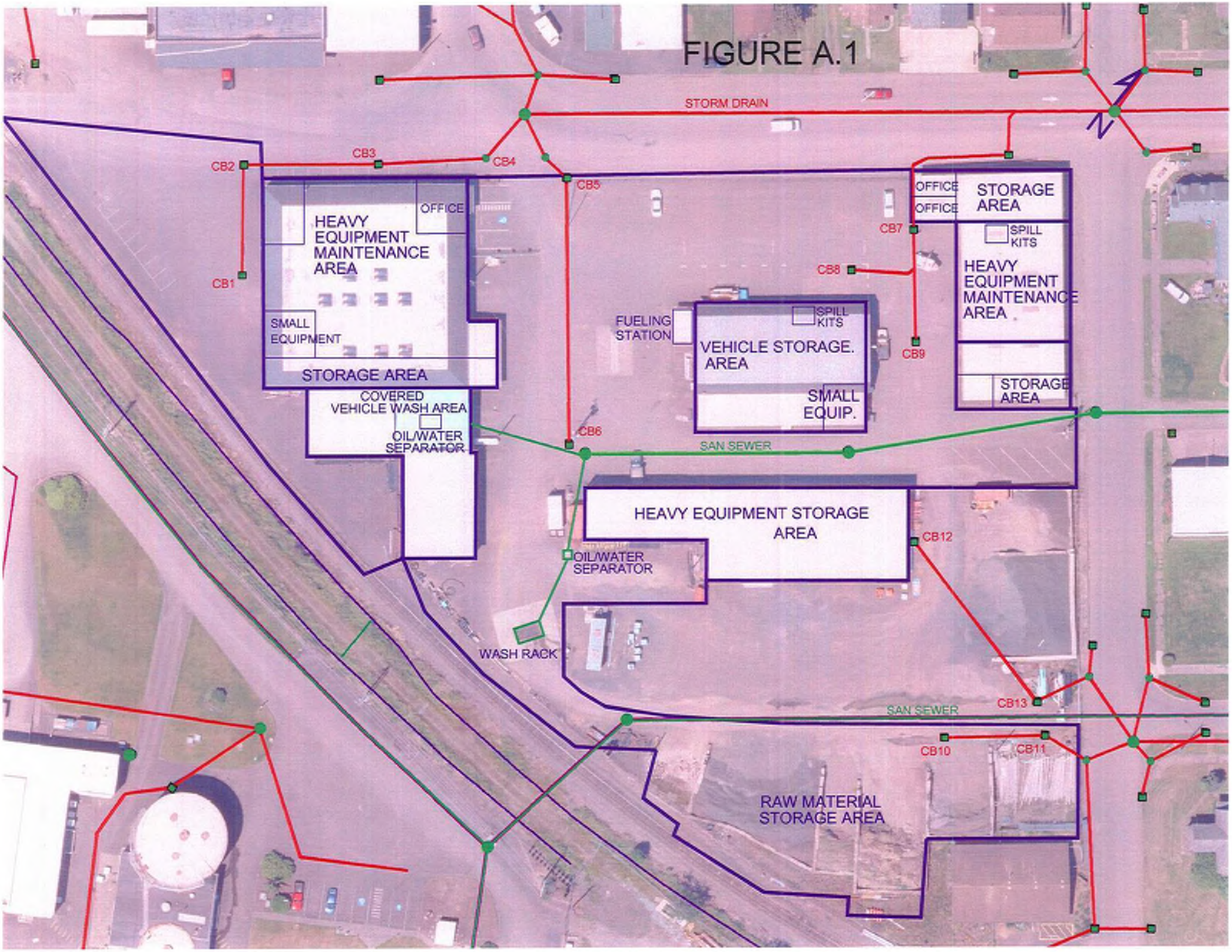
FIGURE A.3



VACTOR DUMP
DEWATERED VACTOR SPOILS
SOLIDS COLLECTION
COLLECTION POND
BERM
WEIR
SECONDARY COLLECTION
WATER INFILTRATION THROUGH POND BOTTOM
OLD DUMP CAPPING W/ DEWATERED SPOILS
BERM
VEGETATION DUMP
SOLIDS SETTLING
DEWATERED TRENCH SPOILS
WET DITCH SPOILS
HIGH GROUND / BERM
WEIR
POND
SWALE
8" CULV.
INFILTRATOR COLLECTOR
HIGH GROUND / BERM
30" CULV.
CONCRETE PILE
ASPHALT PILE
DITCH
DITCH
SILT FENCE
DIRT BERM
OLD GARBAGE DUMP CAPPING W/ 4' DEWATERED DITCH SPOILS

Figure A.2 – Site Map - Operations Facility

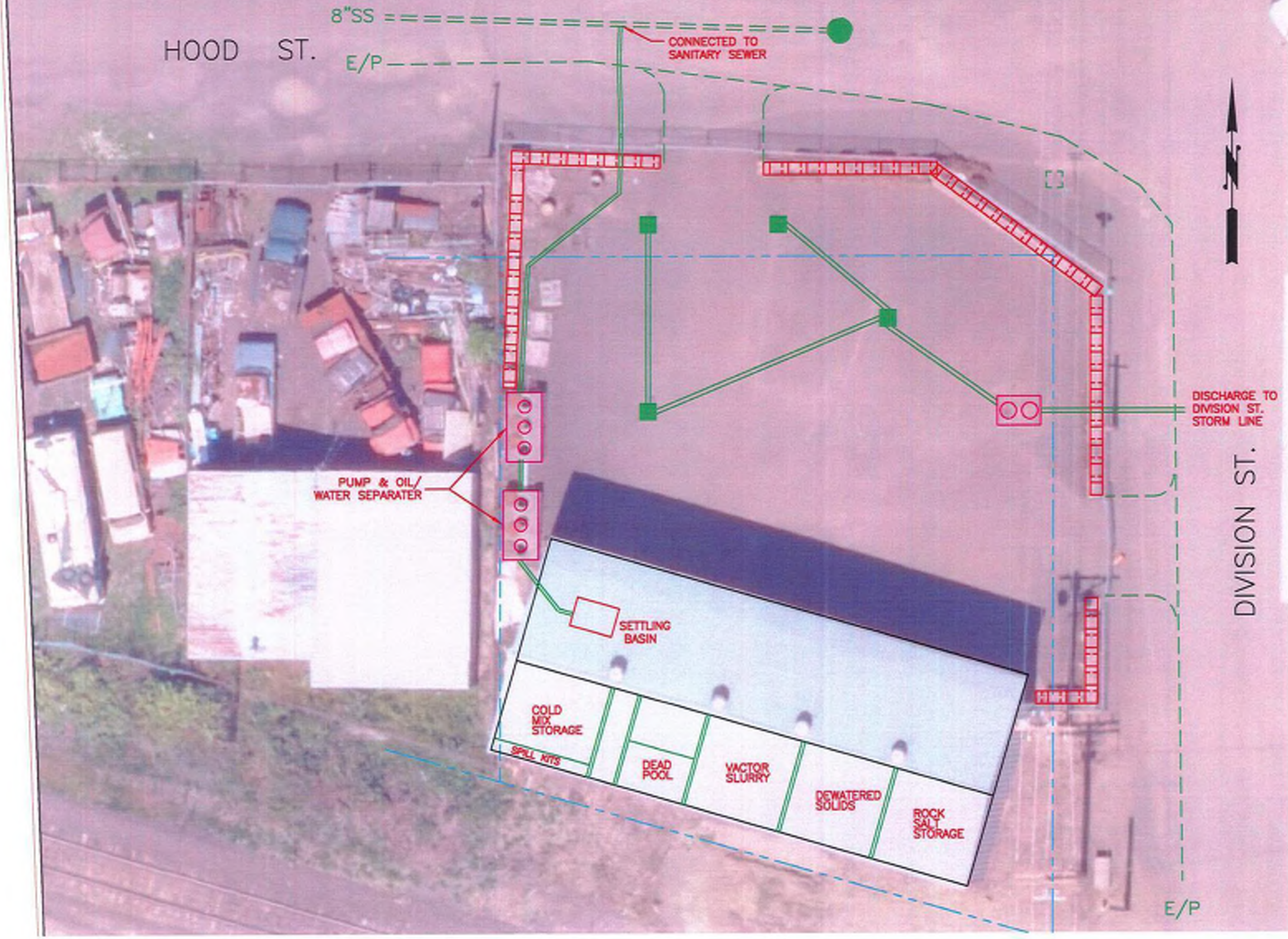
FIGURE A.1



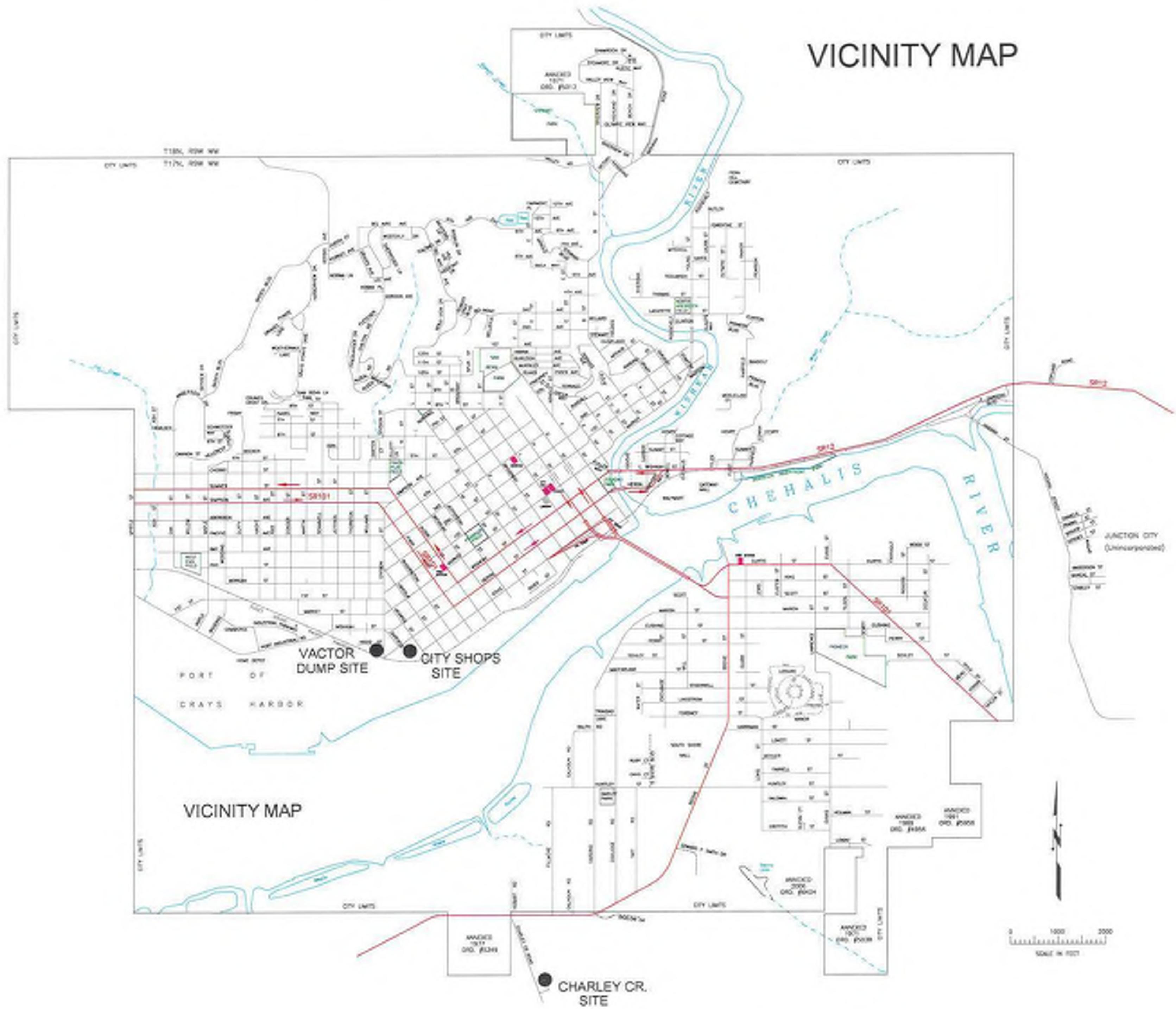
STORM DRAIN
N
CB1
CB2
CB3
CB4
CB5
CB6
CB7
CB8
CB9
CB10
CB11
CB12
CB13
HEAVY EQUIPMENT MAINTENANCE AREA
OFFICE
SMALL EQUIPMENT
STORAGE AREA
COVERED VEHICLE WASH AREA
OIL/WATER SEPARATOR
FUELING STATION
VEHICLE STORAGE. AREA
SPILL KITS
SMALL EQUIP.
OFFICE
OFFICE
STORAGE AREA
SPILL KITS
HEAVY EQUIPMENT MAINTENANCE AREA
STORAGE AREA
SAN SEWER
HEAVY EQUIPMENT STORAGE AREA
OIL/WATER SEPARATOR
WASH RACK
SAN SEWER
RAW MATERIAL STORAGE AREA

Figure A.3 – Site Map – Vactor Solids Facility

FIGURE A.2


8"SS
CONNECTED TO SANITARY SEWER
HOOD ST.
E/P
PUMP & OIL/ WATER SEPARATER
SETTLING BASIN
COLD MIX STORAGE
SPILL KITS
DEAD POOL
VACTOR SLURRY
DEWATERED SOLIDS
ROCK SALT STORAGE
DISCHARGE TO DIVISION ST. STORM LINE
DIVISION ST.
E/P

VICINITY MAP



APPENDIX B – FACILITY POLLUTION PREVENTION BMPS

The BMPs listed below are from the Washington State Department of Ecology's 2005 Stormwater Management Manual for Western Washington (SWMMWW), Volume IV, Chapter 2. The BMPs listed below are applicable to the City of Aberdeen Public Works Operations or Vactor Solids facilities. The BMP numbers are assigned by the corresponding page from the 2005 SWMMWW.

BMPs for Fueling At Dedicated Stations

Description of Pollutant Sources: A fueling station is a facility dedicated to the transfer of fuels from a stationary pumping station to mobile vehicles or equipment. It includes above or under-ground fuel storage facilities. In addition to general service gas stations, fueling may also occur at 24-hour convenience stores, construction sites, warehouses, car washes, manufacturing establishments, port facilities, and businesses with fleet vehicles. Typically, stormwater contamination at fueling stations is caused by leaks/spills of fuels, lube oils, radiator coolants, and vehicle washwater.

Pollutant Control Approach: New or substantially remodeled* fueling stations must be constructed on an impervious concrete pad under a roof to keep out rainfall and stormwater run-on. A treatment BMP must be used for contaminated stormwater and wastewaters in the fueling containment area.

** Substantial remodeling includes replacing the canopy, or relocating or adding one or more fuel dispensers in such a way that the Portland cement concrete (or equivalent) paving in the fueling area is modified.*

For new or substantially remodeled Fueling Stations:

Applicable Operational BMPs:

- Prepare an emergency spill response and cleanup plan (per BMPs for Spills of Oil and Hazardous Substances) and have designated trained person(s) available either on site or on call at all times to promptly and properly implement that plan and immediately cleanup all spills. Keep suitable cleanup materials, such as dry adsorbent materials, on site to allow prompt cleanup of a spill.
- Train employees on the proper use of fuel dispensers. Post signs in accordance with the Uniform Fire Code (UFC). Post "No Topping Off" signs (topping off gas tanks causes spillage and vents gas fumes to the air). Make sure that the automatic shutoff on the fuel nozzle is functioning properly.
- The person conducting the fuel transfer must be present at the fueling pump during fuel transfer, particularly at unattended or self-serve stations.
- Keep drained oil filters in a suitable container or drum.

Applicable Structural Source Control BMPs:

- Design the fueling island to control spills (dead-end sump or spill control separator in compliance with the UFC), and to treat collected stormwater and/or wastewater to required levels. Slope the concrete containment pad around the fueling island toward drains; either trench drains, catch basins and/or a dead-end sump. The slope of the drains shall not be less than 1 percent (Section 7901.8 of the UFC). Drains to treatment shall have a shutoff valve, which must be closed in the event of a spill. The spill control sump must be sized in compliance with Section 7901.8 of the UFC; or

- Design the fueling island as a spill containment pad with a sill or berm raised to a minimum of four inches (Section 7901.8 of the UFC) to prevent the runoff of spilled liquids and to prevent run-on of stormwater from the surrounding area. Raised sills are not required at the open-grate trenches that connect to an approved drainage-control system.
- The fueling pad must be paved with Portland cement concrete, or equivalent. Asphalt is not considered an equivalent material.
- The fueling island must have a roof or canopy to prevent the direct entry of precipitation onto the spill containment pad (see Figure 2.1). The roof or canopy should, at a minimum, cover the spill containment pad (within the grade break or fuel dispensing area) and preferably extend several additional feet to reduce the introduction of windblown rain. Convey all roof drains to storm drains outside the fueling containment area.

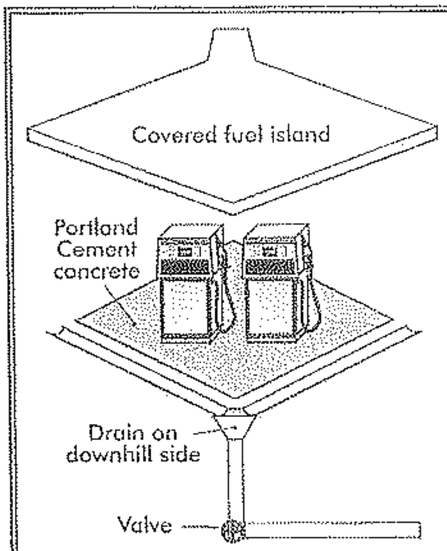


Figure 2.1 – Covered Fuel Island

- Stormwater collected on the fuel island containment pad must be conveyed to a sanitary sewer system, if approved by the sanitary authority; or to an approved treatment system such as an oil/water separator and a basic treatment BMP. (Basic treatment BMPs are listed in Volume V and include media filters and biofilters) Discharges from treatment systems to storm drains or surface water or to the ground must not display ongoing or recurring visible sheen and must not contain greater than a significant amount of oil and grease.

- Alternatively, stormwater collected on the fuel island containment pad may be collected and held for proper off site disposal.
- Conveyance of any fuel-contaminated stormwater to a sanitary sewer must be approved by the local sewer authority and must comply with pretreatment regulations (WAC 173-216-060). These regulations prohibit discharges that could "cause fire or explosion. An explosive or flammable mixture is defined under state and federal pretreatment regulations, based on a flash point determination of the mixture. If contaminated stormwater is determined not to be explosive, then it could be conveyed to a sanitary sewer system.
- Transfer the fuel from the delivery tank trucks to the fuel storage tank in impervious contained areas and ensure that appropriate overflow protection is used. Alternatively, cover nearby storm drains during the filling process and use drip pans under all hose connections.

Additional BMP for Vehicles 10 feet in height or greater

A roof or canopy may not be practicable at fueling stations that regularly fuel vehicles that are 10 feet in height or greater, particularly at industrial or WSDOT sites. At those types of fueling facilities, the following BMPs apply, as well as the applicable BMPs and fire prevention (UFC requirements) of this BMP for fueling stations:

- If a roof or canopy is impractical the concrete fueling pad must be equipped with emergency spill control, which includes a shutoff valve for the drainage from the fueling area. The valve must be closed in the event of a spill. An electronically actuated valve is preferred to minimize the time lapse between spill and containment. Spills must be cleaned up and disposed off-site in accordance with BMPs for Spills of Oil and Hazardous Substances.
- The valve may be opened to convey contaminated stormwater to a sanitary sewer, if approved by the sewer authority, or to oil removal treatment such as an API or CP oil/water separator, catchbasin insert, or equivalent treatment, and then to a basic treatment BMP. Discharges from treatment systems to storm drains or surface water or to the ground must not display ongoing or recurring visible sheen and must not contain greater than a significant amount of oil and grease.

An explosive or flammable mixture is defined under state and federal pretreatment regulations, based on a flash point determination of the mixture. If contaminated stormwater is determined not to be explosive or) then it could be conveyed to a sanitary sewer system.

BMPs for Landscaping and Lawn/ Vegetation Management

Description of Pollutant Sources: Landscaping can include grading, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering. Stormwater contaminants include toxic organic compounds, heavy metals, oils, total suspended solids, coliform bacteria, fertilizers, and pesticides.

