NPDES PERMIT REVIEW FOR REGULATING STORMWATER DURING CONSTRUCTION, EXCAVATION, AND DEMOLITION ACTIVITIES AT MTCA SITES IN THE LOWER DUWAMISH WATERWAY

Prepared for

Science Applications International Corporation

and

Washington Department of Ecology

July 2011

Note:
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1.0 Introduction

The Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA) are directing cleanup of contaminated sediments and control of sources of recontamination in the Lower Duwamish Waterway (LDW) under an Administrative Order on Consent with the City of Seattle, King County, the Port of Seattle, and The Boeing Company. The LDW site is an approximately 5.5-mile portion of the Lower Duwamish River that flows into Elliott Bay. The sediments along the river contain a range of contaminants due to years of industrial activity and runoff from residential areas. These contaminants include polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), chlorinated dioxins and furans, metals, and phthalates.

At Model Toxics Control Act (MTCA) cleanup sites in the LDW, a National Pollutant Discharge Elimination System (NPDES) construction stormwater individual permit (CSWIP) from Ecology may be required to conduct construction, demolition, or excavation activities. At present, CSWIPs are developed by staff in Ecology's Toxics Cleanup Program (TCP) and the Water Quality Program (WQP), depending on the Ecology region. Development of these permits can be time and labor intensive. To facilitate better coordination of the permitting process between TCP and WQP, the TCP Management Team is evaluating the benefit of developing a CSWIP template for use at MTCA cleanup sites. With the aid of a template, TCP site managers could develop CSWIPs for MTCA cleanup sites in the LDW with minimal assistance from WQP staff. An additional benefit would be gained from using a common template to develop these permits for MTCA cleanup sites in other Ecology regions.

To aid in development of a CSWIP template for MTCA cleanup sites, Herrera Environmental Consultants (Herrera) conducted a review of the following background information for the permitting process:

- Regulatory guidance documents for NPDES permits and MTCA cleanup sites
- Stormwater Management Manual for Western Washington (SMMWW) (Ecology Publication No. 05-10-029)
- Stormwater Management Manual for Eastern Washington (Ecology Publication No.0 4-10-076)
- The current construction stormwater general permit (CSWGP) from Ecology
- Existing CSWIPs from Ecology for MTCA cleanup sites
- Existing Stormwater Pollution Prevention Plans (SWPPPs) for MTCA cleanup sites

Based on this review, Herrera produced this document to summarize the following information related to the development of a CSWIP template for MTCA cleanup sites:

- Regulatory context for MTCA cleanup sites in the LDW
- General requirements for SWPPPs and Best Management Practices (BMPs) to control construction stormwater runoff
- Existing construction stormwater permits, SWPPPs, and BMPs for MTCA cleanup sites
- Other potential BMPs for MTCA cleanup sites
- Logistical issues related to the development of a CSWIP template for MTCA cleanup sites

This report was prepared by Herrera under Ecology's "Hazardous Substances Site Investigation & Remediation for the Toxics Cleanup Program Contract No. C0700034" between Science Application International Corporation (SAIC) and Ecology. Herrera is a subcontractor to SAIC under this contract.

2.0 Regulatory Context

This section describes the regulatory context for MTCA cleanup sites in the LDW, including the following programs:

- LDW Source Control
- NPDES
- MTCA Site Cleanup

A summary of key provisions of these programs that could influence the development of a CSWIP template is provided at the end of this section.

2.1 Lower Duwamish Waterway Source Control

Source control in the LDW is the process of working to find and control releases of pollution to sediments in preparation for cleanup and to to minimize and manage recontamination potential. Ecology drafted an LDW Source Control Strategy, with significant input from King County, the Port of Seattle, and the cities of Seattle and Tukwila, before gaining EPA concurrence. The Source Control Strategy was published in 2004.

The LDW Source Control Strategy document provides a framework for identifying and managing sources of chemicals in coordination with sediment cleanups, with the objective to minimize the potential for exceedances of Sediment Management Standards (Chapter 173-204 WAC) and LDW sediment cleanup goals using existing administrative and legal authorities to perform inspections and require necessary source control actions.

The strategy focus is based on the principles of source control for sediment sites described in EPA guidance (Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites; February 12, 2002), and Ecology's Sediment Management Standards (Chapter 173-204 WAC). The first principle is to control sources early, starting with identifying all ongoing sources to the site. EPA's Record of Decision (ROD) for the site requires that sources of sediment contamination to the entire site be evaluated, investigated, and controlled as necessary. Source control work has been divided into specific Source Control Action Plans (SCAPs) to coordinate with sediment cleanups, addressing guidance and regulations to be consistent with the EPA ROD. Individual SCAPs are developed for specified areas of concern along the LDW. In general, they describe potential sources of contaminants to LDW sediments and identify actions necessary to prevent recontamination of sediment after cleanup.

Source control efforts are documented by local jurisdictions under various regulatory programs and collected by Ecology. Ecology provides periodic Source Control Status Reports to EPA to document the progress of source control across the agencies and programs. As the Record of Decision for the LDW is written, Ecology and EPA will summarize what has been accomplished and what must still be done to minimize recontamination potential to the point that sediment

cleanup in the waterway may begin. Given the complexity of source control in general, and how sources affect stormwater discharging to the LDW, it is critical that federal, state and local agencies with regulatory authority and responsibility to control different media and types of sources continue to actively coordinate their efforts

The LDW Source Control Strategy document identified nine potential mechanisms or pathways by which contaminated media can impact sediments:

- Direct discharges
- Stormwater
- CSOs
- Groundwater
- Erosion or leaching
- Spills, dumping, leaks, and inappropriate housekeeping and management practices
- Waterway operations and traffic
- Air pollution
- Transport of contaminated sediments

Four of these can be addressed by controlling contaminant discharge to conveyance systems that discharge to the LDW:

- Direct discharges of pollutants to the waterway from commercial, industrial, private, or municipal outfalls that may or may not be permitted under an NPDES permit
- Stormwater that enters the waterway via storm drains and pipes, ditches, creeks, or directly from properties adjacent to the waterway; contaminated solids that collect in storm drains/pipes, ditches or creeks may be carried to the waterway by stormwater
- CSO events resulting from combined discharges of stormwater, municipally permitted industrial discharges, and untreated sewage released directly to the waterway during heavy rainfall, when the sanitary sewers have reached their capacity; the City of Seattle and King County are municipal NPDES permittees for CSOs
- Spills, dumping, and leaks that result in contaminant releases to soil and stormwater

MTCA cleanup actions are a potential source of contaminants associated with stormwater. As described above, it is the purpose of this document to identify regulatory issues relevant to the development of a CSWIP template for MTCA cleanup sites in the LDW.

2.2 National Pollutant Discharge Elimination System

One of the goals of the Federal Water Pollution Control Act (FWPCA) Amendments of 1972 was to eliminate the discharge of pollutants into navigable waters by 1985. Although that goal remains unmet, it underlies the approach for establishing technology standards implemented through NPDES permits. Through the permitting program, a point source may be authorized to discharge pollutants into waters of the United States. The FWPCA Amendments of 1972 also set an interim goal of achieving "water quality [that] provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" by July 1, 1983. That goal is commonly referred to as the fishable, swimmable goal of the act and is one of the factors that states must consider in the development of their water quality standards. Since 1972, the FWPCA has been further amended on several occasions, including the 1977 Clean Water Act (CWA), which is now the name for the statute.

Any point source that discharges or proposes to discharge pollutants into waters of the United States is required to obtain an NPDES permit.

The term *pollutant* is defined in CWA section 502(6) and §122.2 to include industrial, municipal, or agricultural waste (including heat) discharged into water. For regulatory purposes, pollutants are grouped into three categories under the NPDES program:

- Conventional pollutants are those defined in CWA section 304(a)(4) and §401.16 (BOD_5, TSS, fecal coliform, pH, and oil and grease).
- Toxic (priority) pollutants are those defined in CWA section 307(a)(1) (and listed in §401.15 and Appendix A of Part 423) and include 126 metals and manmade organic compounds.
- Nonconventional pollutants are those that do not fall under either of the above categories (conventional or toxic pollutants) and include parameters such as chlorine, ammonia, nitrogen, phosphorus, chemical oxygen demand (COD), and whole effluent toxicity (WET).