Lawn and vegetation management can include control of objectionable weeds, insects, mold, bacteria and other pests with chemical pesticides and is conducted commercially at commercial, industrial, and residential sites. Examples include weed control on golf course lawns, access roads, and utility corridors and during landscaping; sap stain and insect control on lumber and logs; rooftop moss removal; killing nuisance rodents; fungicide application to patio decks, and residential lawn/plant care. Toxic pesticides such as pentachlorophenol, carbamates, and organometallics can be released to the environment by leaching and dripping from treated parts, container leaks, product misuse, and outside storage of pesticide contaminated materials and equipment. Poor management of the vegetation and poor application of pesticides or fertilizers can cause appreciable stormwater contamination.

Pollutant Control Approach: Control of fertilizer and pesticide applications, soil erosion, and site debris to prevent contamination of stormwater.

Develop and implement an Integrated Pest Management Plan (IPM) and use pesticides only as a last resort. If pesticides/herbicides are used they must be carefully applied in accordance with label instructions on U.S. Environmental Protection Agency (EPA) registered materials. Maintain appropriate vegetation, with proper fertilizer application where practicable, to control erosion and the discharge of stormwater pollutants. Where practicable grow plant species appropriate for the site, or adjust the soil properties of the subject site to grow desired plant species.

Applicable Operational BMPs for Landscaping:

- Install engineered soil/landscape systems to improve the infiltration and regulation of stormwater in landscaped areas.
- Do not dispose of collected vegetation into waterways or storm drainage systems.

Recommended Additional Operational BMPs for Landscaping:

- Conduct mulch-mowing whenever practicable
- Dispose of grass clippings, leaves, sticks, or other collected vegetation, by composting, if feasible.

- Use mulch or other erosion control measures when soils are exposed for more than one week during the dry season or two days during the rainy season.
- If oil or other chemicals are handled, store and maintain appropriate oil and chemical spill cleanup materials in readily accessible locations. Ensure that employees are familiar with proper spill cleanup procedures.
- Till fertilizers into the soil rather than dumping or broadcasting onto the surface. Determine the proper fertilizer application for the types of soil and vegetation encountered.
- Till a topsoil mix or composted organic material into the soil to create a well-mixed transition layer that encourages deeper root systems and drought-resistant plants.
- Use manual and/or mechanical methods of vegetation removal rather than applying herbicides, where practical.

Applicable Operational BMPs for the Use of Pesticides:

- Develop and implement an IPM (See section on IPM at end of BMP) and use pesticides only as a last resort.
- Implement a pesticide-use plan and include at a minimum: a list of selected pesticides and their specific uses; brands, formulations, application methods and quantities to be used; equipment use and maintenance procedures; safety, storage, and disposal methods; and monitoring, record keeping, and public notice procedures. All procedures shall conform to the requirements of Chapter 17.21 RCW and Chapter 16-228 WAC (Appendix IV-D R.7).
- Choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and/or have properties that strongly bind it to the soil. Any pest control used should be conducted at the life stage when the pest is most vulnerable. For example, if it is necessary to use a Bacillus thuringiens is application to control tent caterpillars, it must be applied before the caterpillars cocoon or it will be ineffective. Any method used should be site-specific and not used wholesale over a wide area.
- Apply the pesticide according to label directions. Under no conditions shall pesticides be applied in quantities that exceed manufacturer's instructions.
- Mix the pesticides and clean the application equipment in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.

- Store pesticides in enclosed areas or in covered impervious containment. Ensure that pesticide contaminated stormwater or spills/leaks of pesticides are not discharged to storm drains. Do not hose down the paved areas to a storm drain or conveyance ditch. Store and maintain appropriate spill cleanup materials in a location known to all near the storage area.
- Clean up any spilled pesticides and ensure that the pesticide contaminated waste materials are kept in designated covered and contained areas.
- The pesticide application equipment must be capable of immediate shutoff in the event of an emergency.
- Do not spray pesticides within 100 feet of open waters including wetlands, ponds, and streams, sloughs and any drainage ditch or channel that leads to open water except when approved by Ecology or the local jurisdiction. All sensitive areas including wells, creeks and wetlands must be flagged prior to spraying.
- As required by the local government or by Ecology, complete public posting of the area to be sprayed prior to the application.
- Spray applications should only be conducted during weather conditions as specified in the label direction and applicable local and state regulations. Do not apply during rain or immediately before expected rain.

Recommended Additional Operational BMPs for the use of pesticides:

- Consider alternatives to the use of pesticides such as covering or harvesting weeds, substitute vegetative growth, and manual weed control/moss removal.
- Consider the use of soil amendments, such as compost, that are known to control some common diseases in plants, such as Pythium root rot, ashy stem blight, and parasitic nematodes. The following are three possible mechanisms for disease control by compost addition (USEPA Publication 530-F-9-044):
    1. Successful competition for nutrients by antibiotic production;
    2. Successful predation against pathogens by beneficial microorganism; and
    3. Activation of disease-resistant genes in plants by composts.

Installing an amended soil/landscape system can preserve both the plant system and the soil system more effectively. This type of approach provides a soil/landscape system with adequate depth, permeability, and organic matter to sustain itself and continue working as an effective stormwater infiltration system and a sustainable nutrient cycle.

- Once a pesticide is applied, its effectiveness should be evaluated for possible improvement. Records should be kept showing the applicability and inapplicability of the pesticides considered.
- An annual evaluation procedure should be developed including a review of the effectiveness of pesticide applications, impact on buffers and sensitive areas (including potable wells), public concerns, and recent toxicological information on pesticides used/proposed for use. If individual or public potable wells are located in the proximity of commercial pesticide applications contact the regional Ecology hydrogeologist to determine if additional pesticide application control measures are necessary.
- Rinseate from equipment cleaning and/or triple-rinsing of pesticide containers should be used as product or recycled into product.
- The application equipment used should be capable of immediate shutoff in the event of an emergency.

For more information, contact the WSU Extension Home-Assist Program, (253) 445-4556, or Bio-Integral Resource Center (BIRC), P.O. Box 7414, Berkeley, CA.94707, or the Washington Department of Ecology to obtain "Hazardous Waste Pesticides" (Publication #89-41); and/or EPA to obtain a publication entitled "Suspended, Canceled and Restricted Pesticides" which lists all restricted pesticides and the specific uses that are allowed. Valuable information from these sources may also be available on the internet.

Applicable Operational BMPs for Vegetation Management:

- Use at least an eight-inch "topsoil" layer with at least 8 percent organic matter to provide a sufficient vegetation-growing medium. Amending existing landscapes and turf systems by increasing the percent organic matter and depth of topsoil can substantially improve the permeability of the soil, the disease and drought resistance of the vegetation, and reduce fertilizer demand. This reduces the demand for fertilizers, herbicides, and pesticides. Organic matter is the least water-soluble form of nutrients that can be added to the soil. Composted organic matter generally releases only between 2 and 10 percent of its total nitrogen annually, and this release corresponds closely to the plant growth cycle. If natural plant debris and mulch are returned to the soil, this system can continue recycling nutrients indefinitely.
- Select the appropriate turfgrass mixture for your climate and soil type. Certain tall fescues and rye grasses resist insect attack because the symbiotic endophytic fungi found naturally in their tissues repel or kill common leaf and stem-eating lawn insects. They do not, however, repel root-feeding lawn pests such as Crane Fly larvae, and are toxic to ruminants such as cattle and sheep. The fungus causes no known

adverse effects to the host plant or to humans. Endophytic grasses are commercially available and can be used in areas such as parks or golf courses where grazing does not occur. The local Cooperative Extension office can offer advice on which types of grass are best suited to the area and soil type.

- Use the following seeding and planting BMPs, or equivalent BMPs to obtain information on grass mixtures, temporary and permanent seeding procedures, maintenance of a recently planted area, and fertilizer application rates: Temporary Seeding, Mulching and Matting, Clear Plastic Covering, Permanent Seeding and Planting, and Sodding as described in Volume II).
- Selection of desired plant species can be made by adjusting the soil properties of the subject site. For example, a constructed wetland can be designed to resist the invasion of reed canary grass by layering specific strata of organic matters (e.g., compost forest product residuals) and creating a mildly acidic pH and carbon-rich soil medium. Consult a soil restoration specialist for site-specific conditions.
- Aerate lawns regularly in areas of heavy use where the soil tends to become compacted. Aeration should be conducted while the grasses in the lawn are growing most vigorously. Remove layers of thatch greater than ¾-inch deep.
- Mowing is a stress-creating activity for turfgrass. When grass is mowed too short its productivity is decreased and there is less growth of roots and rhizomes. The turf becomes less tolerant of environmental stresses, more disease prone and more reliant on outside means such as pesticides, fertilizers and irrigation to remain healthy. Set the mowing height at the highest acceptable level and mow at times and intervals designed to minimize stress on the turf. Generally mowing only 1/3 of the grass blade height will prevent stressing the turf.

Irrigation:

- The depth from which a plant normally extracts water depends on the rooting depth of the plant. Appropriately irrigated lawn grasses normally root in the top 6 to 12 inches of soil; lawns irrigated on a daily basis often root only in the top 1 inch of soil. Improper irrigation can encourage pest problems, leach nutrients, and make a lawn completely dependent on artificial watering. The amount of water applied depends on the normal rooting depth of the turfgrass species used, the available water holding capacity of the soil, and the efficiency of the irrigation system. Consult with the local water utility, Conservation District, or Cooperative Extension office to help determine optimum irrigation practices.

Fertilizer Management:

- Turfgrass is most responsive to nitrogen fertilization, followed by potassium and phosphorus. Fertilization needs vary by site depending on plant, soil and climatic conditions. Evaluation of soil nutrient levels through regular testing ensures the best possible efficiency and economy of fertilization. For details on soils testing, contact the local Conservation District or Cooperative Extension Service.
- Fertilizers should be applied in amounts appropriate for the target vegetation and at the time of year that minimizes losses to surface and ground waters. Do not fertilize during a drought or when the soil is dry. Alternatively, do not apply fertilizers within three days prior to predicted rainfall. The longer the period between fertilizer application and either rainfall or irrigation, the less fertilizer runoff occurs.
- Use slow release fertilizers such as methylene urea, IDBU, or resin coated fertilizers when appropriate, generally in the spring. Use of slow release fertilizers is especially important in areas with sandy or gravelly soils.
- Time the fertilizer application to periods of maximum plant uptake. Generally fall and spring applications are recommended, although WSU turf specialists recommend four fertilizer applications per year.
- Properly trained persons should apply all fertilizers. At commercial and industrial facilities fertilizers should not be applied to grass swales, filter strips, or buffer areas that drain to sensitive water bodies unless approved by the local jurisdiction.

Integrated Pest Management

An IPM program might consist of the following steps:

Step 1: Correctly identify problem pests and understand their life cycle

Step 2: Establish tolerance thresholds for pests.

Step 3: Monitor to detect and prevent pest problems.

Step 4: Modify the maintenance program to promote healthy plants and discourage pests.

Step 5: Use cultural, physical, mechanical, or biological controls first if pests exceed the tolerance thresholds.

Step 6: Evaluate and record the effectiveness of the control and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.

For an elaboration of these steps refer to Appendix IV-F.

BMPs for Loading and Unloading Areas for Liquid or Solid Material

Description of Pollutant Sources: Loading/unloading of liquid and solid materials at industrial and commercial facilities are typically conducted at shipping and receiving, outside storage, fueling areas, etc. Materials transferred can include products, raw materials, intermediate products, waste materials, fuels, scrap metals, etc. Leaks and spills of fuels, oils, powders, organics, heavy metals, salts, acids, alkalis, etc. during transfer are potential causes of stormwater contamination. Spills from hydraulic line breaks are a common problem at loading docks.

Pollutant Control Approach: Cover and contain the loading/ unloading area where necessary to prevent run-on of stormwater and runoff of contaminated stormwater.

Applicable Operational BMPs:

At All Loading/ Unloading Areas:

- A significant amount of debris can accumulate at outside, uncovered loading/unloading areas. Sweep these surfaces frequently to remove material that could otherwise be washed off by stormwater. Sweep outside areas that are covered for a period of time by containers, logs, or other material after the areas are cleared.
- Place drip pans, or other appropriate temporary containment device, at locations where leaks or spills may occur such as hose connections, hose reels and filler nozzles. Drip pans shall always be used when making and breaking connections (see Figure 2.2). Check loading/ unloading equipment such as valves, pumps, flanges, and connections regularly for leaks and repair as needed.

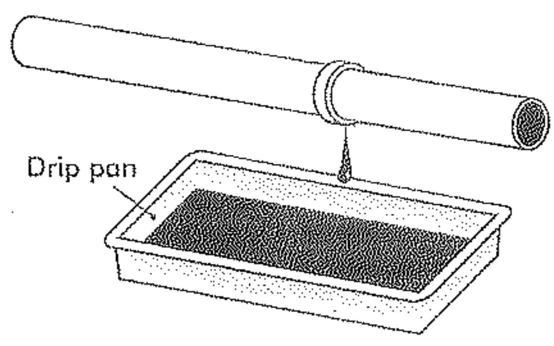


Figure 2.2 – Drip Pan

At Tanker Truck and Rail Transfer Areas to Above/Below-ground Storage Tanks:

- To minimize the risk of accidental spillage, prepare an "Operations Plan" that describes procedures for loading/unloading. Train the employees, especially fork lift operators, in its execution and post it or otherwise have it readily available to employees.
- Report spills of reportable quantities to Ecology (refer to Section 2.1 for telephone numbers of Ecology Regional Offices).
- Prepare and implement an Emergency Spill Cleanup Plan for the facility (BMP Spills of Oil and Hazardous Substances) which includes the following BMPs:
  - Ensure the clean up of liquid/solid spills in the loading/ unloading area immediately, if a significant spill occurs, and, upon completion of the loading/unloading activity, or, at the end of the working day.
  - Retain and maintain an appropriate oil spill cleanup kit on-site for rapid cleanup of material spills. (See BMP Spills of Oil and Hazardous Substances).
  - Ensure that an employee trained in spill containment and cleanup is present during loading/unloading.

At Rail Transfer Areas to Above/below-ground Storage Tanks: Install a drip pan system as illustrated (see Figure 2.3) within the rails to collect spills/leaks from tank cars and hose connections, hose reels, and filler nozzles.

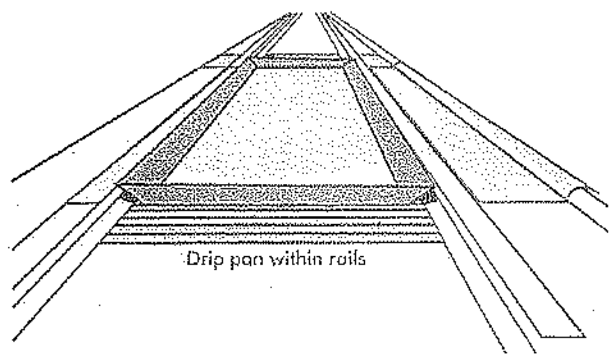


Figure 2.3 – Drip Pan Within Rails

Loading/Unloading from/to Marine Vessels: Facilities and procedures for the loading or unloading of petroleum products must comply with Coast Guard requirements specified in Appendix IV-D R.5.

Transfer of Small Quantities from Tanks and Containers: Refer to BMPs Storage of Liquids in Permanent Above-Ground Tanks, and Storage of Liquid, Food Waste, or Dangerous Waste Containers, for requirements on the transfer of small quantities from tanks and containers, respectively.

Applicable Structural Source Control BMPs:

At All Loading/ Unloading Areas:

- Consistent with Uniform Fire Code requirements (Appendix IV-D R.2) and to the extent practicable, conduct unloading or loading of solids and liquids in a manufacturing building, under a roof, or lean-to, or other appropriate cover.
- Berm, dike, and/or slope the loading/unloading area to prevent run-on of stormwater and to prevent the runoff or loss of any spilled material from the area.
- Large loading areas frequently are not curbed along the shoreline. As a result, stormwater passes directly off the paved surface into surface water. Place curbs along the edge, or slope the edge such that the stormwater can flow to an internal storm drain system that leads to an approved treatment BMP.
- Pave and slope loading/unloading areas to prevent the pooling of water. The use of catch basins and drain lines within the interior of the paved area must be minimized as they will frequently be covered by material, or they should be placed in designated "alleyways" that are not covered by material, containers or equipment.

Recommended Structural Source Control BMP: For the transfer of pollutant liquids in areas that cannot contain a catastrophic spill, install an automatic shutoff system in case of unanticipated off-loading interruption (e.g. coupling break, hose rupture, overfill, etc.).

At Loading and Unloading Docks:

- Install/maintain overhangs, or door skirts that enclose the trailer end (see Figures 2.4 and 2.5) to prevent contact with rainwater.
- Design the loading/unloading area with berms, sloping, etc. to prevent the run-on of stormwater.
- Retain on-site the necessary materials for rapid cleanup of spills.

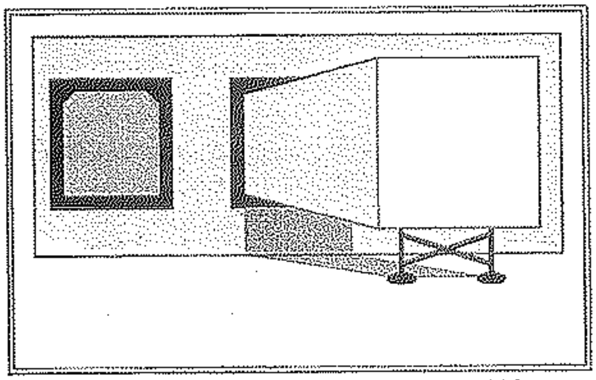


Figure 2.4 – Loading Dock with Door Skirt

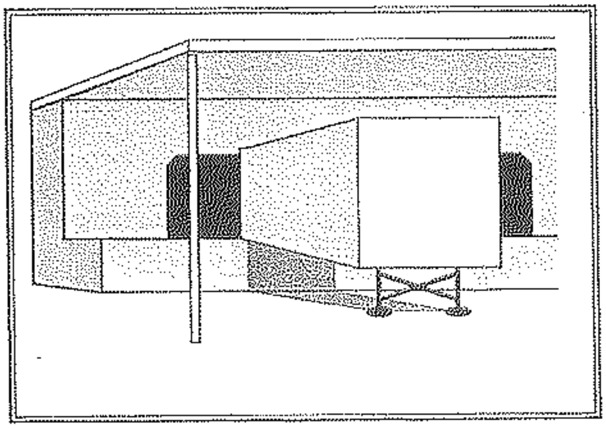


Figure 2.5 – Loading Dock with Overhang

At Tanker Truck Transfer Areas to Above/Below-Ground Storage Tanks:

- Pave the area on which the transfer takes place. If any transferred liquid, such as gasoline, is reactive with asphalt pave the area with Portland cement concrete.
- Slope, berm, or dike the transfer area to a dead-end sump, spill containment sump, a spill control (SC) oil/water separator, or other spill control device. The minimum spill retention time should be 15 minutes at the greater flow rate of the highest fuel dispenser nozzle through-put rate, or the peak flow rate of the 6-month, 24-hour storm event over the surface of the containment pad, whichever is greater. The volume of the spill containment sump should be a minimum of 50 gallons with an adequate grit sedimentation volume.

BMPs for Maintenance and Repair of Vehicles and Equipment

Description of Pollutant Sources: Pollutant sources include parts/vehicle cleaning, spills/leaks of fuel and other liquids, replacement of liquids, outdoor storage of batteries/liquids/parts, and vehicle parking.

Pollutant Control Approach: Control of leaks and spills of fluids using good housekeeping and cover and containment BMPs.

Applicable Operational BMPs:

- Inspect for leaks all incoming vehicles, parts, and equipment stored temporarily outside.
- Use drip pans or containers under parts or vehicles that drip or that are likely to drip liquids, such as during dismantling of liquid containing parts or removal or transfer of liquids.
- Remove batteries and liquids from vehicles and equipment in designated areas designed to prevent stormwater contamination. Store cracked batteries in a covered non-leaking secondary containment system.
- Empty oil and fuel filters before disposal. Provide for proper disposal of waste oil and fuel.
- Do not pour/convey washwater, liquid waste, or other pollutant into storm drains or to surface water. Check with the local sanitary sewer authority for approval to convey to a sanitary sewer.
- Do not connect maintenance and repair shop floor drains to storm drains or to surface water. To allow for snowmelt during the winter a drainage trench with a sump for particulate collection can be installed and used only for draining the snowmelt and not for discharging any vehicular or shop pollutants.