The CWA regulates discharges to *waters of the United States*, defined as:

- Waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide
- Interstate waters including interstate wetlands

- Other waters that could affect interstate or foreign commerce
- Impoundments of waters of the United States
- Tributaries of the above categories of waters
- Territorial seas
- Wetlands adjacent to other waters (except wetlands themselves) in the above categories

The term *point source* is defined in CWA section 502(14) and §122.2 to include any discernible, confined, and discrete conveyance from which pollutants are or may be discharged, including runoff conveyed through a storm drain system.

The EPA has delegated responsibility to administer the NPDES permit program to the State of Washington on the basis of Chapter 90.48 RCW, which defines Ecology's authority and administrative obligations. The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). Chapter 173-226 WAC requires a State Waste Discharge Permit before discharge of wastewater to waters of the State and municipal sewerage systems is allowed, to meet NPDES requirements. The regulations also establish the basis for effluent limitations and other requirements to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least 30 days before the permit is issued (WAC 173-220-050).

All NPDES permits consist, at a minimum, of five sections, including:

- Cover Page
- Effluent Limitations
- Monitoring and Reporting Requirements
- Special Conditions
- Standard Conditions

The Special Conditions are developed to supplement numeric effluent limitations and can include additional monitoring activities, special studies, BMPs, and compliance schedules. BMPs can dictate schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollution. BMPs also include treatment methods, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

CWA sections 402(a)(1) and (2) give the permitting authority the ability to include BMPs in permits on a case-by-case basis to carry out the provisions of the CWA. Construction stormwater permits use BMPs to control or abate the discharge of pollutants when:

- They are authorized under CWA section 402(p) for the control of stormwater discharges
- Numeric effluent limitations are infeasible
- The practices are necessary to achieve effluent limitations and standards or carry out the purpose and intent of the CWA

Current stormwater regulations require permit coverage for all construction activities that result in land disturbance of equal to or greater than 1 acre. The permits require construction site operators to install and maintain erosion and sediment control measures to prevent stormwater from washing soil, nutrients, chemicals and other harmful pollutants into local water bodies, including storm drains, ditches, wetlands, creeks, rivers, lakes and marine waters.

2.2.1 Construction Stormwater Permits

Both CSWGPs and CSWIPs may be issued through the NPDES program; however, it is rare that Ecology issues a CSWIP (of the 15 individual permits found to be currently in place, 12 were issued by the Northwest Regional Office and 3 by the Southwest Regional Office). Construction stormwater permits are required for any land-disturbing activities, such as clearing, grading, excavating, and/or demolition that:

1. Disturb 1 or more acres of land area

OR

2. Are "part of a *larger common plan of development or sale*" that will ultimately disturb 1 or more acres of land

AND

3. Discharge stormwater from the site into *state surface water(s)* or into storm drainage systems, which discharge to state surface waters

A CSWGP is also required for any size construction activity discharging stormwater to waters of the State that Ecology determines to be a significant contributor of pollutants or reasonably expects to cause a violation of any water quality standard.

Ecology's CSWGP requires compliance with applicable water quality regulations. Discharges must not cause or contribute to a violation of surface water quality standards (Chapter 173-201A WAC), ground water quality standards (Chapter 173-200 WAC), sediment management standards (Chapter 173-204 WAC), and human health based criteria in the National Toxics Rule (40 CFR Part 131.36). Discharges not in compliance with these standards are not authorized using this permit mechanism. Additionally, the CSWGP does not provide for an authorized discharge of treated wastewater.

The applicant must submit the application for coverage on or before the first newspaper publication date of the public notice. If applicable, State Environmental Policy Act (SEPA) review must be completed before the permit will be issued. Once Ecology receives a completed application, it will take a minimum of 38 days before permit coverage can be issued. This includes two public notices (7 days apart) in the local newspaper, followed by a 30-day public comment period. Site coverage under this permit cannot be issued any sooner than 31 days from the second public notice date. Ecology will issue coverage under the general permit within 30 days of receiving a completed application or 31 days after the second public notice, whichever is later.

The permit requires development and implementation of a SWPPP. A SWPPP for construction activities is primarily a temporary erosion and sediment control plan. The primary focus of the SWPPP is to implement BMPs for identifying, preventing, reducing, or eliminating sediment and erosion problems on site and to prevent violations of surface and ground water quality and sediment management standards.

2.2.1.1 Construction Stormwater General Permit

Ecology's general permits are designed and intended to provide coverage for a range of sites conducting similar operations, such as within the construction industry, where site activities will disturb soil leading to the potential for erosion. General permit coverage is appropriate when discharge characteristics are sufficiently similar across the broader industry (in this case, construction), and a standard (or "general") set of permit requirements can effectively provide environmental protection and comply with water quality standards for discharges across that industry. The typical water quality parameters of concern addressed by the CSWGP are turbidity and pH. The presence of toxic pollutants typically is not indicative of the broader industry approaches or conditions, and therefore indicates the need for a CSWIP.

General permits, as opposed to *Individual* permits, cover multiple facilities exhibiting similar characteristics within specific categories of discharges. A general permit may be an appropriate permitting approach to address construction-related stormwater issues for the following reasons:

- A general permit is an efficient method to establish the essential regulatory requirements appropriate for a broad range of construction activities.
- A general permit allows Ecology to handle the large number of construction stormwater permit applications across the State more efficiently.
- The application requirements for coverage under a general permit are far less rigorous than individual permit application requirements and hence more cost effective.
- A general permit is consistent with EPA's four-tier permitting strategy, the purpose of which is to use the flexibility provided by the CWA in designing a workable and reasonable permitting system.

Facilities that wish to be covered under the general permit typically submit a Notice of Intent (NOI) to Ecology (there is an option of not requiring permit coverage for stormwater discharges associated with small construction activity; however, this does not apply to contaminated sites). The NOI provides Ecology with information describing the facility. Ecology will either notify the facility that it is covered by the general permit, or can require the facility to apply for an individual permit.

The NOI application requires information about the presence of contaminated soils or groundwater on the site and whether contaminated media will be disturbed during construction. The applicant must identify the contaminants, their concentrations, and locations, and also identify pollution prevention and/or treatment BMPs proposed to control the discharge of the contaminants. Ecology may request a copy of the SWPPP for review.

Before the discharge of stormwater or industrial process water to waters of the State, the Permittee must apply all known, available, and reasonable methods of prevention, control, and treatment (AKART). This includes the preparation and implementation of an adequate SWPPP, with all appropriate BMPs installed and maintained in accordance with the SWPPP and the terms and conditions of the permit (the CSWGP includes 10 Special Conditions and 26 General Conditions – Special Condition S9 describes Stormwater Pollution Prevention Plan content requirements; also discussed in Section 3.1 below).

Ecology typically does not review SWPPP contents before issuing permit coverage and presumes that the Permittee complies with water quality standards, unless discharge monitoring data or other site-specific information demonstrate that a discharge causes or contributes to a violation of water quality standards. To comply with the permit the Permittee must:

- Address all permit conditions, including planning, sampling, monitoring, reporting, and recordkeeping

- Implement stormwater BMPs contained in stormwater management manuals published or approved by Ecology, or BMPs that Ecology certifies as demonstrably equivalent to BMPs contained in stormwater technical manuals published or approved by Ecology, including the proper selection, implementation, and maintenance of all applicable and appropriate BMPs for onsite pollution control

Stormwater Management Manuals described in the 2010 Modification of the Phase I Municipal Stormwater Permit – Appendix 10 have been approved by Ecology to be equivalent to the 2005 Stormwater Management Manual for Western Washington (Appendix A). [Note: some elements of Clark County's program listed in Appendix 10 were challenged and later found by the Pollution Control Hearings Board to be not equivalent – those elements should not be used for equivalency.]

Permit compliance is composed of two parts: 1) review of monitoring (sampling) data that allow for adaptive management and 2) site inspections that indicate whether BMPs are being implemented.

Permittees who exceed water quality-based numeric benchmark (indicator) values for turbidity/transparency and/or pH must review and make appropriate revisions to the SWPPP, as well as implement and maintain appropriate source control and/or treatment BMPs within set timeframes. Benchmark values are used to determine that BMPs are functioning properly; they are not water quality criteria or effluent limits. The use of benchmarks allows for a relatively flexible adaptive management approach designed to result in permit compliance. If the Permittee meets the benchmark for a pollutant parameter, the discharge is presumed not to cause or contribute to a violation of water quality standards for that parameter. If the Permittee exceeds a benchmark, the potential for a violation of water quality standards increases and the Permittee is required to conduct SWPPP review and implementation of additional BMPs. The process must be documented and, at a particular point, reported to Ecology.