Applicable Structural Source Control BMPs:

- Conduct all maintenance and repair of vehicles and equipment in a building, or other covered impervious containment area that is sloped to prevent run-on of uncontaminated stormwater and runoff of contaminated stormwater.
- The maintenance of refrigeration engines in refrigerated trailers may be conducted in the parking area with due caution to avoid the release of engine or refrigeration fluids to storm drains or surface water.
- Park large mobile equipment, such as log stackers, in a designated contained area.

For additional applicable BMPs refer to the following BMPs: Fueling at Dedicated Stations; Washing and Steam Cleaning Vehicle/Equipment/Building Structures; Loading and Unloading Areas for Liquid or Solid Material; Storage of Liquids in Permanent Above-Ground Tanks; Storage of Liquid, Food Waste, or Dangerous Waste Containers;

Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products; Spills of Oil and Hazardous Substances; Illicit Connections to Storm Drains; and other BMPs provided in this chapter.

Note that a treatment BMP is applicable for contaminated stormwater.

Applicable Treatment BMPs: Contaminated stormwater runoff from vehicle staging and maintenance areas must be conveyed to a sanitary sewer, if allowed by the local sewer authority, or to an API or CP oil and water separator followed by a basic treatment BMP (See Volume V), applicable filter, or other equivalent oil treatment system.

Recommended Additional Operational BMPs:

- Consider storing damaged vehicles inside a building or other covered containment, until all liquids are removed. Remove liquids from vehicles retired for scrap.
- Clean parts with aqueous detergent based solutions or non-chlorinated solvents such as kerosene or high flash mineral spirits, and/or use wire brushing or sand blasting whenever practicable. Avoid using toxic liquid cleaners such as methylene chloride, 1,1,1-trichloroethane, trichloroethylene or similar chlorinated solvents. Choose cleaning agents that can be recycled.
- Inspect all BMPs regularly, particularly after a significant storm. Identify and correct deficiencies to ensure that the BMPs are functioning as intended.
- Avoid hosing down work areas. Use dry methods for cleaning leaked fluids.
- Recycle greases, used oil, oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, transmission fluids, and engine oils (see Appendix IV-C).
- Do not mix dissimilar or incompatible waste liquids stored for recycling.

BMPs for Painting/Finishing/ Coating of Vehicles/Boats/ Buildings/ Equipment

Description of Pollutant Sources: Surface preparation and the application of paints, finishes and/or coatings to vehicles, boats, buildings, and/or equipment outdoors can be sources of pollutants. Potential pollutants include organic compounds, oils and greases, heavy metals, and suspended solids.

Pollutant Control Approach: Cover and contain painting and sanding operations and apply good housekeeping and preventive maintenance practices to prevent the contamination of stormwater with painting oversprays and grit from sanding.

Applicable Operational BMPs:

- Train employees in the careful application of paints, finishes, and coatings to reduce misuse and over spray. Use ground or drop cloths underneath outdoor painting, scraping, sandblasting work, and properly clean and temporarily store collected debris daily.
- Do not conduct spraying, blasting, or sanding activities over open water or where wind may blow paint into water.
- Wipe up spills with rags and other absorbent materials immediately. Do not hose down the area to a storm drain or receiving water or conveyance ditch to receiving water.
- On marine dock areas sweep rather than hose down debris. Collect any hose water generated and convey to appropriate treatment and disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control device if dust, grit, washwater, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the workday. Collect contaminated runoff and solids and properly dispose of such wastes before removing the containment device(s) at the end of the workday.
- Use a ground cloth, pail, drum, drip pan, tarpaulin, or other protective device for activities such as paint mixing and tool cleaning outside or where spills can contaminate stormwater.
- Properly dispose of all wastes and prevent all uncontrolled releases to the air, ground or water.
- Clean brushes and tools covered with non-water-based paints, finishes, or other materials in a manner that allows collection of used solvents (e.g., paint thinner, turpentine, xylol, etc.) for recycling or proper disposal.
- Store toxic materials under cover (tarp, etc.) during precipitation events and when not in use to prevent contact with stormwater.

Applicable Structural Source Control BMPs: Enclose and/or contain all work while using a spray gun or conducting sand blasting and in compliance with applicable air pollution control, OSHA, and WISHA requirements. Do not conduct outside spraying, grit blasting, or sanding activities during windy conditions which render containment ineffective.

Recommended Additional Operational BMPs:

- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain.
- Recycle paint, paint thinner, solvents, pressure washwater, and any other recyclable materials.
- Use efficient spray equipment such as electrostatic, air-atomized, high volume/low pressure, or gravity feed spray equipment.
- Purchase recycled paints, paint thinner, solvents, and other products if feasible.

BMPs for Parking and Storage of Vehicles and Equipment

Description of Pollutant Sources: Public and commercial parking lots such as retail store, fleet vehicle (including rent-a-car lots and car dealerships), equipment sale and rental parking lots, and parking lot driveways, can be sources of toxic hydrocarbons and other organic compounds, oils and greases, metals, and suspended solids caused by the parked vehicles.

Pollutant Control Approach: If the parking lot is a **high-use site** as defined below, provide appropriate oil removal equipment for the contaminated stormwater runoff.

Applicable Operational BMPs:

- If washing of a parking lot is conducted, discharge the washwater to a sanitary sewer, if allowed by the local sewer authority, or other approved wastewater treatment system, or collect it for off-site disposal.
- Do not hose down the area to a storm drain or to a receiving water. Sweep parking lots, storage areas, and driveways, regularly to collect dirt, waste, and debris.

Applicable Treatment BMPs: An oil removal system such as an API or CP oil and water separator, catch basin filter, or equivalent BMP, approved by the local jurisdiction, is applicable for parking lots meeting the threshold vehicle traffic intensity level of a *high-use site.*

Vehicle High-Use Sites

Establishments subject to a vehicle high-use intensity have been determined to be significant sources of oil contamination of stormwater. Examples of potential high use areas include customer parking lots at fast food stores, grocery stores, taverns, restaurants, large shopping malls, discount warehouse stores, quick-lube shops, and banks. If the PGIS for a high-use site exceeds 5,000 square feet in a threshold discharge area, and oil control BMP from the Oil Control Menu is necessary. A high-use site at a commercial or industrial establishment has one of the following characteristics: (Gaus/King County, 1994)

- Is subject to an expected average daily vehicle traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area: or
- Is subject to storage of a fleet of 25 or more diesel vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.).

BMPs for Storage of Liquid, Food Waste, or Dangerous Waste Containers

Description of Pollutant Sources: Steel and plastic drums with volumetric capacities of 55 gallons or less are typically used at industrial facilities for container storage of liquids and powders. The BMPs specified below apply to container(s) located outside a building used for temporary storage of accumulated food wastes, vegetable or animal grease, used oil, liquid feedstock or cleaning chemical, or Dangerous Wastes (liquid or solid) unless the business is permitted by Ecology to store the wastes (Appendix IV-D R.4). Leaks and spills of pollutant materials during handling and storage are the primary sources of pollutants. Oil and grease, acid/alkali pH, BOD, COD are potential pollutant constituents.

Pollutant Control Approach: Store containers in impervious containment under a roof or other appropriate cover, or in a building. For roll-containers (for example, dumpsters) that are picked up directly by the collection truck, a filet can be placed on both sides of the curb to facilitate moving the dumpster. If a storage area is to be used on-site for less than 30 days, a portable temporary secondary system like that shown in Figure 2.8 can be used in lieu of a permanent system as described above.

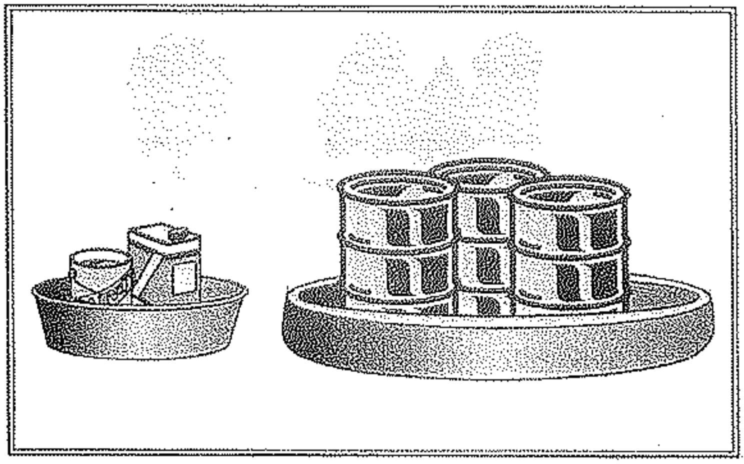


Figure 2.8 – Secondary Containment System

Applicable Operational BMPs:

- Place tight-fitting lids on all containers.
- Place drip pans beneath all mounted container taps and at all potential drip and spill locations during filling and unloading of containers.
- Inspect container storage areas regularly for corrosion, structural failure, spills, leaks, overfills, and failure of piping systems. Check containers daily for leaks/spills. Replace containers, and replace and tighten bungs in drums as needed.
- Businesses accumulating Dangerous Wastes that do not contain free liquids need only to store these wastes in a sloped designated area with

the containers elevated or otherwise protected from storm water run-on.

- Drums stored in an area where unauthorized persons may gain access must be secured in a manner that prevents accidental spillage, pilferage, or any unauthorized use (see Figure 2.9).

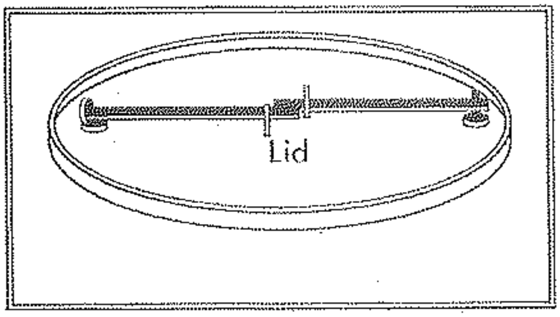


Figure 2.9 – Locking System for Drum Lid

- If the material is a Dangerous Waste, the business owner must comply with any additional Ecology requirements as specified in Appendix IV-D R.3.
- Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code (Appendix IV-D R.2).
- Cover dumpsters, or keep them under cover such as a lean-to, to prevent the entry of stormwater. Replace or repair leaking garbage dumpsters.
- Drain dumpsters and/or dumpster pads to sanitary sewer. Keep dumpster lids closed. Install waterproof liners.

Applicable Structural Source Control BMPs:

- Keep containers with Dangerous Waste, food waste, or other potential pollutant liquids inside a building unless this is impracticable due to site constraints or Uniform Fire Code requirements.
- Store containers in a designated area, which is covered, bermed or diked, paved and impervious in order to contain leaks and spills (see Figure 2.10). The secondary containment shall be sloped to drain into a dead-end sump for the collection of leaks and small spills.
- For liquid wastes, surround the containers with a dike as illustrated in Figure 2.10. The dike must be of sufficient height to provide a volume of either 10 percent of the total enclosed container volume or 110 percent of the volume contained in the largest container, whichever is greater, or, if a single container, 110 percent of the volume of that container.

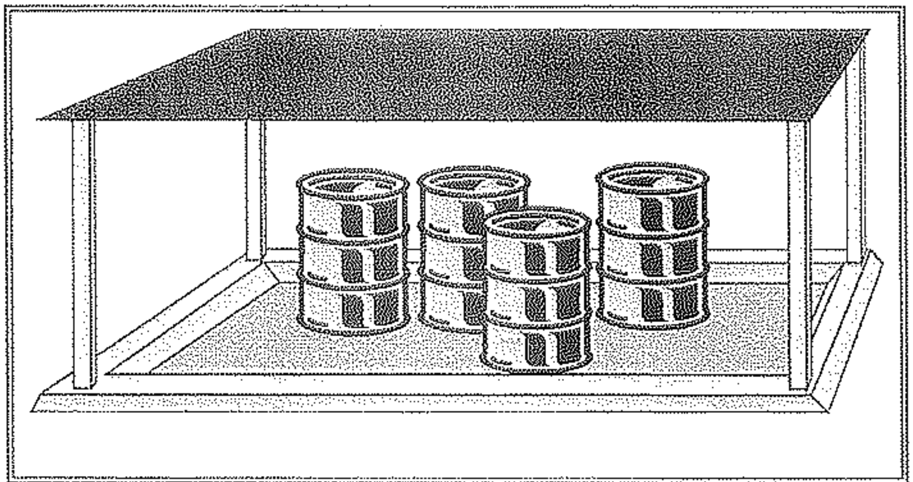


Figure 2.10 – Covered and Bermed Containment Area

- Where material is temporarily stored in drums, a containment system can be used as illustrated, in lieu of the above system (see Figure 2.8).
- Place containers mounted for direct removal of a liquid chemical for use by employees inside a containment area as described above. Use a drip pan during liquid transfer (see Figure 2.11).

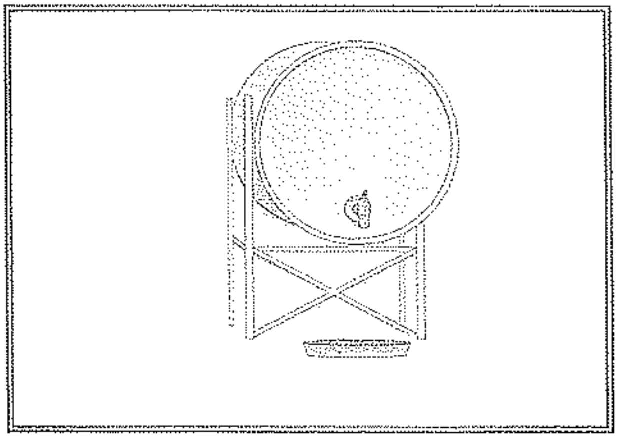


Figure 2.11 – Mounted Container - with drip pan

Applicable Treatment BMP:

Note that a treatment BMP is applicable for contaminated stormwater from drum storage areas.

- For contaminated stormwater in the containment area, connect the sump outlet to a sanitary sewer, if approved by the local Sewer Authority, or to appropriate treatment such as an API or CP oil/water separator, catch basin filter or other appropriate system (see Volume V). Equip the sump outlet with a normally closed valve to prevent the release of spilled or leaked liquids, especially flammables (compliance with Fire Codes), and dangerous liquids. This valve may be opened only for the conveyance of contaminated stormwater to treatment.
- Another option for discharge of contaminated stormwater is to pump it from a dead-end sump or catchment to a tank truck or other appropriate vehicle for off-site treatment and/or disposal.

BMPs for Storage or Transfer (Outside) of Solid Raw Materials, By-Products, or Finished Products

Description of Pollutant Sources: Solid raw materials, by-products, or products such as gravel, sand, salts, topsoil, compost, logs, sawdust, wood chips, lumber and other building materials, concrete, and metal products sometimes are typically stored outside in large piles, stacks, etc. at commercial or industrial establishments. Contact of outside bulk materials with stormwater can cause leachate, and erosion of the stored materials. Contaminants include TSS, BOD, organics, and dissolved salts (sodium, calcium, and magnesium chloride, etc).

Pollutant Control Approach: Provide impervious containment with berms, dikes, etc. and/or cover to prevent run-on and discharge of leachate pollutant(s) and TSS.

Applicable Operational BMP: Do not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or to a receiving water.

Applicable Structural Source Control BMP Options: Choose one or more of the source control BMP options listed below for stockpiles greater than 5 cubic yards of erodible or water soluble materials such as soil, road deicing salts, compost, unwashed sand and gravel, sawdust, etc. Also included are outside storage areas for solid materials such as logs, bark, lumber, metal products, etc.

- Store in a building or paved and bermed covered area as shown in Figure 2.13, or;

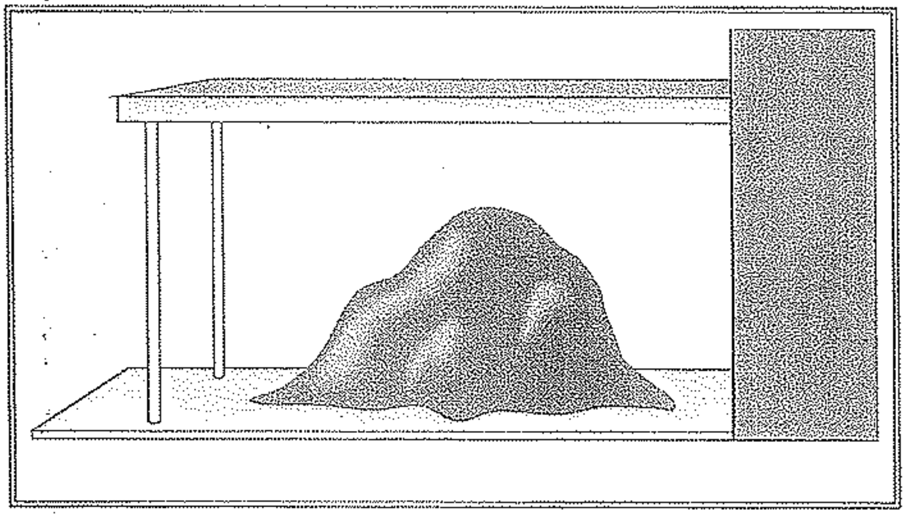


Figure 2.13 – Covered Storage Area for Bulk Solids (include berm if needed)

- Place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent) over the material as illustrated (see Figure 2.14), or;

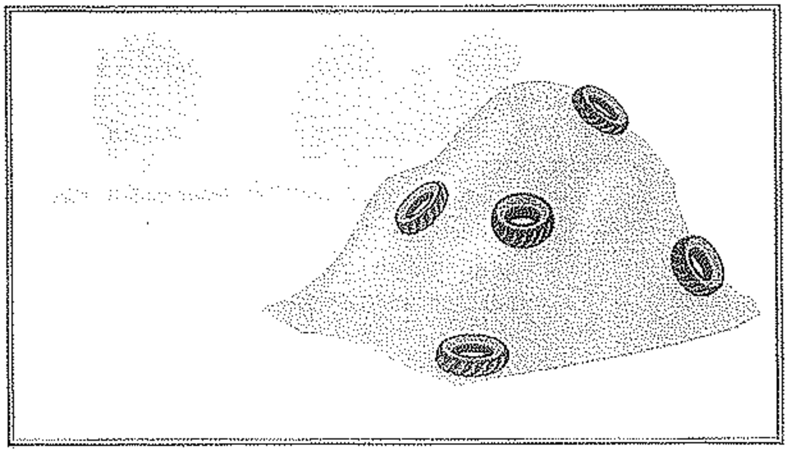


Figure 2.14 – Material Covered with Plastic Sheeting

- Pave the area and install a stormwater drainage system. Place curbs or berms along the perimeter of the area to prevent the run-on of uncontaminated stormwater and to collect and convey runoff to treatment. Slope the paved area in a manner that minimizes the contact between stormwater (e.g., pooling) and leachable materials in compost, logs, bark, wood chips, etc.
- For large stockpiles that cannot be covered, implement containment practices at the perimeter of the site and at any catch basins as needed to prevent erosion and discharge of the stockpiled material offsite or to a storm drain. Ensure that contaminated stormwater is not discharged directly to catch basins without conveying through a treatment BMP.

Applicable Treatment BMP: Convey contaminated stormwater from the stockpile area to a wet pond, wet vault, settling basin, media filter, or other appropriate treatment system depending on the contamination.

Recommended Additional Operational BMPs:

- Maintain drainage areas in and around storage of solid materials with a minimum slope of 1.5 percent to prevent pooling and minimize leachate formation. Areas should be sloped to drain stormwater to the perimeter where it can be collected, or to internal drainage "alleyways" where material is not stockpiled.
- Sweep paved storage areas regularly for collection and disposal of loose solid materials.
- If and when feasible, collect and recycle water-soluble materials (leachates) to the stockpile.
- Stock cleanup materials, such as brooms, dustpans, and vacuum sweepers near the storage area.