Benchmark values are not numeric effluent limits, and discharges that exceed a benchmark value are not automatically considered a permit violation or a violation of water quality standards. A Permittee violates the permit when corrective actions are not followed when exceeding the benchmarks.

If the Permittee becomes aware or Ecology determines that discharges cause or contribute to a water quality standard exceedance, the Permittee is required to notify Ecology and take corrective actions immediately. Sampling is required at all points where stormwater associated with construction activities is discharged offsite or where it enters any onsite surface waters of the State (e.g., a creek running through a site). If information suggests that site discharges are not controlled to meet applicable water quality standards, Ecology may require additional monitoring or a CSWIP. Similarly, if Ecology determines that BMPs are ineffective in protecting groundwater or sediment quality, the Permittee may be required to implement additional measures to assure compliance with the standards or to apply for a CSWIP.

Benchmarks cannot always be used at a site. Special conditions apply to sites that discharge to impaired water bodies. These are waterbodies with total maximum daily load (TMDL) limits or those on the CWA 303(d) list for turbidity, fine sediment, high pH, phosphorus, or other applicable water quality parameters. Applicants for CSWGP coverage must provide information to Ecology that explains specifically how the applicant will manage the site to assure that discharges will not cause or contribute to violations of water quality standards. Ecology must receive this information as part of the application process to make an affirmative determination that the impaired water body will not be affected by the construction project. The permit requires discharges from construction sites to impaired waterbodies to comply with water quality-based numeric effluent limits, including indirect discharges via stormwater conveyance systems. These details are noted in Special Condition S8 of the permit.

2.2.1.2 Construction Stormwater Individual Permit

When a CSWGP is not appropriate for a specific construction project, Ecology may require the discharger to apply for and obtain an individual permit if:

- A general permit would not provide adequate assurance that water quality will be protected
- The project has a reasonable potential to cause or contribute to a violation of water quality standards

CSWIPs are typically issued for complex projects that warrant site-specific controls and monitoring; this may include sites that discharge to a particularly sensitive receiving water (e.g., 303[d]-listed waters), sites where a mixing zone is requested, projects with multiple distinct locations (e.g., a major transportation project), sites that may result in a Sediment Management Standards exceedance, or sites that may result in Groundwater Quality Standards exceedances. The presence of toxic pollutants provides a basis for considering a site as complex.

Any discharger authorized by a general permit may request to be excluded from coverage by applying for a CSWIP. The discharger must submit to Ecology an application, as described in Chapter 173-220-040 WAC, with reasons supporting the request. These reasons must document how an individual permit will apply to the applicant in a way that the general permit cannot. Ecology may make specific requests for information to support the request. The process involves submitting an EPA Form 1 (Appendix B), along with a narrative description of the following:

- The location and the nature of the construction activity
- The total area of the site and the area of the site expected to undergo excavation
- Proposed measures, including BMPs, to control pollutants in stormwater discharges during construction, including a brief description of applicable state and local erosion and sediment control requirements
- Proposed measures to control pollutants in stormwater discharges that will occur after construction operations have been completed, including a brief description of applicable state or local erosion and sediment control requirements
- An estimate of the runoff coefficient of the site and the increase in impervious area after the construction is completed, the nature of fill material, and existing data describing the soil or the quality of the discharge
- The name(s) of the receiving water(s)

Although CSWIPs have been used for large complex construction projects in the past, they also can be applied to smaller complex sites with contaminated media. The individual permit uses the general permit format, but tailors the Special and General Conditions required for site-specific characteristics.

2.3 MTCA Site Cleanup

2.3.1 Objectives of cleanup process

MTCA establishes administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances are located. MTCA applies to facilities where a release or threatened release of a hazardous substance may pose a threat to human health or the environment. A facility is defined as:

> "any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer or publicly owned treatment works), well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, vessel, or aircraft; or any site or area where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located" (Chapter 173-340-200 WAC).

Any owner or operator with information that a hazardous substance has been released to the environment at the owner or operator's facility that may be a threat to human health or the environment must report this information to Ecology. MTCA sets strict cleanup standards to ensure that the quality of cleanup and protection of human health and the environment are not compromised. Cleanup standards provide a uniform, statewide approach to cleanup that can be applied on a site-by-site basis, establishing:

- Cleanup levels for hazardous substances present at the site, selected based upon site uses/exposures and the suite of substances present
- The location where these cleanup levels must be met (point of compliance)
- Other regulatory requirements that apply to the site because of the type of action and/or location of the site ("applicable state and federal laws")

RCW 70.105D.030 (2)(d) requires the cleanup standards in MTCA to be "at least as stringent as all applicable state and federal laws." In addition to establishing minimum requirements for cleanup standards, applicable state and federal laws also impose technical and procedural requirements for performing cleanup actions. These requirements are described in Chapter 173-340-710 WAC and are similar to the "ARAR" (applicable or relevant and appropriate requirements) approach of the federal Superfund law. Sites cleaned up under an order or decree may be exempt from obtaining a permit under certain other laws, but they must still meet the

substantive requirements of these other laws (Chapter 173-340-710(9) WAC). Further discussion regarding other laws, and especially NPDES (State Waste Discharge) permits, is provided in Section 2.3.3.1.

MTCA also provides for the selection of cleanup actions by evaluating methods that can be used to clean a site and then deciding which of those methods would best achieve cleanup standards. Aside from meeting cleanup standards, the cleanup actions must also comply with applicable state and federal laws, protect human health and the environment, provide for compliance monitoring to ensure effectiveness, provide for permanent cleanup to the maximum extent practicable, provide for a reasonable restoration time frame, and consider public concerns.

Design, construction, and operation of cleanup actions should be conducted according to formal plans (i.e., engineering documents). Scopes and level of detail will vary depending on site-specific conditions and the nature and complexity of the cleanup action. Routine cleanups (e.g., leaking underground storage tanks) may combine the information in various documents into one report to avoid unnecessary duplication.

The **engineering design report** should include information sufficient to develop and review construction plans and specifications. It should document engineering concepts and design criteria used for design of the cleanup action, plus additional information needed to address state, federal, and local requirements, including substantive requirements for exempted permits (see Section 2.3.3.1).

Construction plans and specifications should detail the cleanup actions to be performed and must be prepared to conform with accepted engineering practices and techniques. The specifications should include a copy of any permits and approvals and additional information to address applicable state, federal, and local requirements including the substantive requirements for any exempted permits (see Section 2.3.3.1).

Performance monitoring confirms that an interim action or cleanup action has attained cleanup standards and, if appropriate, remediation levels or other performance standards. Examples include construction quality control measurements or monitoring necessary to demonstrate compliance with a permit or, where a permit exemption applies, the substantive requirements of other laws (see Section 2.3.3.1).

MTCA's objective is to minimize public health and environmental risk to acceptable levels. This can be achieved by removing contaminant sources, blocking contaminant movement away from source areas, and/or shielding target organisms (e.g., people, animals, plants) from exposure. When a contaminant release has been identified, MTCA provides a framework for assessing the severity and extent of the release, planning remedial actions, monitoring effectiveness of those actions, and documenting the process. The cleanup actions used at a site are conducted according to construction industry standards that include worker safety, public health, and environmental controls to limit further release of contaminated media. Various approaches to contaminant control at the source, along migration pathways, and at the point of contact with target organisms have been developed to support construction at cleanup sites (see Table 2-1).

Table 2-1. Surface water runoff contaminant source control, pathway control, and target protection measures during construction.

Source Control	
Release of chemical product directly to surface soil during construction	SWPPP
Existing surface soil or surface water contamination	Containment (e.g., stockpiles, holding tanks)
Contaminated dust	Vacuuming surfaces Dust suppression BMPs
Pathway Control	
Contaminated surface soil and surface water	Erosion control BMPs
Contaminated dust	Dust suppression BMPs
Target Protection	
Workers	Personal protective equipment (PPE) – Site-specific Health & Safety Plan
Public	Site security – Site-specific Health & Safety Plan Stormwater BMPs Dust suppression BMPs
Environment	Stormwater BMPs Dust suppression BMPs

2.3.2 Cleanup Process

There are two basic approaches to cleanup under MTCA – formal and informal. The formal approach involves direct involvement of Ecology with development of legal agreements/orders, oversight, and enforcement, while the informal approach is voluntary with less Ecology oversight and does not include legal instruments. The formal approach allows NPDES provisions to be explicitly addressed; the informal approach does not.