BMPs for Washing and Steam Cleaning Vehicles/ Equipment/ Building Structures

Description of Pollutant Sources: Vehicles, aircraft, vessels, and transportation, restaurant cooking, carpet cleaning, and industrial equipment, and large buildings may be commercially cleaned with low or high pressure water or steam. This includes frequent "charity" car washes at gas stations and commercial parking lots. The cleaning can include hand washing, scrubbing, sanding, etc. Washwater from cleaning activities can contain oil and grease, suspended solids, heavy metals, soluble organics, soaps, and detergents that can contaminate stormwater.

Pollutant Control Approach: The preferred approach is to cover and/or contain the cleaning activity, or conduct the activity inside a building, to separate the uncontaminated stormwater from the pollutant sources. Washwater must be conveyed to a sanitary sewer after approval by the local sewer authority, temporarily stored before proper disposal, or recycled, with no discharge to the ground, to a storm drain, or to surface water. Washwater may be discharged to the ground after proper treatment in accordance with *Ecology guidance WQ-95-056, "Vehicle and Equipment Washwater Discharges," June 1995*. The quality of any discharge to the ground after proper treatment must comply with Ecology's Ground Water Quality Standards, Chapter 173-200 WAC. Contact the local Ecology Regional Office for an NPDES Permit application for discharge of washwater to surface water or to a storm drain after on-site treatment.

Applicable Structural Source Control BMPs: Conduct vehicle/ equipment washing in one of the following locations:

- At a commercial washing facility in which the washing occurs in an enclosure and drains to the sanitary sewer, or
- In a building constructed specifically for washing of vehicles and equipment, which drains to a sanitary sewer.

Conduct outside washing operation in a designated wash area with the following features:

- In a paved area, constructed as a spill containment pad to prevent the run-on of stormwater from adjacent areas. Slope the spill containment area so that washwater is collected in a containment pad drain system with perimeter drains, trench drains or catchment drains. Size the containment pad to extend out a minimum of four feet on all sides of the vehicles and/or equipment being washed.
- Convey the washwater to a sump (like a grit separator) and then to a sanitary sewer (if allowed by the local Sewer Authority), or other appropriate wastewater treatment or recycle system. An NPDES permit may be required for any washwater discharge to a storm drain or receiving water after treatment. Contact the Ecology regional office for NPDES Permit requirements.

- The containment sump must have a positive control outlet valve for spill control with live containment volume, and oil/water separation. Size the minimum live storage volume to contain the maximum expected daily washwater flow plus the sludge storage volume below the outlet pipe. The outlet valve will be shut during the washing cycle to collect the washwater in the sump. The valve should remain shut for at least two hours following the washing operation to allow the oil and solids to separate before discharge to a sanitary sewer. (See Ecology Publication WQ-95-056)

Note that the purpose of the valve is to convey only washwater and contaminated stormwater to a treatment system.

- The inlet valve in the discharge pipe should be closed when washing is not occurring, thereby preventing the entry of uncontaminated stormwater into the pretreatment/ treatment system. The stormwater can then drain into the conveyance/discharge system outside of the wash pad (essentially bypasses the washwater treatment/conveyance system). Post signs to inform people of the operation and purpose of the valve. Clean the concrete pad thoroughly until there is no foam or visible sheen in the washwater prior to closing the inlet valve and allowing uncontaminated stormwater to overflow and drain off the pad. (See Figure 2.15)
- Collect the washwater from building structures and convey it to appropriate treatment such as a sanitary sewer system if it contains oils, soaps, or detergents, where feasible. If the washwater does not contain oils, soaps, or detergents then it could drain to soils that have sufficient natural attenuation capacity for dust and sediment.

Recommended Additional BMPs:

- The wash area should be well marked at gas stations, multi-family residences and any other business where non-employees wash vehicles.
- For uncovered wash pads, the positive control outlet valve may be manually operated, but a pneumatic or electric valve system is preferable. The valve may be on a timer circuit where it is opened upon completion of a wash cycle. The timer would then close the valve after the sump or separator is drained (Figure 2.15).
- Use phosphate-free biodegradable detergents when practicable.
- Consider recycling the washwater.

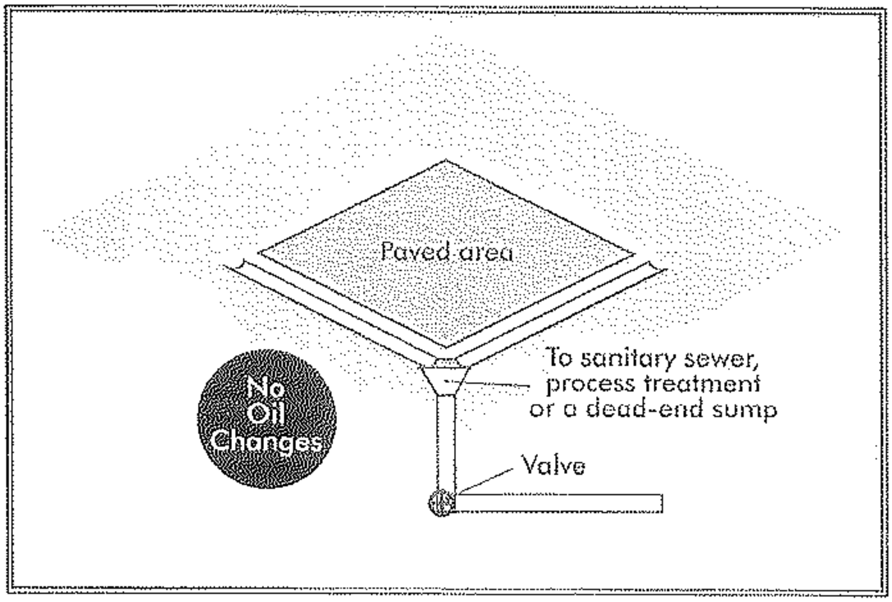


Figure 2.15 – Uncovered Wash Area

- Because soluble/emulsifiable detergents can be used in the wash medium, the selection of soaps and detergents and treatment BMPs should be considered carefully. Oil/water separators are ineffective in removing emulsified or water soluble detergents.

Exceptions

- At gas stations (for charity car washes) or commercial parking lots, where it is not possible to discharge the washwater to a sanitary sewer, a temporary plug or a temporary sump pump can be used at the storm drain to collect the washwater for off-site disposal such as to a nearby sanitary sewer.
- New and used car dealerships may wash vehicles in the parking stalls as long as a temporary plug system is used to collect the washwater for disposal as stated above, or an approved treatment system for the washwater is in place.

At industrial sites contact the local Ecology Regional Office for NPDES Permit requirements even if soaps, detergents, and/or other chemical cleaners are not used in washing trucks.

Quality Assurance Project Plan

Grays Harbor / Chehalis Watershed Fecal Coliform Bacteria Monitoring

Phase II Permit – Aberdeen

January 2015

Table of Contents

Quality Assurance Project Plan

This Quality Assurance Project Plan (Plan) was prepared by the City of Aberdeen. The Plan describes the quality assurance and quality control (QA/QC) procedures for field activities and laboratory analyses associated with stormwater monitoring of fecal coliform for the City of Aberdeen, as required by *Appendix 2 – Total Maximum Daily Load (TMDL) Requirements* of the National Pollutant Discharge and Elimination System and State Waste Discharge General Permit for discharges from small Municipal Separate Storm Sewers in Western Washington (Phase II Permit)

The primary goal of this Plan is to assure the quality and integrity of the collected samples, the representativeness of the results, the precision and accuracy of the analyses, the completeness of the data, and the delivery of defensible products and decisions. This document was developed with guidance from the Department of Ecology; specifically, Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies (Ecology 2004), and Quality Assurance Project Plan Guidance for Special Condition S8.D of the Phase I Municipal Stormwater Permit (Ecology 2010).

Abstract

Grays Harbor was on the list of the Washington State Department of Ecology's (Ecology) impaired waters (303(d) list) for fecal coliform (FC) bacteria in 1996. This prompted Ecology's Environmental Assessment Program to conduct a Total Maximum Daily Load Study (TMDL) during March 1997 – April 1998 (Pelletier and Seiders, 2000). Urban storm drains were sampled as part of the TMDL during the wet season of November 1997 – April 1998. Follow up monitoring was conducted between November 2010 and April 2011 as part of the *Grays Harbor Fecal Coliform Bacteria Monitoring to Characterize Water Quality in Urban Stormwater Drains* study.

This Quality Assurance Project Plan (QAPP) describes a sampling plan to follow-up on the high bacteria concentrations identified in the two previous studies and as required by the NPDES phase II permit. The plan describes the objectives of the monitoring proposal and the procedures to be followed to achieve those objectives (Lombard, 2004).

Project Description

The overall goal of the monitoring project described in this QAPP is to data on Fecal Coliform bacteria concentrations in the urban stormwater drains in the city of Aberdeen between November 2014 and December 2016.

The objectives established to meet the goal are:

1. Collect, analyze, and interpret FC bacteria data to determine if Washington State water quality standards for Class A waters are being met. The criteria state that the geometric mean of the samples must not exceed 100 colonies/100mL with 10% of the samples not to exceed 200 colonies/100mL (WAC 173-201A).
2. Include data in the annual reports for the National Pollutant Discharge and Elimination System and State Waste Discharge General Permit for discharges from small Municipal Separate Storm Sewers in Western Washington (Phase II Permit)

Organization and Schedule

Table 1 – Project Staff and Responsibilities

Staff	Title	Responsibilities
Rick Sangder City of Aberdeen (360) 537-3228	Public Works Director	Clarifies project scope. Provides review and approval of QAPP and annual reporting of data.
Kyle Scott City of Aberdeen (360) 537-3214	Wastewater Systems Manager	NPDES – Writes the QAPP. Submits data to Ecology via the annual report for the Phase II permit.
Jeff Springer City of Aberdeen (360) 580-3479	Stormwater Supervisor – Project Manager	Conducts field sampling and oversees transportation of samples to the lab. Conducts quality assurance review of data. Analyzes and interprets data.
Bill Christie City of Aberdeen (360) 537-3381	Laboratory Supervisor	Provides Laboratory staff and resources.

Table 2 – Proposed Schedule

Work Type	Due Date	Lead Staff
Reconnaissance	October 2014	Jeff Springer
Field Work Initiated	November 2014	Jeff Springer
Field Work Completed	December 2015	Jeff Springer
Lab Analysis Completed	December 2015	Bill Christie
Data compiled and submitted to permit manager	January 2016	Jeff Springer & Bill Christie
Data submitted in annual report	March 2016	Rick Sangder
Field Work Initiated	January 2016	Jeff Springer

Field Work Completed	December 2016	Jeff Springer
Lab Analysis Completed	December 2016	Bill Christie
Data compiled and submitted to permit manager	January 2017	Jeff Springer & Bill Christie
Data submitted in annual report	March 2017	Kyle Scott

Quality Objectives

Measurement quality objectives will vary for parameters based on their ability to be measured in the natural environment. Quality objectives are statements of the precision, bias, and lower reporting limits necessary to address project objectives. Precision and bias together express data accuracy. Other considerations of quality objectives include representativeness and completeness.

Table 3 – Measurement Quality Objectives

Analysis	Precision of Paired Replicates (Relative Standard Deviation (RSD))	Lower Reporting Limit	Bias
Fecal Coliform (MF)*	90% of pairs < 50%RSD and 50% of pairs < 20% RSD**	1 cfu/100 mL	N/A
Conductivity	10%	1 µS/cm @ 25° C	5 µS/cm @ 25° C

Precision

A measure of data consistency. It is expressed as the relative standard deviation (RSD) and derived from replicate sample analyses. RSD is the standard deviation of the replicates divided by the average of the replicates, expressed as a percentage. Increasing the number of bacteria replicates will improve precision estimation and confidence in decision-making. For example, we have planned a 33% replication for fecal coliform sampling because this parameter has inherently large variability. Precision quality will follow the guidelines established by Mathieu, 2006a.

Bias

A measure of the systematic error between an estimated value for a parameter and the true value. Systemic errors can occur through poor technique in sampling, sample handling, or analysis. We will minimize the bias through strict adherence to standard operating protocols (SOPs). Field staff will follow the SOPs listed in this plan for FC bacteria and conductivity (Mathieu 2006b, Ward, 2007). Sample contamination will be prevented through careful bottle handling and sample collection. The field conductivity meter will be calibrated before and checked after each sampling day using a standard solution of known conductivity.

Representativeness

Representativeness will be assured through the use of standardized Ecology protocols (Mathieu, 2006b, Ward, 2007, Sullivan, 2007). FC bacteria will be analyzed using the membrane filter method (MF). This is a variation from the TMDL which analyzed bacteria with both the Most Probable Number method and MF. Because of bacteria inherent variability we are confident that the difference between MF and MPN is not significant (Pelletier, 2000, Massa, et al.. 1989). For this reason, analyzing bacteria only using the MF method is considered valid. Additionally, we believe the data will meet the study objective of characterizing conditions. We will assure that samples represent freshwaters by measuring conductivity and ensuring that it measures less than 3750 µS/cm @ 25°C (salinity < 2 ppt) when fecal coliform samples are collected

Completeness

Completeness will be assessed by examining:

- The number of samples collected compared to the sampling plan;
- The number of samples received at Aberdeen WWTP, Laboratory in good condition;
- The laboratory's ability to produce usable results for each sample; and
- Sample results accepted by the project manager.

The objective for sampling completeness is 90%. The level of uncertainty is due to the dependence of available personnel and available outgoing tides during the sampling window.

Sampling Process Design (experimental Design)

Twice monthly wet weather sampling shall be collected on an ebbing tide at 3 stormwater sites. (Appendix B). Sample locations for this study are the same as Aberdeen locations used in the TMDL study for Grays Harbor (*Grays Harbor Fecal Coliform Bacteria Monitoring to Characterize Water Quality in Urban Stormwater Drains, 2010*). Attempts at source identification will be initiated if high concentrations are found at any site.

Sampling Procedures

Safety

Field personnel have the authority to ensure their safety. Reviewing environmental conditions for safety will always be a priority before accessing a sampling site. Personnel can refuse to proceed if they believe safety hazards are present.

Sampling

Standard Ecology Program protocols will be used for sample collection. Field sampling and measurement protocols will follow those described in Mathieu, 2006b, Ward, 2007 Sullivan, 2007. Grab samples for FC bacteria will be collected directly into pre-cleaned autoclaved containers supplied by the laboratory. Plastic polyethylene bottles will be used to prevent bottle breakage and sample loss. Water samples will be collected below the surface using a sampling pole. Caution will be exercised not to stir up sediment. Each sample will be labeled and immediately placed in a dark thermal cooler with ice. Samples will be kept in conditions between 0°C and 4°C until the samples are processed by the laboratory. Samples arrive and will be processed within 2 hours of sample acceptance.

The chain of custody will be filled out with:

- Project name
- Date
- Site name
- Name of lead sampler
- Laboratory ID number
- Analyte
- Sampling time

Conductivity samples will be collected and analyzed before the FC sample is taken to verify freshwater conditions. Conductivity samples will be analyzed with a Fisher 5 Star conductivity meter.

A waterproof loose-leaf field notebook will be used to record typical field data and any unusual occurrence that may have impacts on the project or sample results.

The project manager will ensure proper training for anyone who is assisting with field work. This will include discussion of quality assurance and contamination prevention. Upon completion of sampling at each site, the notes will be reviewed by the project manager to ensure all activities were performed and records are legible.

The project manager will coordinate sampling dates, laboratory identification numbers, and methods with Aberdeen QA/QC manual (2013), using standard Ecology protocol. The samples shall be delivered to the Aberdeen WWTP Laboratory using chain of custody protocol.

Laboratory Measurement Procedures

Laboratory analyses will be performed in accordance with the Aberdeen QA/QC manual (2013). The laboratory staff will consult with the project manager if there are any changes in procedures over the course of the project. Table 4 summarizes laboratory analysis procedures for FC bacteria.

The field crew will communicate with the laboratory to ensure that laboratory resources are available. The project team will follow normal Aberdeen QA/QC manual (2013) procedures for sample notification and scheduling. With adequate communication, sample quantities and processing procedures should not overwhelm the laboratory capacity. When laboratory-sample load capacities are heavy, rescheduling of individual surveys may be necessary.

Table 4 - Summary of Laboratory Analysis Procedures for Fecal Coliform Bacteria

Method	**Estimated Range** (cfu/100 mL)	**Detection Limit** (cfu/100 mL)	**Holding Time**	**Preservation**	**Container**
MF	<1 to 24,000	1	24 Hours	Chill (4 °C)	250 mL poly Autoclaved

Quality Control Procedures

Variability that comes from field sampling and from laboratory analyses will be assessed by collecting replicate samples and by performing replicate analyses. Bacteria sample concentrations are inherently variable, compared to other water quality parameters. Bacteria sample precision will be assessed by collecting replicates at one of the 3 sites. Aberdeen WWTP Laboratory will analyze the duplicate sample from each sampling event to determine the presence of bias in analytical methods.

All water samples will be analyzed at Aberdeen WWTP Laboratory following standard quality control procedures (Aberdeen QA/QC Manual 2013). The laboratory's data quality objectives are documented in QA/QC Manual. As mentioned previously, field sampling and measurements will follow quality control protocols described in Mathieu, 2006b, Ward, 2007 and Sullivan, 2007. If any of these quality control procedures are not met, the associated results will be qualified and used with caution. Professional judgment and peer review will determine if the data are used in analysis.
Replicate samples and measurements will be obtained at frequencies indicated in Table 3.

Table 5 - Frequency of Quality Control Procedures

Analysis	Meter Calibration	Field Duplicates
Fecal Coliform (MF)	N/A	1/3 Samples
Conductivity	1/use	1/3 Sites

Data Management Procedures

Data reduction, review, and reporting will follow the procedures outlined in Aberdeen QA/QC Manual 2013. Laboratory staff will be responsible for internal quality control verification, proper data transfer, and reporting data to the project manager via the Laboratory Supervisor.

All water quality data shall be collected for two wet seasons beginning October 31, 2014 and submitted to Ecology annually in the Phase II permit annual reports for 2015 and 2016.

The project manager will assess the quality of the data received from the laboratory and collected in the field. The review of measurement quality objectives will be performed within one month of data collection and adjustments to field or laboratory procedures will be made, as necessary. The Department of Ecology will be notified if major changes are made to the sampling plan. Data that does not meet objectives may be approved for use by the project manager, but this data will be qualified appropriately. Laboratory values below the detection limit will be assumed to be the detection limit for analysis purposes. Data from field replicates will be arithmetically averaged for data analysis. Data analysis will include evaluation of data distribution characteristics and, if necessary, appropriate data transformations. Estimation of univariate statistical parameters and graphical presentation of the data will be made using Microsoft Excel software (Microsoft, 2007). Use of any additional statistical analysis will be determined based on results and time available. This study is not a TMDL or a formal effectiveness monitoring study. Precipitation will be determined using the weather station at Aberdeen WWTP. The tidal stage will be determined using information from the Aberdeen tide station (Station ID 957)

Audits and Reports

Aberdeen WWTP Laboratory will submit laboratory reports, QA worksheets, and chain-of-custody records to the project manager. Documentation from the lab should include any quality control results associated with the data in order to evaluate the accuracy of the data and to verify that the quality objectives are met.

Data Verification and Validation

Data verification

Data verification involves examining the data for errors, omissions, and compliance with quality control (QC) acceptance criteria. Once measurement results have been recorded, they are verified to ensure that:

- Data are consistent, correct, and complete, with no errors or omissions.
- Results for QC samples accompany the sample results.
- Established criteria for QC results were met.
- Data qualifiers are properly assigned where necessary.
- Data specified in Sampling Process Design were obtained.
- Methods and protocols specified in the QA Project Plan were followed.

The project manager is responsible for verifying that field data entries are complete and correct (e.g., decimal point missing from an entry or something doesn't look right, based on experience).

Qualified and experienced laboratory staff will examine lab results for errors, omissions, and compliance with QC acceptance criteria. Findings will be documented in each case narrative sent to the project manager. Aberdeen WWTP Laboratory Supervisor is responsible for verifying the staff's analytical results. Analytical data will be reviewed. It will be verified according to the data review procedures outlined in the Aberdeen WWTP Laboratory QA/QC manual. Results that do not meet quality assurance requirements will be labeled with appropriate qualifiers, and an explanation will be provided in a quality assurance memorandum attached to the data package.