2.3.2.1 Consent Decree

A consent decree is a formal legal agreement filed in court. The work requirements in the consent decree and the terms under which it must be conducted are negotiated and agreed to by the potentially liable person (PLP), Ecology, and the state Attorney General's office. Before consent decrees can become final, they must undergo public review and comment period that typically includes a public hearing. Sites cleaned up under a consent decree are exempt from having to obtain certain state and local permits that could delay the cleanup, but must comply with the substantive requirements. Consent decrees require a public participation plan, a notice of negotiations (published in the Site Register), and a notice of proposed decree providing an opportunity for public review.

2.3.2.2 Agreed Order

An Agreed Order is a legally binding administrative order issued by Ecology and agreed to by the PLP. An agreed order describes site activities that must occur for Ecology to agree not to take enforcement action for that phase of work. As with consent decrees, agreed orders are subject to

public review and exempt cleanup work from obtaining certain state and local permits, but must comply with the substantive requirements. Agreed orders require a public participation plan, a notice of discussions (published in the Site Register), and a notice of agreed orders providing an opportunity for public review.

2.3.2.3 Enforcement Order

Enforcement Orders are administrative orders requiring cleanup without an agreement with a PLP. These orders are usually issued to a PLP when Ecology believes a cleanup solution cannot be achieved expeditiously through negotiation of an Agreed Order or if an emergency exists. Enforcement Orders are subject to public review and exempt cleanup work from obtaining certain state and local permits, but must comply with the substantive requirements. Ecology must provide public notice of an enforcement order, which includes an invitation to the public to comment.

2.3.2.4 Independent Cleanup

Independent Cleanup allows smaller or less complex sites to be cleaned up quickly, without having to follow a formal process. In this case, the PLP informs Ecology of the contaminant release to the environment, conducts the cleanup according to MTCA requirements, and submits the results to Ecology (formal design documents, including SWPPPs, typically are not developed for independent cleanups). Ecology may require further action based on review of cleanup documentation. Alternatively, the PLP may solicit Ecology input through the Voluntary Cleanup Program (VCP). Typically, the property owner submits a cleanup report with a fee and Ecology either issues a letter stating that the site needs "No Further Action" or identifies what additional work is needed. The PLP may solicit Ecology input during the characterization or cleanup planning stages, which would be an opportunity to identify the need for a CSWIP. For those sites where underground storage tanks are to be removed, the PLP typically gives Ecology a 30-day notice before construction (timing may vary, but is supposed to be "reasonable" based on the situation). This also provides an opportunity to identify the need for a CSWIP. In King County, the Fire Marshall must be notified so that the site may be visited for safety reasons during the tank removal process.

It should be acknowledged that property owners may perform construction activities on a contaminated site without Ecology involvement or notification (this may occur when a property owner initiates redevelopment or constructs site improvements). These actions may not address site contamination directly, and so would not be classified as a cleanup, but they might indirectly result in the transitory exposure or release of site contaminants. These situations may be addressed through permitting associated with local jurisdictions, discussed in Section 2.3.3.3.

2.3.3 Permitting under MTCA

2.3.3.1 General Approach – ARARs

The ARAR provisions of MTCA address contaminant control requirements during construction performed at the remedial action stage of the process. Important contaminant control

mechanisms are provided through NPDES construction stormwater permits that dictate stormwater control requirements imposed at the site boundary. BMPs required in the NPDES permits provide options to achieve required compliance.

Chapter 173-340-710 WAC states that all cleanup actions conducted under MTCA, including interim actions, must comply with applicable state and federal laws. Applicable state and federal laws include legally applicable requirements and those requirements that Ecology determines are relevant and appropriate:

- Applicable requirements include those cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations adopted under state or federal law that specifically address a hazardous substance, cleanup action, location, or other circumstances at the site.

- Relevant and appropriate requirements include those cleanup standards, standards of control, and other environmental requirements, criteria, or limitations established under state or federal law that, while not legally applicable to the hazardous substance, cleanup action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

Proponents of independent remedial actions, including those conducted under the VCP, must obtain permits required by federal, state, and local laws.

Remedial actions conducted under a consent decree, order, or agreed order, and Ecology when it conducts a remedial action, are exempt from the administrative permitting requirements of the following RCW chapters:

- 70.94 – Air
- 70.95 – Solid Waste
- 70.105 – State-only Designated Dangerous Waste
- 77.55 – Hydraulic Permit
- 90.58 – Shorelands

These remedial actions also are exempt from the procedural requirements of any laws requiring or authorizing any local government permits or approvals. The intent is to expedite the cleanup process by eliminating the permit documentation and review process; however, the substantive provisions of the implementing regulations still must be met. Ecology will still provide an opportunity for comment by the public, tribes, and state and local governments.

When MTCA was last updated, this list also included RCW 90.48 – Water Pollution Control; however, in 2008 Ecology determined that in order to maintain its delegated authority to implement the Federal NPDES program, it could not exempt any actions from compliance with

requirements of the law (Appendix C); only Congress could create exemptions from the Clean Water Act. The law applies to discharge of hazardous substances directly or indirectly released or proposed to be released to waters of the State, which must incorporate all known, available, and reasonable methods of treatment consistent with the requirements of chapters 90.48 and 90.54 RCW and the implementing regulations.

2.3.3.2 State Environmental Policy Act

The State Environmental Policy Act (SEPA) is a state policy that requires state and local agencies to consider the likely environmental consequences of a proposal before approving or denying the proposal. Any proposal that requires a state or local agency decision to license (permit) a project can trigger environmental review under SEPA. The environmental review usually starts when an applicant applies for a permit or approval from a state (e.g., construction stormwater permit) or local agency (e.g., grading plan, demolition plan). The completed environmental checklist is submitted to the SEPA "lead agency" as a prerequisite to issuing the permit or approval (one agency is usually identified as the "lead agency" to evaluate the environmental consequences of the proposal). The lead agency for most non-governmental projects will be the city or county where the project is located.

Some minor projects do not require environmental review, which is decided by the lead agency. If the type of project is considered "categorically exempt," no further review under SEPA is needed. If the project is not categorically exempt, the applicant will usually be asked to complete an "environmental checklist." The answers in the checklist will help the lead agency determine if an environmental impact statement (EIS) is needed (SEPA does not offer an Environmental Assessment [EA] option).

If the project is not likely to have a significant environmental impact, the lead agency will issue a determination of nonsignificance (DNS). In some cases, a mitigated determination of nonsignificance (MDNS) will be issued when the lead agency identifies conditions that will reduce impacts to a nonsignificant level.

Whether an EIS or a DNS is issued, most SEPA documents will require a public comment period. The lead agency will consider any comments received and may require additional review. Once the SEPA review process is complete, agencies will use the information in the SEPA document to decide whether to issue the permits and approvals needed for the project.

The responsible official for the lead agency must make a threshold decision no later than 90 days after the application and supporting documentation are determined complete. Once a threshold determination is made, there is generally a specified comment period followed by an appeal period, which varies depending on the type of proposal and whether or not an EIS is required.

2.3.3.3 Local Permits and Stormwater Management Manuals

The City of Seattle, City of Tukwila, and King County have local authority over stormwater discharges and construction activities impacting the LDW, depending upon the location of the

project. A variety of local reviews, approvals, and permits are applicable to any given project on a contaminated site, depending upon the nature of the work. Additionally, Washington State Department of Transportation (WSDOT) projects have their own stormwater standards. This section briefly summarizes the most common local permits, applicable regulations, and information about each municipality's authority as it applies to contaminated sites.

Stormwater Management Manuals: Each of the municipalities along the LDW are subject to Phase I or Phase II Municipal Stormwater NPDES permit requirements, which provide a level of consistency across the local governments regarding construction stormwater controls. State and local stormwater management manuals address four primary stormwater control approaches:

- Source Control BMPs
- Construction Erosion and Sediment Control BMPs
- Hydrologic (flow) Controls
- Treatment BMPs

The following two stormwater management manuals developed by Seattle and King County have been approved by Ecology as equivalent to the SMMWW:

- City of Seattle 2009 Director's Rules, Stormwater Manual – Volume 2 Construction Stormwater Control Technical Requirements Manual

- King County 2009 Surface Water Design Manual, Appendix D – Erosion and Sediment Control Standards

Generally, a new development or redevelopment project proposal that triggers a local permit is required to comply with the applicable stormwater management manual. In Seattle and unincorporated King County, projects that result in 2,000 square feet of new plus replaced impervious surface, or 7,000 square feet of land disturbing activity, must have a local permit and comply with the adopted stormwater management manuals. The City of Tukwila generally follows the King County program, with some amendments. A construction project's SWPPP required by Ecology's CSWGP will typically also meet the requirements of the local government's temporary erosion and sediment control program.

Land disturbing activity permits: The Seattle Department of Planning and Development (DPD) has established a number of project thresholds that trigger the need for a grading permit based on excavation size, site location relative to sensitive environments, and site conditions. In particular, if the "Type of Site" is considered a "Potentially Hazardous Location," any grading at all requires a permit (SMC 22.800.050). This includes any site listed on Ecology's Hazardous Sites List (http://www.ecy.wa.gov/fs/) or EPA's National Priorities List (http://www.epa.gov/superfund/sites/npl/). The definition extends to solid waste disposal sites, which include sites with construction and demolition wastes, dangerous waste, hazardous substances, and problem wastes. At a minimum, two inspections are required by DPD, both before ground disturbance to discuss proposed erosion control measures and then following removal of control measures.

The King County Clearing and Grading Permit is administered by the Department of Development and Environmental Services. Chapter 16.82 King County Code (KKC) establishes a number of project thresholds that trigger the need for a clearing and grading permit, including the location of the project, amount of new or replaced impervious surface, cumulative excavation volumes, and cumulative clearing. There are no provisions for contaminated sites.

The Tukwila Public Works Department administers grading permits, which are required for any grading (no minimum threshold). Chapter 16.54 of the Tulwila Municipal Code (TMC) requires that all grading activities require erosion prevention and sediment control commensurate with the degree of risk and that all grading activities shall be undertaken according to The King County Surface Water Design Manual, Appendix D. There are no provisions for contaminated sites.

Demolition permits: Demolition permits are required in Seattle to remove structures, including accessory structures with more than 120 square feet of projected roof area (including overhangs), as specified in the Seattle Building Code (SBC) Section 106 and the Seattle Residential Code (SRC) Section 105. Applicants are required to abide by PSCAA requirements for asbestos control and EPA requirements for lead-based paint control. No specific requirements are identified for stormwater control; however, the Director's Rules are considered applicable for stormwater control.

KCC Title 16 Building and Construction standards include provisions for demolition of structures in King County. The code addresses protecting water quality from the adverse impacts associated with erosion and sedimentation. Erosion control measures must be in place before disturbing any soil associated with demolition activities. All disturbed soil must be stabilized and must remain on site. At the completion of demolition work, permanent soil stabilization, erosion, and drainage controls measures must be in place. The Surface Water Design Manual – Appendix D is considered applicable for stormwater controls.

TMC Section 16.04 Buildings and Construction standards include provisions for demolition of structures in Tukwila. The code does not specifically link demolition activities to erosion and sediment control, except through the separate grading and clearing requirements (described above).

Infrastructure connections: During construction, stormwater may be discharged to storm drains that normally convey water to a King County Wastewater Treatment Plant through a pipe network that may also, during high intensity or prolonged rainfall events, discharge water to Puget Sound through CSOs. Discharge of contaminated industrial stormwater to King County requires a supplement to the standard Industrial Waste Program's Wastewater Discharge Permit Application, providing descriptions of site modifications to reduce the volume of stormwater discharge, description of methods used to minimize the degree of stormwater contamination to be discharged, and a description of stormwater flow controls that will restrict or retain stormwater flow to the sanitary sewer. Typically, discharge flow restrictions will be imposed by King County to minimize the potential for overflows based on the capacity of the conveyance system in the area of concern.

2.3.3.4 Local Stormwater Discharge Requirements

In addition to project-specific local stormwater management requirements, Seattle and King County require source control BMPs for potential pollution generating activities regardless of the presence of an active permit. Local governments also prohibit non-stormwater discharges to their municipal separate stormwater systems. Here too, the Phase I or Phase II Municipal Stormwater NPDES permit requirements provide consistency across the local governments regarding prohibited discharges to the municipal stormwater systems.

Seattle, King County, and Tukwila have developed Stormwater Management Program Plans to address their NPDES Phase I / Phase II obligations. Two of the major program elements of these plans are 1) Illicit Discharge Detection and Elimination (IDDE) and 2) Controlling Runoff from New Development, Redevelopment and Construction Sites, both of which are discussed for each jurisdiction below.

2.3.3.4.1 City of Seattle Stormwater Discharge Requirements

The Seattle Stormwater Code (SMC 22.800) has been implemented to accomplish remedial purposes, which include, but are not limited to:

- Protect, to the greatest extent practicable, life, property and the environment from loss, injury and damage by pollution, erosion, flooding, landslides, strong ground motion, soil liquefaction, accelerated soil creep, settlement and subsidence, and other potential hazards, whether from natural causes or from human activity
- Protect the public interest in drainage and related functions of drainage basins, watercourses and shoreline areas
- Protect receiving waters from pollution, mechanical damage, excessive flows and other conditions in their drainage basins which will increase the rate of downcutting, streambank erosion, and/or the degree of turbidity, siltation and other forms of pollution, or which will reduce their low flows or low levels to levels which degrade the environment, reduce recharging of groundwater, or endanger aquatic and benthic life within these receiving waters and receiving waters of the State
- Meet the requirements of state and federal law and the City's municipal stormwater National Pollutant Discharge Elimination System ("NPDES") permit
- Fulfill the responsibilities of the City as trustee of the environment for future generations

SMC 22.803 establishes Minimum Requirements for all Discharges and all Real Property within the City. This provision establishes that all responsible parties are required to comply, even where no development is occurring, such that:

> "No discharge from a site, real property, or drainage facility, directly or indirectly to a public drainage system, private drainage system, or a receiving water within or contiguous to Seattle city limits, may cause or contribute to a prohibited discharge or a known or likely violation of water quality standards in the receiving water or a known or likely violation of the City's municipal stormwater NPDES permit."

The owner is required to:

> "Make plans, procedures, and schedules required by this subsection available to the Director of SPU [Seattle Public Utilities] when requested. A responsible party is required to, at the earliest possible time, but in any case within 24 hours of discovery, report to the Director of SPU, a spill, release, dumping, or other situation that has contributed or is likely to contribute pollutants to a public drainage system, a private drainage system, or receiving water. This reporting requirement is in addition to, and not instead of, any other reporting requirements under federal, state or local laws."

For all discharges, responsible parties shall implement and maintain source controls to prevent or minimize pollutants from leaving a site or property. Source controls required for all real property include, but are not limited to, the following:

- Solid wastes must be stored in a manner that minimizes the risk of contaminating stormwater.
- Solid and liquid wastes must be disposed of in a manner that minimizes the risk of contaminating stormwater.

SMC 22.802.020 states that source controls (i.e., BMPs) shall be implemented by all businesses and public entities for specific pollution-generating activities as specified in the joint SPU/DPD Directors' Rule (Source Control Technical Requirements Manual) to the extent necessary to prevent prohibited discharges and to prevent contaminants from coming in contact with drainage water. SMC 22.802.020 also includes the following MTCA-relevant substances that are prohibited to enter, either directly or indirectly, a public drainage system, a private drainage system, or a receiving water within or contiguous to Seattle city limits, including but not limited to when entering via a service drain, overland flow, or as a result of a spill or deliberate dumping:

- Acids
- Alkalis including cement wash water
- Chemicals not normally found in uncontaminated water
- Commercial and household cleaning materials

- Metals in excess of naturally occurring amounts, whether in liquid or solid form
- Painting products
- Pesticides
- Solid waste
- Solvents and degreasers

Discharges in compliance with a separate individual or general NPDES permit are permissible.

When the Director of SPU has reason to believe that any discharge is a prohibited discharge, the Director of SPU may sample and analyze the discharge and recover the costs from a responsible party in an enforcement proceeding. When the discharge is likely to be a prohibited discharge on a recurring basis, the Director of SPU may conduct, or may require the responsible party to conduct, ongoing monitoring at the responsible party's expense.