Data validation

Professional judgment will be used to determine whether data quality objectives have been met.
The project manager will examine the complete data package in detail to determine whether the procedures in the methods and procedures specified in this QAPP were followed. The usability determination will entail evaluation of field and laboratory results

and relative standard deviation between field replicates. Adherence to established protocols should eliminate most sources of bias (Lombard and Kirchmer, 2004). Laboratory duplicates help estimate laboratory precision.
Field replicates should indicate overall variability (environmental + sampling + laboratory).

Laboratory Costs

Laboratory costs were calculated using the Aberdeen WWTP Laboratory price list for FY2014. The total laboratory cost will be approximately $13,600 This reflects four samples (3 samples from sites plus 1 replication per event) for 52 events. The value was rounded up to account for potential source identification sampling. The test method and costs for sampling are shown below in table 6.

Table 6 – Laboratory Costs

Laboratory Test	Test Method	Price per Test
Fecal	SM 922D	$50.00
Turbidity	SM 2130-B	$15.00
PH	SM 4500-H	$15.00
Temperature	N/A	N/A
Conductivity	Orin 5 Star Meter	$15.00
Metals Testing		$75/00

References

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2013. QA/QC Manual, City of Aberdeen

Appendices

Appendix A. Glossary, Acronyms, and Abbreviations

Glossary

Conductivity: A measure of water's ability to conduct an electrical current. Conductivity is related to the concentration and charge of dissolved ions in water.

Fecal coliform: That portion of the coliform group of bacteria which is present in intestinal tracts and feces of warm-blooded animals as detected by the product of acid or gas from lactose in a suitable culture medium within 24 hours at 44.5 plus or minus 0.2 degrees Celsius. Fecal coliform are "indicator" organisms that suggest the possible presence of disease-causing organisms. Concentrations are measured in colony forming units per 100 milliliters of water (cfu/100 mL).

Geometric mean: A mathematical expression of the central tendency (an average) of multiple sample values. A geometric mean, unlike an arithmetic mean, tends to dampen the effect of very high or low values, which might bias the mean if a straight average (arithmetic mean) were calculated. This is helpful when analyzing bacteria concentrations, because levels may vary anywhere from 10 to 10,000 fold over a given period. The calculation is performed by either:

1. taking the nth root of a product of n factors, or
2. taking the antilogarithm of the arithmetic mean of the logarithms of the individual values.

QAPP: Quality Assurance Project Plan. A guide for the planning process. Promotes communication among those who contribute to the study. The completed plan provides direction to those who carry out the study and foms the basis for the written reports.

Stormwater: The portion of precipitation that does not naturally percolate into the ground or evaporate but instead runs off roads, pavement, and roofs during rainfall or snow melt. Stormwater can also come from hard or saturated grass surfaces such as lawns, pastures, playfields, and from gravel roads and parking lots.

Surface waters of the state: Lakes, rivers, ponds, streams, inland waters, salt waters, wetlands and all other surface waters and watercourses within the jurisdiction of Washington State.

Total Maximum Daily Load (TMDL): A distribution of a substance in a waterbody designed to protect it from exceeding water quality standards. A TMDL is equal to the sum of all of the following:

1. individual wasteload allocations for point sources,
2. the load allocations for nonpoint sources,
3. the contribution of natural sources
4. a Margin of Safety to allow for uncertainty in the wasteload determination. A reserve for future growth is also generally provided.

Watershed: A drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower elevation.

303(d) list: Section 303(d) of the federal Clean Water Act requires Washington State to periodically prepare a list of all surface waters in the state for which beneficial uses of the water – such as for drinking, recreation, aquatic habitat, and industrial use – are impaired by pollutants. These are water quality limited estuaries, lakes, and streams that fall short of state surface water quality standards, and are not expected to improve within the next two years.

90th percentile: A statistical number obtained from a distribution of a data set, above which 10% of the data exists and below which 90% of the data exists.

Acronyms and Abbreviations

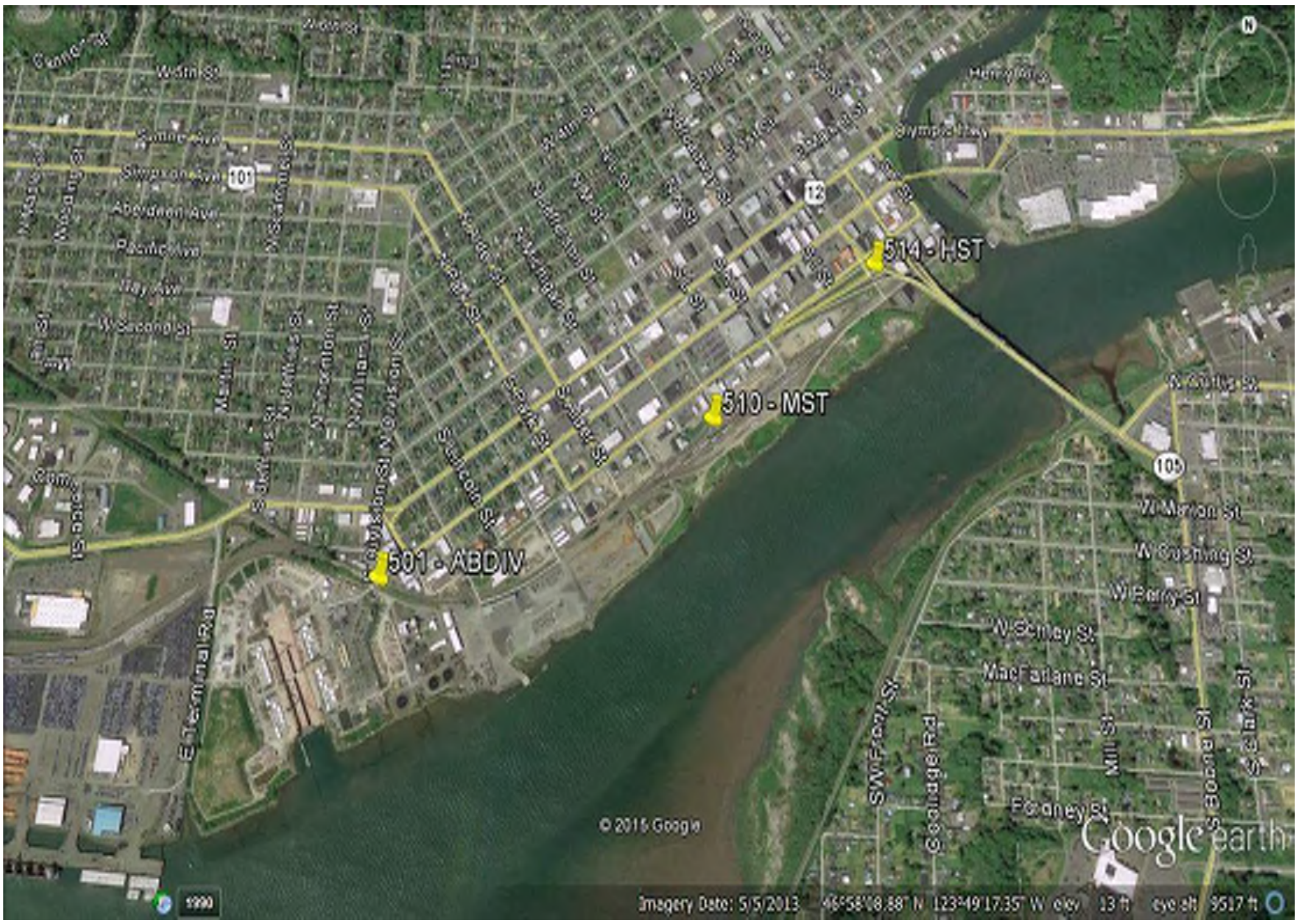
Following are acronyms and abbreviations used frequently in this report.

Ecology	Washington State Department of Ecology
MQO	Measurement quality objective
NPDES	National Pollutant Discharge Elimination System
QA	Quality assurance
RPD	Relative percent difference
RSD	Relative standard deviation
TMDL	Total Maximum Daily Load
WAC	Washington Administrative Code
WRIA	Water Resources Inventory Area
WWTP	Waste Water Treatment Plant

Units of Measurement

°C	degrees centigrade
cfs	cubic feet per second
cfu	colony forming unit
ft	feet
mg/L	milligrams per liter (parts per million)
μS/cm	micro Siemens per centimeter, a unit of conductivity

Appendix B. Aberdeen Monitoring Locations



Appendix C. City of Aberdeen QA/QC Manual

LABORATORY QUALITY

ASSURANCE MANUAL

CITY OF ABERDEEN

WASTEWATER TREATMENT PLANT

JANUARY 2013

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Chlorine (Residual) Total SM 4500-CL G-00

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SECTION III

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Appendix B – Plant Map and Sample Locations

Appendix C – Sample Preservation

Appendix D – Calibration Procedures

Appendix E – Laboratory Quality Assurance Checklist

SECTION I

INTRODUCTION

The purpose of the Quality Assurance Program is to ensure reliability and accuracy of the data produced in the laboratory. A Quality Assurance Program recognizes the importance of three factors: (1) using only accepted methods, (2) routinely analyzing both unknown and control samples, (3) confirming the ability of a laboratory to produce acceptable results by requiring routine analysis of EPA audit or other “certified” reference samples.

This manual is not to be considered entirely complete, but rather, a foundation from which to build a comprehensive Quality Assurance Program. As such, this manual will be reviewed, revised and amended to reflect laboratory requirements over time.

Objectives

1. To produce documentation that complies fully with both Washington DOE and Federal EPA regulations.
2. To produce analytical data of quality equal to that documented in section 1020, “Quality Assurance” of current Standard Methods. After significant analysis has been conducted, a quality control for a given analysis will be constructed. The arithmetic mean and standard deviation used to establish limits will be charted. In turn these computations will become the data quality objectives (DQO) for that analytical method.
3. To determine the degree of accuracy and precision for each analytical protocol.
4. To identify possible problem areas associated with analytical methods, calculations, and results, prior to reporting data.

Responsibilities

The Operator/Analysts have the following Quality Assurance Responsibilities:

1. Reviewing all data prior to entering into the data management system.
2. Taking appropriate corrective action when analysis is “out of control” or a discrepancy is noted.
3. Introducing the prescribed number of Quality Control samples into the daily testing routine, (typically 10-20% of all samples analyzed will be Quality Control Samples).
4. Following the approved testing, sampling, and reservation methods outlined in this manual and other approved manuals mentioned herein.
5. Producing and maintaining the Quality Control charts and reports as outlined in this manual. Entering all daily information from test results and operator bench sheets onto the discharge monitoring report allowing for the production of accurate monthly NPDES discharge monitoring reports and the required attachments.
6. Training new personnel in Quality Control procedures.
7. Reviewing each week all Quality Control data, and once again prior to submitting the monthly discharge monitoring report.

8. Determining the precision and accuracy of analytical results based on the Quality Control information provided by and charted in the Quality Control charts.
9. Providing a permanent record of instrument and analyst performance as a basis for evaluating data.
10. Evaluating the results of the Quality Control Program.
11. Informing the Laboratory Supervisor of Quality assurance non-conformance and subsequent measures taken to regain conformance.
12. Developing, implementing, and coordinating the overall Quality Control Plan based on EPA/WDOE guidelines and regulations.
13. Reporting monthly progress to Sewer Department Management.

SAMPLE MANAGEMENT

The Sewer Department Management's schedule for conducting tests is primarily, dictated by their NPDES permit. A copy of this facility's NPDES permit, which outlines testing schedules and plant permit compliance requirements, is kept on file in the lab office.

Prior to any sampling event, the Laboratory Supervisor must develop a detailed sample management program which addresses:

1. The nature of the sampling.
2. The type of samples to collect (grab or composite).
3. Sample volume, method of preservation, and container type.
4. Sampling technique.
5. Sample holding time.
6. Chain-of-custody requirements.

The goals of an effective and valid sampling effort are:

1. To take representative samples of the desired waste.
2. To record descriptively the sample point, time, conditions, etc.
3. To place the sample in a proper container to avoid contamination from the environment, other samples or the container itself.
4. To preserve the sample, as near to the time of collection as possible, to prevent sample degradation.
5. To measure in the field any parameters which are required (temperature, D.O., pH, flow, etc.).
6. To transport the samples to the laboratory and log all descriptive information in a permanent record.

Unless proper procedures are followed in collecting and documenting the samples, credible data cannot be generated at the laboratory, regardless of how well the analysis is performed. It is the responsibility of the laboratory analyst to review proper sampling. The most current edition of Standard Methods lists the required containers, preservation techniques, and holding times which are to be followed. Also, an in-house plant schematic is provided showing the flow path of the liquid stream, as well as the various sampling locations. Any new laboratory personnel will have a two week training period gathering the daily samples as part of their training program.

Sampling Procedure and Guidelines

1. Prepare the correct type of containers (glass or plastic) for sample collection. Example: for oil and grease use only glass with aluminum foil under the cap, for fecal coliform use only sterile glass or plastic bottles with aluminum foil over the cap and containing sodium thiosulfate as a dechlorinating agent.
2. Check cleanliness of sampling equipment and sample containers prior to sampling efforts to avoid contamination.
3. The sampling site must provide a representative sample (homogeneous).
4. Prepare to collect samples in the correct manner. Example: for fecal coliform and chlorine residual use only grab samples and never composite samples.
5. Collect an adequate sample volume commensurable for the specific test(s) analysis.
6. Properly preserve all samples immediately after collection.
7. Properly identify samples with the appropriate labels.
8. Do not exceed holding times for each sample before beginning analysis.
9. Fulfill all Chain-of-Custody requirements.

Sample Handling and Identification

The number of people involved in sample collection and handling should be kept to a minimum. Field records shall be complete including collection time, and they shall be initialed and dated by the collector. Each sample must be accurately and completely identified by a tag or label. In some cases, a field data sheet containing detailed information of a sample may be preferred to using a label or tag. In-house composite and grab samples, which are collected on a daily basis, should be collected in properly labeled containers in order to avoid any confusion about sample origin. At the time of receipt, the Laboratory Analyst shall document on the lab bench sheet, utilized in recording test results, any descriptive information such as that listed below:

1. Description of the sampling site location and sample type.
2. Name of collector(s).
3. Date and time of sample collection.
4. Indication of being either a grab or composite sample.
5. Parameters to be analyzed.
6. Sample conditions that may change before laboratory analysis begins, such as: pH, temperature, chlorine residual, and/or physical appearance.
7. Indication of any unusual condition at the sampling site and/or in the physical appearance of the wastewater.
8. Preservative and method utilized.
9. Any other noteworthy information

After samples are received in the laboratory, for in-house testing an appropriate bench sheet is used in recording data for that analysis. It is critical to maintain a complete historical record of everything which has happened, from the time the sample was collected until the analysis was completed. A samples Chain-of-Custody included the above-mentioned information, along with the names of all persons who did any collection, delivering and/or receiving of the samples.

GENERAL LABORATORY PROGRAM

Cleanliness

Laboratory cleanliness is of extreme importance to ensure valid data. A high standard of care must be given to properly clean and maintain glassware, instrumentation and analytical supplies. Glass BOD bottles and carboys are cleaned regularly using appropriate high-strength lab detergent. Sample bottles used for priority pollutant testing have been purchased pre-cleaned by the manufacturer using EPA method "A".

Supplies

All supplies are to be of the best possible quality to ensure both protocol reliability and avoidance of contamination. All analysis will employ reagent blanks, when appropriate, to monitor any contamination of glassware, distilled water and/or reagents.

Methodology

All methods utilized in any laboratory analysis are to be approved by EPA and can be found published in the most current Standard Methods and/or other EPA publications. However, in order to provide a quick source of reference for various analytical techniques adapted from Standard Methods and other approved EPA publications, standard operating procedures (SOP) have been produced in a condensed form. These condensed procedures will provide the experienced Lab Analyst with a quick reference guide when verifying analytical methods. However, SOP's are not to be considered complete enough for training new Operator/Analysts or for complex troubleshooting of Quality Control Problems. SOP's are listed in the Section II for the NPDES pollutant parameter testing conducted at this facility. These condensed procedures will also have a reference to the publication where such methods were derived.

Equipment Calibration & Maintenance

An equipment inventory shall be maintained which lists the equipment type, number of units, make/model, function (field or lab), and equipment identification number. A complete maintenance/calibration record shall be maintained for all equipment in the laboratory. A sample of typical laboratory equipment maintenance and calibration procedures is listed below.

1. Balances – Verify accuracy of balance with weights daily; also, have them serviced at least annually, by a professional service company.
2. Autoclave – Document the date, time, and items sterilized during each sterilization cycle. Place indicator tape on tray before each cycle, and check afterwards for evidence of having reached proper sterilization temperature.
3. Refrigerator – Check and document temperature daily.
4. Incubators and Ovens – Check and document temperature daily.
5. Water Baths – Check and document temperature daily. Drain, clean and refill with regent grade water monthly.
6. Thermometers – Check against an NBS grade thermometer and document temperature daily.
7. DO Meters – Self calibrate daily, checking against bench barometer for accuracy.
8. PH meters and specific ion meters – Check calibration using established standards daily.

Standardization

All chemicals, reagents, and standards are to be properly standardized prior to use. Records of all reagents mixed and standardizations are to be kept in a permanent log. All solutions are to be labeled as follows: name of solution, date prepared, preparer's initials, and NFPA rating label (see safety section). All chemicals and reagents are to be dated when delivered and opened.

Safety

Prior to work in the laboratory, each new Operator/Analyst will be given complete instructions for use of the eye wash, safety shower, and fume hood; and shown the locations of fire extinguishers and other safety equipment. Each Operator/Analyst will follow the safety rules which are available in the City of Aberdeen Wastewater Treatment Plant Safety Manual and in this manual. All of the material safety data sheets for the entire plant's inventory of hazardous materials are stored in the lab library and will be kept up-to-date through the efforts of the Operator/Analyst. A color coded diamond shaped emblem with ratings from "0" to "4", designates the particular hazards of a material related to the Health, Reactivity, Corrosiveness, and Flammability (NFPA rating system). It is mandatory that all secondary containers used for the storage of hazardous materials in the laboratory be properly labeled with an NFPA label. This serves to protect the employee from accidental miss-use or miss-handling of the product, as well as the action required during a first aid situation.

Training

The City of Aberdeen Sewer Department is committed to providing the most current training available to the employees of the Wastewater Treatment Plant. Sources for training in the laboratory field are often times outdated, scarce or not applicable to our particular requirements. Operator/Analysts will take wastewater certification examinations and will be provided the necessary time off to do so. It is also possible to become certified as a Laboratory Analyst through the ABC testing program. In addition, the City will provide the tuition for attending applicable local college courses and will make allowances for some time to attend training. Those courses which an Operator/Analyst desires to attend must be related to a wastewater field of study in order to be reimbursed by Sewer Department Management. Other sources of Operator/Analyst training or certification are:

- WETRC Courses
- Regional University
- Local Community College
- Vendor Instrumentation Courses
- Washington Operators Workshop
- PNPCA Courses
- City of Aberdeen Wastewater Operator Training Program

Quality Control

To assure that precise and accurate data is being collected by the laboratory, it is essential that such data be reproducible. As part of the Analytical Quality Control Program, the laboratory analysis develop both precision and accuracy criteria for each parameter which is to be measured. This type of data is gathered while using the following controls:

1. In house performance evaluation on operations.
2. Blanks - to check for contamination.
3. Reference Standards - to check for accuracy of the method.
4. Duplicate Samples – to check for precision or repeatability.
5. Spiked Samples – to check for recovery and accuracy.
6. Standards, Yearly average (TSS, BOD).

The precision and accuracy Quality Control Charts of each laboratory analysis method will be updated semi-annually. It is recommended by the EPA that 10 to 20 percent of analysis replicates be strictly for Laboratory Quality Control purposes with an additional 5 percent assigned for Field Quality Control.

Precision

Precision is a measure of the reproducibility of a test result and can be expressed as a "range" or "difference." For each parameter analyzed, at least one "replicate sample" is run per each group of 10 samples or 10 percent of the samples. A "replicate sample" means: fully analyzing a second separate identical run of the same sample.

Accuracy

Accuracy is a measure of how close the analysis value is to an actual "known" value, and can be plotted versus the "known" value on a graph. Accuracy can also be determined and expressed as percent recovery. These analyses are carried out on spikes, "known" standards, or EPA audit "unknown" samples.