Any site on a list, register, or data base compiled by the EPA or Ecology for investigation, cleanup, or other action regarding contamination under any federal or state environmental law shall be a Potentially Hazardous Location according to SMC 22.800. When EPA or Ecology removes the site from the list, register, or data base, or when the Director of DPD determines the owner has otherwise established the contamination does not pose a present or potential threat to human health or the environment, the site will no longer be considered a potentially hazardous location.

SMC 22.800.080H stipulates the following authority:

> "If the Director of SPU determines that a discharge from a site, real property, or drainage facility, directly or indirectly to a public drainage system, a private drainage system, or a receiving water within or contiguous to Seattle city limits, has exceeded, exceeds, or will exceed water quality standards at the point of assessment, or has caused or contributed, is causing or contributing, or will cause or contribute to a prohibited discharge or a known or likely violation of water quality standards in the receiving water or a known or likely violation of the City's municipal stormwater NPDES permit, and cannot be adequately addressed by the required best management practices, then the Director of SPU has the authority, to the extent allowed by law, to issue an order under Chapter 22.808 requiring the responsible party to undertake more stringent or additional best management practices. These best management practices may include additional source control or structural best management practices or other actions necessary to cease the exceedance, the prohibited discharge, or causing or contributing to the known or likely violation of water quality standards in the receiving water or the known or likely violation of the City's municipal stormwater NPDES permit. Structural best management

> practices may include but shall not be limited to: drainage control facilities, structural source controls, treatment facilities, constructed facilities such as enclosures, covering and/or berming of container storage areas, and revised drainage systems. For existing discharges as opposed to new projects, the Director may allow 12 months to install a new flow control facility, structural source control, or treatment facility after the Director notifies the responsible party in writing of the Director's determination pursuant to this subsection and of the flow control facility, structural source control, or treatment facility that must be installed."

2.3.3.4.2 King County Stormwater Discharge Requirements

King County Surface Water Management Code (Title 9) has been implemented to:

- Promote the public health, safety and welfare by providing for the comprehensive management of surface and storm waters and erosion control, especially that which preserves and utilizes the many values of the county's natural drainage system including open space, fish and wildlife habitat, recreation, education, and urban separation

- Conduct programs to reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance groundwater recharge; and prevent water quality degradation through the implementation of comprehensive and thorough permit review, construction inspection, enforcement, and maintenance

- Prohibit the discharge of contaminants into surface and stormwater and groundwater, and outline preventive measures to restrict contaminants from entering such waters, which may include implementation of BMPs

KCC 9.12 sets forth the water quality compliance program, prohibiting the discharge of any contaminants into surface and stormwater and outlines preventive measures to restrict contaminants from entering the waters, including implementation of BMPs. The code requires a drainage review offsite analysis that:

> "…assesses potential offsite drainage and water quality impacts associated with development of the proposed site and proposes appropriate mitigations to those impacts. This initial submittal shall include, at minimum, a Level One downstream analysis as described in the Surface Water Design Manual. If impacts are identified, the proposed projects shall meet any applicable problem-specific requirements as specified in the Surface Water Design Manual."

Erosion and sediment control is required that:

> "…prevents, to the maximum extent practicable, the transport of sediment from the site to drainage facilities, water resources and adjacent properties. Erosion and sediment controls shall be applied in accordance with KCC 16.82, as specified by the temporary erosion and sediment control measures and performance criteria and implementation requirements in the King County Surface Water Design Manual."

KKC 9.12.025 states that it is unlawful for any person to discharge any contaminants into surface and stormwater, groundwater, or Puget Sound. Contaminants include, but are not limited, to the following:

- Trash or debris
- Construction materials
- Petroleum products including but not limited to oil, gasoline, grease, fuel oil, heating oil
- Antifreeze and other automotive products
- Metals in either particulate or dissolved form
- Flammable or explosive materials
- Radioactive material
- Batteries
- Acids, alkalis, or bases
- Paints, stains, resins, lacquers or varnishes
- Degreasers and solvents
- Drain cleaners
- Pesticides, herbicides or fertilizers
- Steam cleaning wastes
- Soaps, detergents or ammonia
- Swimming pool backwash
- Chlorine, bromine and other disinfectants
- Heated water
- Domestic animal wastes

- Sewage
- Recreational vehicle waste
- Animal carcasses
- Food wastes
- Bark and other fibrous materials
- Collected lawn clippings, leaves or branches
- Silt, sediment, or gravel
- Dyes, except as stated in subsection C.1. of this section
- Chemicals not normally found in uncontaminated water
- Any hazardous material or waste not listed above

Discharge control is required through properly designed, constructed, implemented, and maintained King County Stormwater Pollution Prevention Manual BMPs and by carrying out AKART. The Pollution Prevention Manual addresses source controls applicable to commercial, industrial, agricultural, public, and residential properties for non-construction-related activities.

KKC 9.12.060 stipulates the following authority:

> "Whenever it appears to the director that conditions exist requiring immediate action to protect the public health and/or safety, the director is authorized to enter at all times in or upon any such property, public or private, for the purpose of inspecting and investigating such emergency conditions. The director may without prior notice order the immediate discontinuance of any activity leading to the emergency condition. Failure to comply with such order shall constitute a misdemeanor as specified in K.C.C. 23.08.080."

2.3.3.4.3 City of Tukwila Stormwater Discharge Requirements

TMC Chapter 14.31 – Illicit Discharge Detection and Elimination provides for the health, safety, and general welfare of the citizens of Tukwila through the regulation of non-stormwater discharges to the stormwater drainage system to the maximum extent practicable, as required by federal and state law. This chapter establishes methods for controlling the introduction of pollutants into the stormwater drainage system in order to comply with requirements of the NPDES permit process.

The objectives are to:

- Regulate the contribution of pollutants to the stormwater drainage system by stormwater discharges by any person

- Prohibit illicit connections and illicit discharges to the stormwater drainage system
- Establish legal authority to carry out all inspection, surveillance, and monitoring procedures necessary to ensure compliance with this chapter

No person may discharge into the stormwater drainage system, surface water, or groundwater any materials other than stormwater. Examples of prohibited contaminants include, but are not limited to, the same list of items identified for King County above.

Tukwila currently conducts construction compliance through:

- Construction Site Inspection – all sites are inspected by the City prior to the start of construction
- Design Standards – minimum design standards of the 1998 King County Surface Water Design Manual, with an option to use the SMMWW.
- Construction Standards – Project plans; the City's Infrastructure Design and Construction Standards; and WSDOT Standard Specifications for Road, Bridge, and Municipal Construction
- Enforcement – TMC 8.45 provides for a system of escalating enforcement procedures necessary to sustain the existing codes and standards throughout the construction and development process
- Notice of Intent – The City requires NOI for Construction Activity and NOI for Industrial Activity to representatives of proposed new development or redevelopment projects

2.4 Key Regulatory Provisions for Developing a Construction Stormwater Individual Permit Template

The following summary of regulatory-based provisions provides a backdrop for implementing stormwater controls at MTCA cleanup sites.

NPDES:

- Construction stormwater permits are required for any land disturbing activities, such as clearing, grading, excavating, and/or demolition that disturb 1 or more acres of land area – **Ecology can require a construction stormwater permit for any size construction site**, if it determines the site is a significant potential contributor of pollutants to waters of the State

- CSWIPs are typically issued for complex projects that warrant site-specific controls and monitoring; this may include sites that discharge to an impaired water body (e.g., 303[d]-listed waters), sites where a mixing zone is requested, sites that may result in Sediment Management Standards exceedances, or sites that may result in Groundwater Quality Standards exceedances. **The presence of toxic pollutants provides a basis for considering a site as complex**.

MTCA:

- The **ARARs provisions** of MTCA address contaminant control requirements of the CWA (and its implementing State and local regulations) during construction performed at the remedial action stage of the process.

- The **CWA (and its implementing State and local regulations) applies to discharges of hazardous substances directly or indirectly released, or proposed to be released**, to waters of the U.S. (State), which must be addressed with AKART.

- **Independent remedial actions**, including those conducted under the VCP, **must obtain permits** required by federal, state, and local laws. Remedial actions conducted under a consent decree, order, or agreed order, and Ecology when it conducts a remedial action, are exempt from the administrative permitting requirements; however, in order for **Ecology to maintain its authority to implement the Federal NPDES program, it cannot exempt any actions from compliance with requirements of the law**.

Local permits and requirements:

- Any site on a list, register, or database compiled by the EPA or Ecology for investigation, cleanup, or other action regarding contamination under any federal or state environmental law is a Potentially Hazardous Location and covered under the Seattle Directors' Rules.

- Potentially Hazardous Locations require a grading permit in Seattle, regardless of the amount of soil excavated or the land area disturbed. Issuing the permit requires an inspection by DPD prior to ground disturbance to discuss proposed erosion control measures (no such requirements were found for King County or Tukwila).

- Seattle has no specific requirements for stormwater control at demolition sites; however, the Director's Rules are considered applicable for stormwater control. The King County demolition code requires erosion control measures must be in place before disturbing any soil associated

with demolition activities; the Surface Water Design Manual – Appendix D is considered applicable for stormwater controls. This would not apply to demolition conducted without ground disturbance. Tukwila code does not specifically link demolition activities to erosion and sediment control, except through the separate grading and clearing requirements.

- All of the local jurisdictions regulate discharge of contaminants to storm drain systems through their IDDE programs, as part of their NPDES permits. These discharges are regulated regardless of the activity generating them (i.e., construction, demolition). Contaminants include silt, sediment, or gravel; a wide array of chemicals and chemical products; and any hazardous material or waste not specifically listed.

3.0 Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs)

The SWPPP is used to identify all potential pollution sources that could come into contact with stormwater leaving a construction site. It identifies the erosion and sediment control (ESC) BMPs selected to reduce pollutants in stormwater discharges; it also describes the site inspections and follow-up maintenance required to meet discharge requirements. The SWPPP includes a site drawing to identify the exact locations that stormwater discharges from the site occur, as well as the location of selected ESC BMPs. The ESC BMPs are selected from Ecology's 2005 SMMWW, Volume II. As discussed in the previous subsection, Seattle, Tukwila and King County requirements for construction erosion and sediment controls are equivalent to Ecology's 2005 SMMWW.

Technology-based effluent limitations, also known as effluent limitation guidelines, are established for specific industry categories or subcategories after conducting an in-depth analysis of that industry. Non-numeric (typically called "narrative") effluent limits may be authorized in lieu of numeric limits, where numeric effluent limitations are infeasible. The variability of effluent and effectiveness of appropriate control measures makes setting uniform effluent limits for stormwater at construction sites difficult. Construction stormwater discharges vary in terms of flow rates, flow volumes, and levels of pollutants, due to:

- The nature of grading, clearing, and other construction activities occurring at the site
- The nature of precipitation in relation to phases of construction activity
- Site-specific conditions, including vegetation, hydrology, topography, soils, and surface imperviousness

As a result, control measures for construction stormwater discharges tend to focus on pollution prevention measures through BMPs. More detailed information on SWPPPs and associated BMPs for construction stormwater discharges is provided in the following subsections.

3.1 Stormwater Pollution Prevention Plan

Construction SWPPPs identify the potential for pollution problems on a construction project and details the measures required to be taken to control those problems.

An adequate construction SWPPP includes a narrative and drawings. The narrative is a written statement to explain and justify the pollution prevention decisions made for a particular project. The narrative contains concise information about existing site conditions, construction schedules, and other pertinent items not contained on the drawings. The drawings and notes describe where

and when the Permittee must install BMPs, the performance the BMPs are expected to achieve, and actions the Permittee must take if the performance goals are not achieved. Sections 3.1.1 and 3.1.2 each provide a list of contents to be addressed in the narrative and drawings, as identified in the SMMWW – Volume II, Section 3.3.

While it is a good idea to include standards and specifications from the construction SWPPP in the contract documents, the construction SWPPP is a separate, stand-alone document. The Permittee must keep the construction SWPPP on the construction site or within reasonable access to the site (within an hour) for construction and inspection personnel, although a copy of the drawings must be kept on the construction site at all times.

The SWPPP is a living document – a diary for the site. As site work progresses, the Permittee must modify the SWPPP to reflect changing site conditions, subject to the rules for plan modification by the local permitting authority.

The Permittee should apply the following general principles to the development of the construction SWPPP:

- Retain the duff layer, native topsoil, and natural vegetation in an undisturbed state to the maximum extent practicable
- Prevent pollutant release – select source control BMPs as a first line of defense
- Prevent erosion rather than treat turbid runoff
- Select BMPs depending on site characteristics (topography, drainage, soil type, ground cover, and critical areas) and the construction plan
- Divert runoff away from exposed areas wherever possible – keep clean water clean
- Limit the extent of clearing operations and phase construction operations
- Before reseeding a disturbed soil area, amend all soils with compost wherever topsoil has been removed
- Incorporate natural drainage features whenever possible, using adequate buffers and protecting areas where flow enters the drainage system
- Minimize slope length and steepness
- Reduce runoff velocities to prevent channel erosion
- Prevent the tracking of sediment off-site

- Select appropriate BMPs for the control of pollutants other than sediment

- Be realistic about the limitations of controls specified and the operation and maintenance of those controls – anticipate what can go wrong, how it can be prevented, and what will need to be done to fix it

3.1.1 SWPPP Narrative Requirements

- The plan must include the following 12 elements, with the type and location of BMPs used to satisfy each element called out (if an element is not applicable to a project, a written justification why it is not necessary must be provided):

    1. Mark Clearing Limits
    2. Establish Construction Access
    3. Control Flow Rates
    4. Install Sediment Controls
    5. Stabilize Soils
    6. Protect Slopes
    7. Protect Drain Inlets
    8. Stabilize Channels And Outlets
    9. Control Pollutants
    10. Control De-Watering
    11. Maintain BMPs
    12. Manage the Project

- Project description – Describe the nature and purpose of the construction project. Include the total size of the area; any increase in existing impervious area; the total area expected to be disturbed by clearing, grading, excavation or other construction activities, including off-site borrow and fill areas; and the volumes of proposed grading cut and fill areas.

- Existing site conditions – Describe the existing topography, vegetation, and drainage. Include a description of any structures or development on the parcel, including the area of existing impervious surfaces.

- Adjacent areas – Describe adjacent areas, including streams, lakes, wetlands, residential areas, and roads that construction activities might affect.. Provide a description of the downstream drainage leading from the site to the receiving body of water.

- Critical areas – Describe areas on or adjacent to the site classified as critical areas. Describe critical areas that receive runoff from the site up to

1/4 mile away (this distance may be increased by the Plan Approval Authority). Describe special requirements for working near or within these areas.

- Soil – Describe site soils, including soil names, mapping units, erodibility, settleability, permeability, depth, texture, and structure.
- Potential erosion problem areas – Describe areas on the site with potential erosion problems.
- Construction phasing – Describe the intended sequence and timing of construction activities and proposed construction phasing.
- Construction schedule – Describe the construction schedule. Identify activities that will continue during the wet season and how the transport of sediment from the construction site to receiving waters will be prevented.
- Financial/ownership responsibilities – Describe ownership and obligations for the project. Include bond forms and other evidence of financial responsibility for environmental liabilities associated with construction.
- Engineering calculations – Attach any calculations made for the design of such items as sediment ponds, diversions, and waterways, as well as calculations for runoff and stormwater detention design (if applicable). Engineering calculations must bear the signature and stamp of an engineer licensed in the state of Washington.
- Identify the site's Certified Erosion and Sediment Control Lead (CESCL), with telephone and/or pager numbers included.