Quality Control Samples

The City of Aberdeen Sewer Department is involved in ordering yearly performance evaluation samples from an environmental sample firm. The samples are supplied as true blinds, the true values and acceptance limits are unknown to anyone at the treatment plant until after the results are reported. The Laboratory Supervisor takes delivery of the samples along with the instructions and expected test result ranges. These expected result ranges are very broad and give the analysis only general information about concentration levels. Typical parameters analyzed for during these yearly performance evaluation tests include: BOD, TSS, pH, Fecals, Turbidity and Ammonia (NH_3). These yearly tests will help meet the annual performance evaluation audit required by the WDOE's accreditation program. All of the requirements are satisfied by the EPA's DMR-QA test. We also performance test our lab assistants once a year on all parameters (except fecals).

Quality Control Charts

Quality Control Charts provide a means of evaluating day-to-day performance, once sufficient precision and accuracy data has been generated. Normally, 25 test results on either "known" standards or sample “replicates” are required to provide sufficient initial data for constructing any Quality Control Chart. Subsequently, through statistical analysis, corresponding warning and control limits can be established.

In applying the Quality Control Charts, any of the following four conditions would indicate an “out-of-control” situation.

- When any single test result (point) is beyond any control limit (CL).
- When three out of four successive points are beyond any warning limit (WL).
- When four out of five successive points are beyond one standard deviation (S) of the “mean”.
- When eight successive points are on one side or the other of the “mean”.

When “out-of-control” situation occurs, laboratory methods must be examined until the problem has been identified and resolved, after which the testing frequency should increase for the next few quality control checks. The problem and its solution must be determined and documented. All analysis, since the last previous “in-control” point, should be repeated If at all possible.

The Laboratory Supervisor must update any Quality Control Chart whenever any “out-of-control” situation has been brought back under control. This is done by waiting for seven (7) subsequent post “out-of-control” test values, and calculating their specific “mean” and standard deviation. If there is no significant difference between their “mean” or standard deviation and that of the pre “out-of-control” period, then continue using the original Quality Control Limits. If there is a significant difference, then a new set of Quality Control Limits must be established for that specific parameter under testing. <u>Remember</u>: Omit all data resulting from any “out-of-control” situation prior to calculating any statistics, otherwise biased and incorrect graphs/tables will have been produced.

A. Quality Control Chart Development
   The applicability of Quality Control Charts is based on the assumption that laboratory data approximate a statistical “normal” distribution. For best results, obtain at least 25 values of a test before calculating any statistics or plotting any Quality Control Chart. All results should not be obtained on the same day; optimally, they should be accumulated as part of the day-to-day laboratory operation.

   The Accuracy and Precision Quality Control Charts are probably the most widely used, especially where quantities of data are being collected. This is because Accuracy is sensitive to changes in the mean (trend), and Precision can detect changes in the variability (standard deviation).

   Normal parameter analysis should follow these rules: One duplicate every ninth “unknown” sample and end the run with a “standard” and a “blank.” This methodology exceeds that recommended by <u>Standard Methods</u>: “one in ten must be a duplicate, standard or spike.”
   If a test result is determined to be “out-of-control,” then each Operator/Analyst will take immediate action to determine the cause of said problematic result. Consider all similar analytical results as unreliable, which were completed on the same day as the erroneous result occurred.
   Accuracy is a measure of how close the analysis is to a correct or “true” value, which is accomplished by analysis of reference standards. Precision refers to the reproducibility of a test result when determined from a “replicate” run on the same standard or sample. The City of

Aberdeen Sewer Department incorporates reference standards and performs replicates when each sample batch is run, utilizing practices recommended by EPA guidelines.

B. Accuracy Quality Control Charts

This Quality Control Chart is used to check for accuracy and is derived from reference "standard" analysis. The symbol X represents an individual result, and X represents the "mean" (average) of all the individual results. After compiling an initial set of 25 data points, the "mean" and standard deviation of this group can then be calculated. To make an Accuracy Quality Control Chart, follow these steps:

- Calculate the "mean," X, of an initial group of 25 analysis results.

$$X = \frac{X}{}$$

N

Where N is the number of analysis results.

- Calculate the standard deviation, S , of the group.

$$S = \left[(X - X)\right] / (N - 1)$$

- Calculate the control limits as follows:

(1) Upper Control Limit, UCL= X+3S
(2) Upper Warning Limit, UWL= X+2S
(3) Lower Control Limit, LCL= X-3S
(4) Lower Warning Limit, LWL= X-2S

- On a Microsoft Excel graph plot sample data along the horizontal axis. Plot X value of the samples along the vertical axis.
- Draw in the 5 horizontal lines representing all four control limits and the "mean," X.
- Label the chart, the axes, the control limits and the "mean."
- Label the chart according to the test parameter analyzed, analysis method number, true "standard" value. Identify the original group of results used to calculate X and S.
- Update the Quality Control Chart limits quarterly by using all test results collected since the previous quarterly update.
- Update the Quality Control Chart whenever an "out-of-control" situation has been brought back under control. If there has been no appreciable change in either the "mean" or standard deviation, after gaining control, then omit all results recorded

during the “out-of-control” situation before updating the Quality Control Chart limits.

C. Precision Quality Control Chart

This Quality Control Chart is used to check for precision and is derived from replicate analysis of either a reference standard or an actual sample. The plotted points represent the actual differences between replicate values and are derived by subtracting the second result from the first result for each pair of replicates. Our replicate values are comprised of two results from the replicate analyses of an actual sample. Normally, an initial set of 25 replicate test results are collected in order to begin making the control chart. To make a Precision Quality Control Chart, follow these steps:

- Calculate the mean “difference, “ D, of an initial group of 25 replicate results.

$$D = \frac{D}{}$$

N

- Calculate the standard deviation, S of the group.

$$S = \frac{[(D)-(D)]/N}{N-1}$$

- Calculate the control limits as follows:

(1) Upper Control Limit, UCL= D+3S
(2) Upper Warning Limit, UWL= D+2S
(3) Lower Warning Limit, LWL= D-2S
(4) Lower Control Limit, Rpc= D-3S

- On a Microsoft Excel graph plot sample date along the horizontal axis. Plot D value for all replicates along the vertical axis. <u>Remember:</u> Note whether positive or negative.

  - Draw in the 5 horizontal lines representing the four control limits and the “mean difference,” D.
  - Label the chart, the axes, the control limits and the “mean difference.”
  - Label the chart according to the test parameter analyzed and analysis method number. Identify the original group of replicate results used to calculate D and S.

- Update the control chart limits quarterly by using all test results collected during the previous period. Remember: Eliminate from any such update all data which was determined to be from an "out-of-control" situation.

Each separate D value should not exceed either (upper or lower) Control Limit (CL) or an "out-of-control" situation would be present. Any value found to lie between a CL and a Warning Limit (WL) would be cause for concern and some type of remedial action would be advised before an "out-of-control" situation could develop.

SECTION II

STANDARD OPERATING PROCEDURES

Biochemical Oxygen Demand (B.O.D.) Test

Putting B.O.D test on

1. Check calibration/ calibrate D.O. meter. Enter all information on the B.O.D sheet.
2. Determine the sample sizes by flow and turbidly along with other B.O.D tests.
3. Pour primary seed into beaker.
4. Pipet sample size into primary effluent settled bottle.
5. Pipet seed into effluent bottles and the G/GA bottles.
6. Add sugar standard to G/GA bottles.
7. Pipet primary effluent stirred sample into the correct bottle.
8. Pipet raw samples into the correct bottles.
9. Pour final effluent samples in the correct bottles.
10. If there are additional test samples (Lemay etc.) determine sample size and add the samples to the correct bottles.
11. Fill all bottles with dilution water to the neck. Start with the highest numbered bottles and work down to the lowest numbered bottles. Rinse and fill dilution jug.
12. Start taking initial dissolved oxygen reading beginning with the highest numbered bottle and work down to the lowest numbered bottle enter the dissolved oxygen reading into the correct location on the B.O.D sheet. After you enter the information place a stopper in the bottle and cap it with the plastic covers.
13. Put a date out on the group of bottles and place in the incubator
14. On Wednesday add a duplicate final effluent sample.

Taking the B.O.D test off

1. Confirm that the D.O. meter is calibrated.
2. Take the B.O.D test that is to be analyzed on today's date out of the incubator and line the bottles starting with the largest number and ending with the smallest number. Checking to make sure that it is the correct set and it is in the proper order. Start taking D.O. readings beginning with the largest numbered bottle and working to the smallest numbered bottle. Record the readings in the correct location on the B.O.D sheet. Wash the B.O.D bottles and all glassware and put in the dishwasher
3. Do the math starting with the seed correction and then the G/Ga standard and then the final and the rest of the test in order.
4. Enter the numbers into the state report and the additional information in the proper location.
5. Set up the next group of B.O.D bottles and cover.
6. The samples coming off must use 2.0 D.O. and leave at least 1.0 of D.O. The blanks have a deviance factor of plus/minus 20mils of D.O.
7. The ideal seed correction is .5 to 1.0 try to adjust your seed sample accordingly.

Fecal Coliform Test

1. Obtain final grab sample.
2. Record the feed rate at the chlorinator rotameter.
3. Add sample to sterile 250 mL orange cap bottle containing 2 mL 1/100 sodium thio-sulfate used for dechlorination.
4. Place filtration funnel into the manifold.
5. Sterilize forceps by dipping them in alcohol and igniting with the alcohol burner.
6. Place filter in filter funnel with the sterile forceps.
7. Filter samples and place in petri dishes. Use care to not trap air under filter. Sterilize forceps between each sample.
    a. Filter 100 ml of buffer as a blank.
    b. Fill filter funnel to approximately 50 mL with buffer. Using a disposable pipet, pipet 1 mL of sample into the buffer and filter sample.
    c. Fill filter funnel to approximately 50 mL with buffer. Using a disposable pipet, pipet 10 mL of sample into the buffer and filter sample.
    d. Fill filter funnel to 50 mL of sample and filter. Rinse filter funnel with buffer.
    e. Fill filter funnel to 100 mL of sample and filter. Rinse filter funnel with buffer.
8. Place tightly closed petri dishes in whirlpac bags and submerge in water bath for 22 to 24 hours and count colonies grown.
9. Record the collection time, setup time, chlorine feed rate, chlorine residual and colony count on the fecal log sheet.
10. Record the chlorine residual and colony count on the state report.
11. Place funnel and orange bap bottle in the dishwasher.
12. After cleaning wrap funnel in foil in preparation for autoclaving.
13. Autoclave funnels in the fast exhaust (instruments) mode for 15 mins.
14. Add 2 mL of 1/100 sodium Thiosulfate to orange cap bottles and autoclave with slow exhaust (liquids) for 15 minutes.
15. Use sterility tape with each load.

Volatile Acid/Alkalinity Test

1. Take a sample of digester sludge and pour correct amounts of sample into centrifuge tubes and spin for twenty minutes.
2. Confirm pH meter calibration. Calibrate if needed.
3. Pour 50 mL of sample into a beaker and clean the cylinder and tubes. Take to the pH meter and take a reading.
4. Using 0.2N H_2SO_4 Titrate the pH of the sample down to four. Count the mL and enter the number on the bottom of the next day's B.O.D sheet.
5. Continue to lower the pH to 3.0-3.5.
6. Boil the sample gently in the fume hood for 3 minutes and then cool to room temperature.
7. Raise the pH of the sample to 4.0 with 0.02 N NaOH.
8. Titrate the sample from 4.0 to 7.0 with 0.02N NaOH and record the mL used on the bottom of the same B.O.D sheet.
9. Wash the glassware and place in the dishwasher.

10. Calculate the Alkalinity and Volatile acids by dividing the alkalinity results by the Volatile acid results to get the ratio and enter the results in the digester report.

Total Suspended Solids (T.S.S.) Test

1. Take the numbered trays from the drying oven and put them in the desiccator to cool.
2. After cooling weigh the trays for the tare weight and enter the weight on the daily T.S.S. sheet.
3. After determining the sample sizes place the paper on the funnel and wet with regent water.
4. Apply a well-mixed, measured sample to the paper and vacuum water from sample. Wash out the residual left in the cylinder, pipet, etc. using 20 mL, and rinsing three times.
5. Place the paper back in the tray.
6. Repeat procedure until all samples have been ran through the papers.
7. Place the samples in the drying oven and dry for a minimum of two hours.
8. Remove the trays from the drying oven and place in the desiccator to cool the trays.
9. After the trays have cooled to room temperature weigh them and enter the information on the daily T.S.S. sheet. Discard spent papers.
10. Place the samples that need to be analyzed for volatiles in the muffle furnace for a minimum of 25 min.
11. Do the math and enter the information on the daily report.
12. Take the samples out of the muffle furnace place in the desiccator and let them cool.
13. After cooling reweigh, do the math and enter on the daily report.
14. Making sure the wrinkled side of the paper is face up, place in the funnel. Rinse out the new papers three times using 100 mL of reagent water each rinse. After rinsing papers place in empty trays and return to the drying oven. Place the trays that are used for volatile solids in the muffle furnace for at least 25 minutes, remove and place in the drying oven.

ALKALINITY TEST

1. Make sure the pH meter is calibrated.
2. Measure out your samples (50 mL), add magnet.
3. Place on the stir plate start and insert probe (remove rubber plug from pH probe) let the sample stabilize.
4. Start titrating the sample with .2N $H_2\,SO_4$ to a pH of 4, counting the mL used.
5. Multiply the amount of mils used by 200 this equals the alkalinity of the sample
6. Enter the information on the bench sheet and initial it.
7. Enter the pH of the final sample on bench sheet.
8. When samples are complete rinse probes, dry, replace rubber stopper and place in storage solution.
9. Turn off stir plate.

AMONIA TEST

1. Take the storage bottle off of the probe, rinse the probe with lab water.
2. Make sure the meter is calibrated.
3. Measure out your samples at 100 mL.
4. Add the ISA buffer solution (2 mL).
5. Place the probe and mixer in the sample, start mixer and wait for a stable reading.
6. Enter the information on the bench sheet and initial.
7. After completing all samples, make sure the mixer is off and replace the storage bottle.

TURBIDITY

1. Turn on the Turbidity meter and let warm up for a min. of 30 minutes.
2. Rinse the cuvette with about 20 mL of sample
3. Discard the 20 mL and rinse twice.
4. Fill cuvette to the shoulder, approximately 30 mL.
5. Cap the cuvette and invert 10-15 times.
6. Using lens quality paper, dry and clean the outside of the cuvette.
7. Place in the meter and index the sample to lowest reading.
8. Enter the lowest reading on the daily sheet.

pH TEST

1. Make sure the meter is calibrated.
2. Rinse off the probes with lab water.
3. Pull rubber plug out of the pH probe.
4. Pour approximately 50 mL of well mixed sample into a beaker with a stir bar.
5. Place the sample on the stir plate and place the probes into the sample.
6. Turn on the stir plate and wait for a stable reading.
7. Record the reading on the daily information sheet.
8. When all samples are measured, rinse the probes and place in storage solution.
9. Turn off stir plate and replace rubber stopper in the pH probe.

SECTION III

DATA MANAGEMENT

All records mentioned in the preceding and subsequent paragraphs and required in standard methods are retained at the AWWTP office in file cabinets for a period of three years. Before any result is reported, all raw data and calculations are reviewed for accuracy by the lab supervisor acting as the quality assurance officer. If data contained on any record is transcribed to facilitate brevity or neatness, the original record is also kept. All data is recorded in ink and corrections are initialed. A list of initials identifying the person to whom they belong is maintained as a permanent lab record. (appendix A)

AUDITS

Two types of audits are used to determine status of the AWWWTP lab operations. A system audit is used to assess personnel, equipment, facilities and analytical procedures. The system audit is conducted periodically by the Department of Ecology and at least every year by the Lab Supervisor. Performance audits are conducted at least every year for each plant performance parameter except fecal coliforms as part of the EPA Water Pollution Study.

REPORTS

A QA/QC report is prepared quarterly and given to the plant manager. The lab supervisor may provide the report in writing (verbatim or in summary) or verbally to the plant manager. The checklist at Appendix C is used to assist in drafting these reports and otherwise in assessing lab capability and performance.

APPENDIX A

INITIAL SHEET

NAME	INITIAL
WILLIAM CHRISTY	
RICK EATON	
WILLY ERICKSON	
SHAYNE LESTER	
KEN MILES	
KYLE SCOTT	
GEORGE YAKOVICH	

APPENDIX B

CITY OF ABERDEEN WWTP

1 INFLUENT PUMPING

2 HEADWORKS

3 PRIMARY CLARIFICATION

4 AERATION BASIN

5 SECONDARY CLARIFICATION

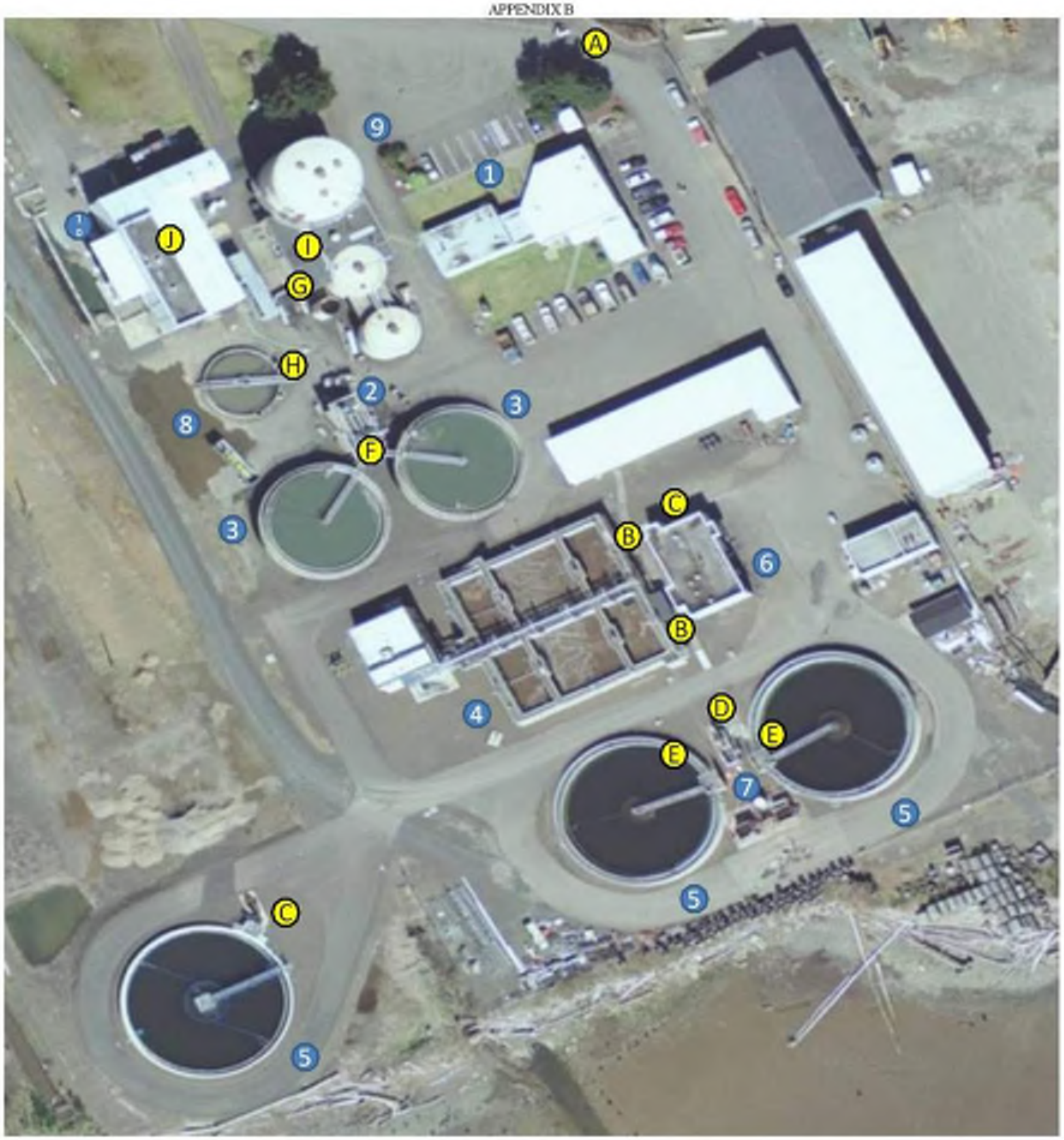
6 DISINFECTION & DECHLORINATION

7 PARSHALL FLUME FINAL EFFLUENT

8 GRAVITY THICKENING

9 ANAEROBIC DIGESTER

10 SLUDGE DEWATERING



SAMPLE LOCATIONS

A RAW—COMPOSITE

B MIXED LIQUOR—GRAB

C R.A.S—GRAB

D FINAL EFFLUENT—GRAB & COMP.

E Cl_2 RESIDUAL - GRAB

F PRIMARY EFFLUENT—COMPOSITE

G RAW TO DIGESTER—GRAB

H WASTE—GRAB

I DIGESTER—GRAB

J CAKE—GRAB

APPENDIX C
TABLE 1 – SAMPLE PRESERVATION

UNIT PROCESS	SAMPLING LOCATION	ANALYSIS	SAMPLE		TYPE	STANDARD METHODS	PRESERVATION	HOLDING TIMES	CONTAINER REQUIREMENTS
			USE	FREQ					
Primary Treatment	Raw Influent	BOD	PP	D	C	SM 5210B	Cool, 4^0C	6 Hours	P,G
		TSS	PP	D	C	SM 2540D	Cool, 4^0C	7 Days	P,G
		pH	PC	W	G	SM 4500-H	None Required	Stat	P,G
		NH_3	PP	2W	C	SM 19/20 4500-NH3 D	Cool, 4^0C H_2SO_4 to pH <2	28 Days	P,G
		Alk	PP	2W	C	2320B	Cool, 4^0C	14 Days	P,G
	Primary Effluent	BOD	PP	W	C	SM 5210B	Cool, 4^0C	6 Hours	P,G
		TSS	PP	W	C	SM 2540D	Cool, 4^0C	7 Days	P,G
		pH	PP	D	G	SM 4500-H	None Required	Stat	P,G
		NH_3	PP	2W	C	SM 19/20 4500-NH3 D	Cool, 4^0C H_2SO_4 to pH <2	28 Days	P,G
		Alk	PP	2W	C	2320B	Cool, 4^0C	14 Days	P,G
Activated Sludge	Primary Effluent	BOD	PP	D	C	SM 5210B	Cool, 4^0C	6 Hours	P,G
		TSS	PP	D	C	SM 2540D	Cool, 4^0C	7 Days	P,G
		pH	PC	D	G	SM 4500-H	None Required	Stat	P,G
		NH_3	PP	2 W	C	SM 19/20 4500-NH3 D	Cool, 4^0C H_2SO_4 to pH <2	28 Days	P,G
		Alk	PP	2W	C	2320B	Cool, 4^0C	14 Days	P,G
	Mixed Liquor	pH	PC	D	G	SM 4500-H	None Required	Stat	P,G
		Temp	PC	D	G	SM 2550	None Required	Stat	P,G
		TSS	PC	D	G	SM 2540D	Cool, 4^0C	7 Days	P,G
		VSS	PC	D	G	SM 2540E	Cool, 4^0C	7 Days	P,G
	Return Sludge	TSS	PP	W	C	SM 2540D	Cool, 4^0C	7 Days	P,G
	Waste Sludge	TSS	PP	W	C	SM 2540D	Cool, 4^0C	7 Days	P,G
		VSS	PC	D	G	SM 2540E	Cool, 4^0C	7 Days	P,G
	Final Effluent	BOD	PP	D	C	SM 5210B	Cool, 4^0C	6 Hours	P,G
		TSS	PP	D	C	SM 2540D	Cool, 4^0C	7 Days	P,G
		F Col	PP	D	G	SM 9222D	Cool, 4^0C 0.008% $Na_2S_sO_3$	6 Hours	P,G
		Cl_2 Res	PP	D	G,C	4500-Cl	None Required	Stat	P,G
		Turb	PP	D	G,C	SM 2130B	Cool, 4^0C	48 Hours	P,G
		pH	PP	D	G	SM 4500-H	None Required	Stat	P,G
		NH_3	PP	2 W	C	SM 19/20 4500-NH3 D	Cool, 4^0C H_2SO_4 to pH <2	28 Days	P,G
		Alk	PP	2W	C	2320B	Cool, 4^0C	14 Days	P,G

Cl_2 Res	=	Chlorine Residual	TSS	=	Total Suspended Solids	D	=	Once Per Day	F Col	=	Fecal Coliform
VS	=	Volatile Solids	W	=	Once Per Week	NH_3	=	Ammonia	PP	=	Plant Performance
G	=	Grab	Temp	=	Temperature	PC	=	Process Control	C	=	Composite
TS	=	Total Solids	VSS	=	Volatile Suspended Solids	P,G	=	Plastic or Glass	2W	=	Twice Per Week

APPENDIX D
CALIBRATION

D.O. METERS

Pro-Series O.D.O. Meter

1. Make sure the membrane is dry and in a bottle with a saturated air environment.
2. Press the calibration (cal) hot key on the keypad then highlight D.O. and press enter
3. Highlight D.O. % then press enter.
4. Verify the barometric pressure displayed is accurate. Once D.O. and temperature are stable (wait at least 30 seconds), highlight "accept calibration" and press enter. The screen will indicate if the calibration has been accepted.

YSI 5100

1. Make sure the membrane is dry and in a bottle with a saturated air environment.
2. Turn on the meter.
3. Allow the meter to warm up for 15 minutes. If calibration is performed prematurely the values will drift and may be out of specification.
4. Press the calibrate soft key to Calibrate mode. Refer to posted instruction for visual aids).
5. Verify the barometer is correct. If the barometer is out of calibration contact the lab supervisor.
6. Make sure that the display readings are stable, then press the "auto cal" soft key to calibrate Dissolved Oxygen. The message "D.O. Calibration Saved" will be displayed for a few seconds.
7. Press "mode" to return to the main mode. The instrument is now calibrated and ready to measure dissolved oxygen and temperature.

DUAL STAR PH/ISE (AMMONIA) METER

pH Probe

1. Press f2 (calibration mode).
2. Highlight channel 1 for pH and press f2 (channel 2 is for ISE probe).
3. Rinse probe, dry and place in buffer solution.
4. Wait for the pH value to stop flashing if the reading is not the same as the buffer solution, enter the correct value and press f2.
5. Rinse probe and dry.
6. Place the probe in the buffer solution press f2 and wait for a stable reading.
7. If the reading is not the same as the buffer solution, enter the correct value and press f3.
8. Look at the slope and if it is within standards press f2 (log/print) to save and end calibration.

ISE Probe Calibration

1. Press f2 to enter calibration mode.
2. Highlight channel 2 and press f2.
3. Remove probe from cover, put the probe in a clean beaker of water to clean.
4. Place the probe in the first buffer solution after adding two mils of sodium hydroxide and press f2.

5. Wait for a stable reading. If the value is different than buffer solution value, hard enter the value and press f2.
6. Place the probe in to a clean beaker of water to clean.
7. Prepare the next buffer solution, place the probe in the buffer and press f2.
8. Wait for a stable reading, if the value is different than the known value as the buffer solution, enter the correct value and press f2.
9. Press f3 to end calibration.
10. If the slope is within standards (-54 to -60) then press f2 to save and end the calibration.

MICRO 100 TURBIDIMETER

1. Turn the meter on and let warm up for at least 30 minutes.
2. Press calibrate.
3. Insert the 1000 NTU standard, index the cuvette. When the display stabilizes press the button with the arrow key.
4. Insert the 10 NTU standard as prompted, index the cuvette. When the display stabilizes press the arrow key.
5. Insert the .02 NTU standard, as prompted, index the cuvette. When the display stabilizes push the arrow key. This will complete calibration.

METTLER BALANCE SCALES

1. Make sure the meter is level.
2. Press the on/off button.
3. Push calibrate button, meter will auto calibrate.
4. Place the 2.0000 g weight on the scale, enter the display reading on the calibration sheet.
5. Place the 50.0000 g weight on the scale, enter the display reading on the calibration sheet.

LAB TEMPERATURES

1. Drying oven temp. - 104.0^0 C. +/- 1.0^0 C.
2. Sample refrigerator - 4.0^0 C. +/- 1.0^0 C.
3. Muffle furnace - 500^0 C.
4. Fecal bath - 44.5^0 C. +/- 1.0^0 C.
5. B.O.D. incubator - 20 C. +/- 1.0^0 C.
6. Lab temp. – 20^0 C.

LABORATORY MAINTENANCE

1. The lab will be cleaned once week.
2. All lab equipment will be cleaned and serviced as per factory instructions.
3. The temperatures will be checked by verified thermometer twice a year.
4. Required state calibration is performed once a year by a certified agency.
5. All cracked or broken glassware will be disposed of properly.
6. Report all broken or malfunctioning equipment to lab supervisor.

APPENDIX E

LABORATORY QUALITY ASSURANCE CHECKLIST

		YES	NO	COMMENTS
GENERAL				
1.	Is Quality Assurance Manual up-to-date, available to all lab personnel?			
	LABORATORY PROCEDURES			
1.	Are EPA-approved methods (e.g. Standard Methods) used and readily available to and used by all lab personnel?			
2.	Are calibration and maintenance of instruments /equipment satisfactory?			
3.	Does a written schedule for required equipment maintenance exist?			
4.	Are QC procedures in the QA Manual used consistently?			
5.	Are QC records adequate to determine if lab is in control?			
LABORATORY FACILITIES AND EQUIPMENT				
1.	Is distilled or deionized water available (as required by the method)?			
2.	Is dry, uncontaminated, compressed air available (if needed)?			
3.	Is the fume hood air-flow measured periodically and is it adequate?			
4.	Is the laboratory sufficiently lighted?			
5.	Are adequate electrical sources available in the lab			
6.	Are instruments appropriate for the method and in good condition?			
7.	Are trouble shooting procedures and written requirements for daily operation of instruments available to each instrument operator?			
8.	Are standards available to perform required QC checks?			
9.	Is proper volumetric glassware used?			
10.	Is glassware cleaned?			
11.	Are solvents and standard reagents properly stored?			
12.	Are calibration and check standards frequently cross-checked?			
13.	Are standards discarded after recommended shelf-life has expired?			
14.	Are reagent bottles marked with date received, opened and when known, with expiration date?			
15.	Are blanks run each day for appropriate analyses (e.g. BOD, TSS)?			

		YES	NO	COMMENTS
16.	Are sufficient SOPs on hand for lab operations (e.g., cleanup, hazard response)?			
17.	Are gas cylinders (if used) replaced at 100-200 psi?			
LABORATORY'S PRECISION, ACCURACY AND CONTROL PROCEDURES				
1.	Are duplicates analyzed for all analyses and are the results recorded?			
2.	Are control samples required by the QA Manual introduced into the train of actual samples to ensure valid data are being generated?			
3.	Are control charts maintained and used routinely?			
4.	Is the lab within control (i.e., is precision good)?			
DATA HANDLING AND REPORTING				
1.	Are round-off rules documented and uniformly applied?			
2.	Are significant figures established for each analytical procedure?			
3.	Are results checked by at least one person other than the analyst?			
4.	Are correct formulas used to calculate final results?			
5.	Do report forms exist to provide complete data documentation and permanent records and to facilitate data processing?			
6.	Are data reported in proper form and units?			
7.	Are lab records maintained for three years?			
8.	Is all data recorded in indelible ink with corrections initialed?			
9.	Is a list of initials identifying to whom they belong filed in the lab?			
10.	Are lab notebooks and pre-printed data forms bound permanently to provide good and defensible documentation?			
11.	Does an efficient filing system exist?			
LABORATORY PERSONNEL				
1.	Are enough analysts present to perform necessary analyses?			
2.	Do analysts have on-hand necessary references for procedures being used?			
3.	Are analysts trained in procedures performed?			

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: CITY OF ABERDEEN
ADDRESS: STORMWATER

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity	Fecal Coliforms SM 9222 D	Temperature	Comments
[illegible]	1-9-17	1:30										<1	7.8	
[illegible]	1-9-17	1335										<15	10.0	
Diversion	1-9-17	1340										45	7.7	

RELINQUISHED BY: [signature]
DATE/TIME: 1/9/17 1:45

RECEIVED BY: [signature]
DATE/TIME: 1/9/17 1:46

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: City of Aberdeen
ADDRESS: Stormwater

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity	Fecal Coliforms SM 9222 D	Temperature	Comments
H st	1-20	1:00												
M st	1-20	1:05												
Division st	1-20	1:10												

RELINQUISHED BY: [signature]
DATE/TIME: 1-20-17 1:15

RECEIVED BY:
DATE/TIME:

RELINQUISHED BY: [signature]
DATE/TIME: 1-20-17 1:15

RECEIVED BY:
DATE/TIME:

YEAR 2017

Storm water

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: JV DATE: 1-9-17 Divison FEED:

COLLECTION TIME: 1:50 SET UP TIME: 2:57 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	1	5	24	43	0	/
TOTAL FECAL COUNT							
AVERAGE	45						

ANALYST: JV DATE: 1-9-17 Hst FEED:

COLLECTION TIME: 1:30 SET UP TIME: 3:01 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	0	0	0	2	0	X
TOTAL FECAL COUNT							
AVERAGE	E-1						

ANALYST: JV DATE: 1-9-17 mst FEED:

COLLECTION TIME: 1:35 SET UP TIME: RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	0	1	10	14	0	X
TOTAL FECAL COUNT							
AVERAGE	E-15						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

DATE	LOCATION	Ph	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNT
1/9/7	Div. St	6.86	121.5	7.7	2.60	
	H St	6.93	795	7.8 ~~[illegible]~~ RR	2.08	
	M St	6.70	121	10.0 ~~[illegible]~~ RR	1.95	
1/20/17	Div. St	6.83	146.5	8.6	3.46	50
	H St.	6.70	169.2	9.0	3.72	29
	M St.	6.66	102.6	9.4	2.36	51

YEAR:

STORM
1-20-17

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: JV DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAI EAST WEST finaıb samp.

SAMPLE SOURCE: DIVISION ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	Ø	7	26	47	Ø	
TOTAL FECAL COUNT				52	47		
AVERAGE	50						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAI EAST WEST finaıb samp.

SAMPLE SOURCE: H STREET ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	1	5	7	29	Ø	
TOTAL FECAL COUNT					29		
AVERAGE	29						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAI EAST WEST finaıb samp.

SAMPLE SOURCE: M STREET ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT				23	56	Ø	
TOTAL FECAL COUNT				46	56		
AVERAGE	51						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAI EAST WEST finaıb samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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CLIENT: City of Aberdeen
ADDRESS: Stormwater

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H st	2-10	3:05												
M st	2-10	3:10												
Division st	2-10	3:15												
Division St	2-16	10:40												
H St	2-16	10:35												
M St	2-16	10:30												

RELINQUISHED BY: [signature]
DATE/TIME: 2/10/17 3:17
2/16/17 11:03

RECEIVED BY: [signature] Ryan L. Rx
DATE/TIME: 2/10/17 3:17
[signature] 2-16-17 11:03 Josh Vessey

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: CITY OF ABERDEEN
ADDRESS: STORM WATER

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochemical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
DIVISION	2-26	2:30						6.86			3.18		7.6	
M ST	2-26	2:35						6.72			3.32		11.7	
H ST	2-26	2:40						6.80			2.53		7.3	

RELINQUISHED BY: [signature]
DATE/TIME: 2/26/17 2:45

RECEIVED BY: [signature]
DATE/TIME: 2-26-17 2:45pm

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

DATE	LOCATION	pH	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNTS
2/10/17	DIV	6.67	84.4	9.0	4.63	NO RESULTS
2/10/17	H st	6.80	138.4	8°	9.85	
2/10/17	m S	6.67	75.2	8.5	13.2	
2/16/17	Divison	9.684	81.1	9.5	3.43	29
2/16/17	H st	6.87	183.7	10.3	1.21	E8
2/16/17	M st	6.72	99.5	11.2	1.87	45
2-26-17	DIVISION	6.86	89.0	7.6	3.18	500
2-26-17	H ST	6.80	643	7.3	2.53	45
2-26-17	M ST	6.72	119	11.7	3.32	E-16

YEAR 2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: SV   DATE: 2-26   FEED: /

COLLECTION TIME: 2:30   SET UP TIME: 3:05   RESIDUAL: EAST / WEST / final grab samp. /

SAMPLE SOURCE: DIVISION   FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	~~50~~	~~TNTC~~	TNTC	TNTC	0	
TOTAL FECAL COUNT		7	50				
AVERAGE	500						

ANALYST: SV   DATE: 2-26   FEED: /

COLLECTION TIME: 2:40   SET UP TIME: 3:12   RESIDUAL: EAST / WEST / final grab samp. /

SAMPLE SOURCE: H ST   FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	[illegible]	4	22	45	0	
TOTAL FECAL COUNT							
AVERAGE	45						

ANALYST: SV   DATE: 2-26   FEED: /

COLLECTION TIME: 2:35   SET UP TIME: 3:25   RESIDUAL: EAST / WEST / final grab samp. /

SAMPLE SOURCE: M ST   FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	0	3	6	17	0	
TOTAL FECAL COUNT							
AVERAGE	E-16						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

YEAR

2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: RR DATE: 2-16-17 Division FEED:

COLLECTION TIME: 10:40 SET UP TIME: 11:00 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	Ø	3	15	29	Ø	1
TOTAL FECAL COUNT							
AVERAGE	29						

ANALYST: RR DATE: 2-16-17 H St FEED:

COLLECTION TIME: 10:35 SET UP TIME: 11:15 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	Ø	1	5	7	Ø	
TOTAL FECAL COUNT							
AVERAGE	E 8						

ANALYST: RR DATE: 2-16-17 M St FEED:

COLLECTION TIME: 10:30 SET UP TIME: 11:30 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	Ø	6	22	45	Ø	
TOTAL FECAL COUNT							
AVERAGE	45						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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EMAIL:
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PROJECT LOCATION:
PROJECT NUMBER:
PROJECT PO:
CONTACT:

Sample identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H St	3/8/17	1:40												
M St	3/8/17	1:45												
Division St	3/8/17	1:50												

RELINQUISHED BY: [signature]
DATE/TIME: 3/8/17 1:56 P.M.

RECEIVED BY: [signature]
DATE/TIME: 157 pm 3/8/17

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR
2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: [illegible] DATE: 3/8 FEED:

COLLECTION TIME: 1150 SET UP TIME: 200 RESIDUAL: EAST WEST final grab samp.

DIU

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	1	23	68	260	0	X
TOTAL FECAL COUNT							
AVERAGE	230						

ANALYST: [illegible] DATE: 3/8 FEED:

COLLECTION TIME: 1:40 H st SET UP TIME: 215 RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	3	18	58	120	0	X
TOTAL FECAL COUNT							
AVERAGE	116						

ANALYST: [illegible] DATE: 3/8 FEED:

COLLECTION TIME: 1:45 M st SET UP TIME: 500 RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	—
PLATE COUNT	0	1	10	55	78	0	17
TOTAL FECAL COUNT							
AVERAGE	110						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments conductance
H St	3/10/17	1:10						6.86			6.78	E-11	9.3	507
M St	3/10/17	1:15						6.61			2.07	636	10.8	90.3
Division St	3/10/17	1:25						6.65			6.12	E-9	10.1	80

RELINQUISHED BY:
DATE/TIME: 3/10/17 1:28

RECEIVED BY:
DATE/TIME: 3/10/17 1:29

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR

2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: [illegible] DATE: 3/10 D.st FEED: —

COLLECTION TIME: 1:25 SET UP TIME: 130 RESIDUAL: EAST X WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	0	7	2	10	0	X
TOTAL FECAL COUNT							
AVERAGE	E 9.3167						

ANALYST: [illegible] DATE: 3/10 H FEED: —

COLLECTION TIME: 1:10 SET UP TIME: 145 RESIDUAL: EAST X WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	0	1	10	4	0	X
TOTAL FECAL COUNT							
AVERAGE	E 11						

ANALYST: [illegible] DATE: 3/10 M FEED: —

COLLECTION TIME: 1:15 SET UP TIME: 200 RESIDUAL: EAST X WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	7	63	TNTC	TNTC	0	X
TOTAL FECAL COUNT							
AVERAGE	636						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	cond	Comments
D.U st	4-18	10:35						684			4.36	530	10.9	78.1	
H st	4-18	10:25						6.57			6.68	86	14.1	109.3	
M st	4-18	10:30						6.70			4.57	340	12.9	96.8	

RELINQUISHED BY:
DATE/TIME: 4/18/17 10:42 A.M.

RECEIVED BY:
DATE/TIME: 4/18/17 1045

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR

2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: [illegible] DATE: 4/18 Div FEED: X

COLLECTION TIME: 10 35 SET UP TIME: 1050 RESIDUAL: EAST / WEST X / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	10	53	TNTC	TNTC	Ø	X
TOTAL FECAL COUNT		5~~10~~					
AVERAGE	530						

ANALYST: DATE: 4/18 H st FEED:

COLLECTION TIME: 10:25 SET UP TIME: 11 10 RESIDUAL: EAST / WEST X / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT		2	7	43	107	Ø	X
TOTAL FECAL COUNT	Ø			86			
AVERAGE	86						

ANALYST: DATE: 4/18 M st. FEED: 11 20

COLLECTION TIME: 10:30 SET UP TIME: RESIDUAL: EAST / WEST X / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							X
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	2	34	TNTC	TNTC	Ø	
TOTAL FECAL COUNT			340				
AVERAGE	340						

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Cond.	Comments
H St	4-11-17	3:15						6.94			540	~~[illegible]~~ E-14	9.8	3.54	
M St	4-11-17	3:20						6.90			2.73	~~[illegible]~~ 23	12.7	107.6	
Division	4-11-17	3:25						7.09			3.31	[illegible]	10.6	92.2	

RELINQUISHED BY: [signature] 3:30 p.m.
DATE/TIME: 4-11-17 / 3:30 p.m.

RECEIVED BY: [signature]
DATE/TIME: 4-11-17 / 330pm

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR 2017

4-11

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: | DATE: | FEED:

COLLECTION TIME: | SET UP TIME: | RESIDUAl EAST | WEST | finaıb samp.

SAMPLE SOURCE: DIV

FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT	Ø	Ø	3	14	14		
AVERAGE	E-19						

ANALYST: | DATE: | FEED:

COLLECTION TIME: | SET UP TIME: | RESIDUAl EAST | WEST | finaıb samp.

SAMPLE SOURCE: H

FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE	E-14	0	1	7	15	Ø	

ANALYST: | DATE: | FEED:

COLLECTION TIME: | SET UP TIME: | RESIDUAl EAST | WEST | finaıb samp.

SAMPLE SOURCE: M

FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT		1	2	15	23		
AVERAGE	23						

ANALYST: | DATE: | FEED:

COLLECTION TIME: | SET UP TIME: | RESIDUAl EAST | WEST | finaıb samp.

SAMPLE SOURCE:

FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: STORM WATER
ADDRESS:
PHONE:
FAX:
EMAIL:
PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:
PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	COND. Comments
DIV	5-13-17	7:25						6.59			4.42	E28	11.6	105.9
H St	5-13-17	7:15						6.61			289	E27	12.5	232.5
M St	5-13-17	7:20						6.62			266	E8	13.1	111.0

RELINQUISHED BY: [illegible]
DATE/TIME: 5/13/17 7:30 a.m.

RECEIVED BY: Shayne [illegible]
DATE/TIME: 5-13-17 7:30 AM

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR

2017

STORMWATER

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: SV DATE: 5-13-17 FEED:

COLLECTION TIME: 7:25 SET UP TIME: 0:40 RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: DIVISION ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	5	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT		~~6~~ 8	12	Ø			
TOTAL FECAL COUNT		120	120				
AVERAGE	~~E120~~ E28 SV						

ANALYST: SV DATE: 5-13-17 FEED:

COLLECTION TIME: 7:15 SET UP TIME: 10:50 RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: HST ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	5	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT		~~5~~ 4 SV	12 ~~Ø~~ SV	~~Ø~~ SV			
TOTAL FECAL COUNT		100	120				
AVERAGE	~~E110~~ E27						

ANALYST: SV DATE: 5-13-17 FEED:

COLLECTION TIME: 7:20 SET UP TIME: 11:10 RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: MST ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	5	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT		4	Ø	1			
TOTAL FECAL COUNT		80		2			
AVERAGE	E8						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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EMAIL: bchristy@aberdeenwa.gov

CLIENT: City of Aberdeen
ADDRESS: Stormwater

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Cond	Comments
H St	5-15	10:05						6.75			2.67	E-1	14.6	203.4	
M St	5-15	10:10						4.74			6.86	650	14.8	108.2	
Division St	5-15	10:15						4.78		X	7.27	E700	13.0	99.6	

RELINQUISHED BY: [signature]
DATE/TIME: 5/15/17 @ 10:20 A.M.

RECEIVED BY: Ken Miles
DATE/TIME: 5/15/17 10:28 AM

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR

2017

Storm water S

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: [illegible] DATE: 5-15-17 FEED: X

COLLECTION TIME: 10:15 SET UP TIME: 10:55 RESIDUAL: final EAST WEST grab samp. X

SAMPLE SOURCE: Division FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	X	—	X
PLATE COUNT	0	7	TNTC	TNTC			
TOTAL FECAL COUNT							
AVERAGE	E 700						

ANALYST: [illegible] DATE: 5-15-17 FEED: X

COLLECTION TIME: 10:05 SET UP TIME: RESIDUAL: final EAST WEST grab samp. X

SAMPLE SOURCE: H ST FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	X	—	X
PLATE COUNT	0	0	0	1			
TOTAL FECAL COUNT							
AVERAGE	E-1						

ANALYST: [illegible] DATE: 5-15-17 FEED: X

COLLECTION TIME: 10:10 SET UP TIME: RESIDUAL: final EAST WEST grab samp. X

SAMPLE SOURCE: M ST FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	X	—	X
PLATE COUNT	0	1	5	25			
TOTAL FECAL COUNT							
AVERAGE	50						

ANALYST: [illegible] DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

DATE	LOCATION	pH	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNT
3/8	Div	6.71	77.2	8.6	9.62	230
3/8	H	6.71	92.3	7.6	22.4	116
3/8	M st.	6.70	51.1	9.9	14.0	110
3/10	Div st	6.65	80	10.1	6.12	E-9
3/10	H st	6.86	507	9.3	6.28	E-11
3/10	M st.	6.61	90.3	10.8	2.07	626
4/11	Div	7.09	95.2	10.6	3.31	E-19
	H St.	6.94	3.54	9.8	5.40	E-14
	M St.	6.90	107.6	12.7	2.73	23
4/18	D	6.84	78.1	10.9	4.35	530
	H	6.57	109.3	14.1	6.68	86
	M	6.78	96.8	12.9	4.57	340
5-13-17	DIV	6.59	105.9	11.6	4.42	E-28
	H	6.61	232.5	12.5	7.89	E-27
	M	6.62	111.0	13.1	2.66	E-8
5-15-17	D	6.78	99.6	13.0	7.27	E-700
	H	6.75	203.4	14.6	4.86	E-7
	M	6.74	108.2	14.8	2.03	50

DATE	LOCATION	ph	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNT
6/9	DIV	7.04	177.2	12.8	5.48	
	H st	6.78	3.27	15.8	2.16	
	~~A~~ M st.	7.06	183.6	13.8	3.32	
6/16	DIV	6.67	117.0	15.8	4.04	
	H st	6.71	~~[illegible]~~ 317	16.2	1.87	
	M st	6.58	118	16.2	3.36	

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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CLIENT:
ADDRESS:

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H St.	6-16-17	10:20												
M St.	6-16-17	10:25												
Division St.	6-16-17	10:30												

RELINQUISHED BY: Ron Corral
DATE/TIME: 6-16-17 11:40 AM

RECEIVED BY: [signature]
DATE/TIME: 6/16/17 11:41

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR 2007

~~2010~~

Storm water

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: un **DATE:** 6/9 Div **FEED:**

COLLECTION TIME: 720 **SET UP TIME:** 730 **RESIDUAL:** final grab samp. EAST / WEST

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT		6	28	50	TNTC		X
TOTAL FECAL COUNT							
AVERAGE	280						

ANALYST: un **DATE:** 6/9 H st **FEED:**

COLLECTION TIME: 5:55 **SET UP TIME:** 745 **RESIDUAL:** final grab samp. EAST / WEST

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT			1	3	9		X
TOTAL FECAL COUNT							
AVERAGE	E-4						

ANALYST: un **DATE:** 6/9 M st. **FEED:**

COLLECTION TIME: 535 **SET UP TIME:** 800 **RESIDUAL:** final grab samp. EAST / WEST

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT			23	50	TNTC		X
TOTAL FECAL COUNT							
AVERAGE	230						

ANALYST: **DATE:** **FEED:**

COLLECTION TIME: **SET UP TIME:** **RESIDUAL:** final grab samp. EAST / WEST

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: City of Aberdeen
ADDRESS: Stormwater

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochemical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H st	6-9	5:50											15.6	
M st	6-9	5:55											13.7	
Division	6-9	7:20											12.8	

RELINQUISHED BY: [signature]
DATE/TIME: 6/9/17 7:30 A.M.

RECEIVED BY: [signature]
DATE/TIME: 730AM 6/9/17

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR 2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: lmr DATE: 6/16 FEED:

COLLECTION TIME: 1030 div SET UP TIME: 1145 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	1	3	1	1	0	
TOTAL FECAL COUNT							
AVERAGE							

ANALYST: lmr DATE: 6/16 H st. FEED:

COLLECTION TIME: 1120 SET UP TIME: 1200 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	12	26	64	TNTC	0	
TOTAL FECAL COUNT							
AVERAGE							

ANALYST: lmr DATE: 6/16 M st. FEED:

COLLECTION TIME: 1025 SET UP TIME: 1220 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT		2	11	26	56		
TOTAL FECAL COUNT							
AVERAGE							

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

10-23-17

CLIENT: STORM
ADDRESS:
PHONE:
FAX:
EMAIL:
PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:
PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochemical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	CONDUCTIVITY Comments
DIV	10-23-17							6.65			3.68		13.2°	259.2
H ST	10-23-17							6.87			1.26		13.7°	294.6
M ST	10-23-17							6.75			2.54		14.8°	149.7

RELINQUISHED BY: [signature]
DATE/TIME: 10-23-17 10:00 am

RECEIVED BY: Shayne [signature]
DATE/TIME: 10-23-17 10:00 Am

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520

PHONE: 360.537.3381 FAX: 360.533.7949

EMAIL: bchristy@aberdeenwa.gov

CLIENT: City of Aberdeen

ADDRESS: Stormwater

PHONE:

FAX:

EMAIL:

PROJECT NAME:

PROJECT LOCATION:

PROJECT NUMBER:

PROJECT PO:

CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Conductivity	Comments
H st	10-12	10:35						6.72			12.3		13.1	889	
M st	10-12	10:40						6.67			6.42		14.1	118.5	
Division	10-12	10:45						6.90			7.90		13.8	4.09	

RELINQUISHED BY: [illegible]

DATE/TIME: 10/12/17 10:50 a.m.

RECEIVED BY: [illegible]

DATE/TIME: 10/12/17 10:50 am

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

YEAR 2017

STORM

FECAL COLIFORM 10-23-17

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: SV DATE: 10-23 FEED:

COLLECTION TIME: SET UP TIME: 12:45 RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: DIVISION ~~FLUME FINAL EFFLUENT~~

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	3	25	TNTC			
TOTAL FECAL COUNT							
AVERAGE	250						

ANALYST: SV DATE: 10-23 FEED:

COLLECTION TIME: SET UP TIME: 12:53 RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: H ST FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	0	2	9			
TOTAL FECAL COUNT							
AVERAGE	E17						

ANALYST: SV DATE: 10-23 FEED:

COLLECTION TIME: SET UP TIME: 1:05 RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: M ST FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	0	9	49			
TOTAL FECAL COUNT							
AVERAGE	98						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAl EAST WEST finaıb samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

YEAR

2017

Storm water

FECAL COLIFORM

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: [illegible] DATE: 10/12 FEED: Div

COLLECTION TIME: SET UP TIME: 1100 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	0 –	–	–	–	–		
PLATE COUNT	0	7	56	TNTC	TNTC	0	
TOTAL FECAL COUNT						0	
AVERAGE	560						

ANALYST: [illegible] DATE: 10/12 FEED: H st

COLLECTION TIME: SET UP TIME: 1115 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	–	–	–	–	–	–	
PLATE COUNT	0	27	TNtc	TNTC	TNTC	0	X
TOTAL FECAL COUNT							
AVERAGE	2700						

ANALYST: [illegible] DATE: 10/12 FEED: M st

COLLECTION TIME: SET UP TIME: 1130 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	–	–	–	–	–	–	
PLATE COUNT	0	8	58	TNTC	TNTC	0	X
TOTAL FECAL COUNT							
AVERAGE	580						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

DATE	LOCATION	Ph	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNT
DIV						
~~H st~~						
m st						
	DIV	6.90	4.09	12.8	7.90	
	H st	6.72	889	13.1	12.3	
	m st	6.67	118.5	14.1	6.42	

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

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CLIENT: City of Aberdeen
ADDRESS: Stormwater
PHONE:
FAX:
EMAIL:
PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:
PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H st	11-22	8:50						6.53			3.82		14.2	
M st	11-22	8:55						6.42			2.97		13.7°c	
Division	11-22	9:00						6.50			3.76		12.8	

RELINQUISHED BY: [signature]
DATE/TIME: 11/22/17 9:20 a.m.

RECEIVED BY: [signature]
DATE/TIME: 11/22/17 925 am

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

DATE	LOCATION	pH	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNTS
11/21	DIV	6.82	56	9.8	9.36	580
	H	6.91	29.23	10.1	49.5	450
	M	6.89	23.63	9.2	8.44	560
11/22	D		96.8	12.8	3.75	370
	H		137.7	14.0	3.82	59
	M		100.7	13.7	2.97	78

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PROJECT NUMBER:
PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochemical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H st	11-21	8:20						6.91			49.5		10.1	
M st	11-21	8:25						6.89			8.44		9.2	
Division	11-21	8:30						6.82			9.56		9.8	

RELINQUISHED BY: [signature]
DATE/TIME: 11-21-17 / 8:35

RECEIVED BY: [signature]
DATE/TIME: 11/21/17 - 836

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR

2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: [illegible] DATE: 11/21 FEED:

COLLECTION TIME: 830Am Div SET UP TIME: 900 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	9	58	TNTC	TNTC	0	X
TOTAL FECAL COUNT							
AVERAGE	580						

ANALYST: [illegible] DATE: 11/21 FEED:

COLLECTION TIME: 820 Hst SET UP TIME: 915 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT			45	TNTC	TNTC	0	X
TOTAL FECAL COUNT							
AVERAGE	450						

ANALYST: [illegible] DATE: 11/21 Mst FEED:

COLLECTION TIME: 825 SET UP TIME: 930 RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	
PLATE COUNT	0	2	54	TNTC	TNTC	0	X
TOTAL FECAL COUNT							
AVERAGE	560						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: final EAST WEST grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

YEAR: 2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: Wm DATE: 11/22 FEED:

COLLECTION TIME: 900Am Div SET UP TIME: 930 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—	—	—	—	X
PLATE COUNT	0	4	37	TNTC	TNTC	0	
TOTAL FECAL COUNT							
AVERAGE	370						

ANALYST: Wm DATE: 11/22 FEED:

COLLECTION TIME: 850Am H St SET UP TIME: 945 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—			—	X
PLATE COUNT	Wm 0	0	10	29	59	0	
TOTAL FECAL COUNT	~~[illegible]~~ 58.6		100				
AVERAGE							

ANALYST: Wm DATE: 11/22 M st FEED:

COLLECTION TIME: 855 SET UP TIME: 1000 RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR	—	—	—		—	—	X
PLATE COUNT	Wm 0	1	11	39	TNTC	0	
TOTAL FECAL COUNT	~~39~~ 78						
AVERAGE							

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST / WEST / final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: City of Aberdeen
ADDRESS: Stormwater

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochamical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H St	12-19	2:55												
M St	12-19	3:00												
Division	12-19	3:05												

RELINQUISHED BY:
DATE/TIME: 12-19-17 3:15 P.M.

RECEIVED BY:
DATE/TIME: 12/19/17 3:17

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

YEAR 2017

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

H. St.

ANALYST: KR DATE: 12/19/17 FEED:

COLLECTION TIME: 2:55 SET UP TIME: 4:00 RESIDUAL: final EAST: WEST: grab samp.:

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	5	48	TNTC	TNTC		
TOTAL FECAL COUNT							
AVERAGE	480						

Div

ANALYST: GY DATE: 12/19/17 FEED:

COLLECTION TIME: 3:05 SET UP TIME: 4:00 RESIDUAL: final EAST: WEST: grab samp.:

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	Ø	Ø	25	TNTC	TNTC	Ø	
TOTAL FECAL COUNT							
AVERAGE	250						

MSt.

ANALYST: GY DATE: 12/19/17 FEED:

COLLECTION TIME: 3:00 SET UP TIME: 4:00 RESIDUAL: final EAST: WEST: grab samp.:

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	2	25	75	TNTC		
TOTAL FECAL COUNT							
AVERAGE	250						

ANALYST: GY DATE: 12/20/17 FEED:

COLLECTION TIME: 8:30 SET UP TIME: 9:40 RESIDUAL: final EAST: WEST: grab samp.:

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							

DATE	LOCATION	Ph	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNT
12/19	Div	6.68	86	10.1	7.73	
12/19	H st	6.83	117.4	11.9	~~3~~ 11.6	
12/19	M st	6.50	74.4	10.	4.82	

CITY OF ABERDEEN - CHAIN OF CUSTODY RECORD

1205 W STATE ST, ABERDEEN, WA 98520
PHONE: 360.537.3381 FAX: 360.533.7949
EMAIL: bchristy@aberdeenwa.gov

CLIENT: City of Aberdeen
ADDRESS: Stormwater

PHONE:
FAX:
EMAIL:

PROJECT NAME:
PROJECT LOCATION:
PROJECT NUMBER:

PROJECT PO:
CONTACT:

Sample Identification	Date Stamped	Time Stamped	Container Type		Ammonia as N SM 19/20 4500-NH3 D	Biochemical Oxygen Demand (BOD) SM 5210 B	Oxygen, dissolved (DO) SM 4500-O G	Ph SM 4500-H	Residue-nonfilterable (TSS) SM 2540 D	Total Residual Chlorine SM 4500-Cl G	Turbidity SM 2130 B	Fecal Coliforms SM 9222 D	Temperature	Comments
H St	12-28	1:00						6.62			30.6		10.5	
M St	12-28	1:15						6.61			161		9.5	
Division	12-28	1:25						6.86			125		10.0	

RELINQUISHED BY: [signature]
DATE/TIME: 12/28/17 1:30

RECEIVED BY: [signature]
DATE/TIME: 12/28/1:30

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

DATE	LOCATION	Ph	CONDUCTIVITY	TEMPERATURE	TURBIDITY	FECAL COUNT
~~#9~~	H St	6.62	~~62.5~~ 67.1	~~[illegible]~~ 10.5	30.6	
	M	6.61	37.5	9.5	16.0	
	Div	6.86	55.5	10.0	12.5	

YEAR

FECAL COLIFORM

Storm water

TECHNIQUE: MEMBRANE FILTER PROCEDURE

ANALYST: Ry DATE: 12/28 H St FEED:

COLLECTION TIME: 1:00 SET UP TIME: 1:30 RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	18	73	TNTC	TNTC	0	
TOTAL FECAL COUNT							
AVERAGE	730						

ANALYST: Ry DATE: 12/28 M St FEED:

COLLECTION TIME: 1:15 SET UP TIME: 1:30 RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	2	37	TNTC	TNTC	0	
TOTAL FECAL COUNT							
AVERAGE	370						

ANALYST: Ry DATE: 12/28 Division FEED:

COLLECTION TIME: 1:25 SET UP TIME: 1:30 RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT	0	5	50	TNTC	TNTC	0	
TOTAL FECAL COUNT							
AVERAGE	500						

ANALYST: DATE: FEED:

COLLECTION TIME: SET UP TIME: RESIDUAL: EAST WEST final grab samp.

SAMPLE SOURCE: FLUME FINAL EFFLUENT

MLS FILTERED	Blank-1	1	10	50	100	Blank-2	DUP.10
DILUTION FACTOR							
PLATE COUNT							
TOTAL FECAL COUNT							
AVERAGE							