3.1.2 SWPPP Drawings Requirements

- Vicinity map – Provide a map with enough detail to identify the location of the construction site, adjacent roads, and receiving waters.
- Site map – Provide a site map(s) showing the following features (the site map requirements may be met using multiple plan sheets for ease of legibility):

    1. A legal description of the property boundaries or an illustration of property lines (including distances) in the drawings
    2. The direction of north in relation to the site

3. Existing structures and roads, if present

4. The boundaries of and label the different soil types

5. Areas of potential erosion problems

6. Any on-site and adjacent surface waters, critical areas, their buffers, Federal Emergency Management Agency (FEMA) base flood boundaries, and Shoreline Management boundaries

7. Existing contours and drainage basins and the direction of flow for the different drainage areas

8. Final and interim grade contours, drainage basins, and the direction of stormwater flow during and upon completion of construction

9. Areas of soil disturbance, including all areas affected by clearing, grading, and excavation

10. Locations where stormwater discharges to surface waters during and upon completion of construction

11. Existing unique or valuable vegetation and the vegetation that is to be preserved

12. Cut and fill slopes indicating top and bottom of slope catch lines

13. Stockpile, waste storage, and vehicle storage/maintenance areas

14. Total cut and fill quantities and the method of disposal for excess material

- Conveyance systems – Show on the site map the following temporary and permanent conveyance features:

1. Locations for swales, interceptor trenches, or ditches

2. Drainage pipes, ditches, or cut-off trenches associated with erosion and sediment control and stormwater management

3. Temporary and permanent pipe inverts and minimum slopes and cover

4. Grades, dimensions, and direction of flow in all ditches and swales, culverts, and pipes

5. Details for bypassing off-site runoff around disturbed areas

6. Locations and outlets of any dewatering systems

- Location of detention BMPs – Show on the site map the locations of stormwater detention BMPs.

- Erosion and Sediment Control BMPs – Show on the site map all major structural and nonstructural ESC BMPs, including:

    1. The location of sediment ponds, pipes, and structures
    2. Dimension pond berm widths and inside and outside pond slopes
    3. The trap/pond storage required and the depth, length, and width dimensions
    4. Typical section views through pond and outlet structure
    5. Typical details of gravel cone and standpipe, and/or other filtering devices
    6. Stabilization technique details for inlets and outlets
    7. Control/restrictor device location and details
    8. Stabilization practices for berms, slopes, and disturbed areas
    9. Rock specifications and detail for rock check dam, if used
    10. Spacing for rock check dams as required
    11. Front and side sections of typical rock check dams
    12. The location, detail, and specification for silt fence
    13. The construction entrance location and a detail

- Detailed drawings – Any structural practices used, but not referenced in the SMMWW or other local manuals, should be explained and illustrated with detailed drawings.

- Other pollutant BMPs – Indicate on the site map the location of BMPs to be used for the control of pollutants other than sediment.

- Monitoring locations – Indicate on the site map the water quality monitoring locations required by Ecology or the local permitting authority (sampling stations located in accordance with applicable permit requirements).

- Standard notes addressing construction phasing and scheduling

3.2 Best Management Practices

Construction Stormwater Permits require that BMPs be consistent with the SMMWW. Federal, state, and local permitting authorities with jurisdiction can require more stringent measures deemed necessary to meet locally established goals, state water quality standards, or other established natural resource or drainage objectives.

To support implementation of the Seattle Stormwater Code, the Directors of SPU and DPD have promulgated rules that provide specific technical requirements, criteria, guidelines, and additional information. Seattle's Stormwater Manual, Volume 2 – Construction Stormwater Control Technical Requirements Manual (Directors' Rule 2009-004 [SPU], 16-2009 [DPD]) contains temporary erosion and sediment control technical requirements required to prevent contaminants from leaving projects during construction (based on the SMMWW). It also provides submittal requirements for drainage control review to help ensure stormwater controls are appropriately implemented during construction projects.

The King County Surface Water Design Manual contains requirements and standards for designing surface and storm water management systems to comply with the County's NPDES General Municipal Stormwater Permit. The manual regulates proposed projects through a mixture of requirements, performance standards, and design standards that are primarily enforced by the King County Department of Development and Environmental Services (DDES). Appendix D of the Manual contains Erosion and Sediment Control Standards, including BMPs, to be implemented during construction to prevent discharges of sediment-laden runoff from the project site.

BMPs are schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices, that when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of the State. BMPs can address:

- Volume and timing of stormwater flows
- Prevention of pollution from potential sources
- Treatment of runoff to remove sediment and other pollutants

Source control BMPs are structures or operations 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. These BMPs can be combined with structural source control BMPs (i.e., impervious containments and covers). If operational and structural source control BMPs are not feasible or adequate, then stormwater **treatment BMPs** become necessary.

3.2.1 Source Control BMPs

Operational source control BMPs are non-structural practices that prevent or reduce pollutants from entering stormwater, including:

- Formation of a pollution prevention team
- Good housekeeping practices
- Preventive maintenance procedures
- Spill prevention and cleanup
- Employee training
- Inspections of pollutant sources
- Record keeping

Operational source control BMPs are considered the most cost-effective pollutant minimization practices.

Structural source control BMPs are physical, structural, or mechanical devices or facilities intended to prevent pollutants from entering stormwater by:

- Enclosing and/or covering the pollutant source (e.g. within a building or other enclosure, a roof over storage and working areas, temporary tarp, etc.)

- Physically segregating the pollutant source to prevent run-on of uncontaminated stormwater

- Directing only contaminated stormwater to appropriate treatment BMPs (e.g., discharge to a sanitary sewer if permission has been granted by the local sewer authority)

3.2.2 Treatment BMPs

Treatment BMPs are appropriate if action values of certain pollutants are exceeded, despite the application of operational and structural source control measures. Treatment BMPs include:

- Settling basins or vaults
- Oil/water separators
- Biofilters
- Wet ponds
- Constructed wetlands
- Infiltration systems
- Onsite chemical treatment
- Emerging technologies, such as media filtration

Treatment BMPs should be sized to accommodate the site-specific stormwater flow regime, dependent on the rainfall-runoff relationship for a particular catchment area. Captured stormwater may be stored and meted out for treatment based on operational constraints of the system. Typically, these include flow-through, sediment-loading, and contaminant-loading limits. The SMMWW and local government stormwater management manuals provide specific

guidance for calculating anticipated stormwater flows based on annual rainfall volume and intensity. The site operator should consider site-specific applications for operations to be conducted during wet or dry portions of the year only. Engineering calculations are typically provided in the SWPPP or as part of the Fact Sheet published for the site.

4.0 Existing Construction Stormwater Permit, SWPPPs, and BMPs

Ecology administers over 750 NPDES individual wastewater permits, posted at http://www.ecy.wa.gov/programs/wq/permits/wwdischargepermits.html (CRO – 141, ERO – 173, NWRO – 216, SWRO – 225, Headquarters – 1). Of these, only 15 were found to apply to construction sites (five of which may be considered remediation sites based on the presence of contamination):

- BNSF Skykomish (remediation site)
- Budd Inlet – Port of Olympia (remediation site)
- East Bay Development – Port of Olympia (remediation site)
- Issaquah Highlands
- King County – Brightwater Conveyance System
- McCormick North Phase
- Northwest Natural Gas Pipeline System
- Port of Ridgefield – Lake River Industrial Site (remediation site)
- Quadrant Homes – Skagit Highlands
- Quadrant Homes – Snoqualmie Ridge II
- Redmond Ridge East
- Sound Transit Light Rail System
- Trilogy at Redmond Ridge UPD
- WSDOT Bremerton Transportation and Pedestrian Project (remediation site)
- WSDOT Highway Project, SR 539

The 15 construction permits were reviewed for commonalities and differences to evaluate whether permit requirements have been applied consistently and how the requirements might be applied to a larger group of sites undergoing remediation.

4.1 Comparison of Permits

Comparisons were made between general and individual permit formats (Special and General Conditions included), between the Conditions used in each of the 15 CSWIPs, and between the language used in both sets of conditions. The contents of three Special Conditions (Monitoring, Reporting, and SWPPPs) were compared in detail, as those most relevant to MTCA cleanup actions.

4.1.1 Construction Stormwater Permit Content Comparisons

This section compares General Conditions and Special Conditions between the CSWGP and CSWIPs for sites listed above. In these comparisons, “standard” conditions are not site-specific and would not be expected to change from permit-to-permit; “Non-standard” conditions are

generally those added into permits for specific situations, such as the known or planned use of a particular treatment method or the existence of contamination in soil or groundwater that must also be managed.

CSWIPs follow the CSWGP format, including both Special and General Conditions. Of the 10 standard Special Conditions, 4 were always used and 4 were never used. Of the 26 standard General Conditions, 6 were always used and 2 were never used. Additional non-standard conditions were added to many of the permits (Tables 4-1 and 4-2).

Even though the CSWGP has been used as a template, the content of individual standard Special and General Conditions may vary (Tables 4-3 and 4-4). All of the CSWIP Special Conditions and two of the General Conditions used were tailored to the specific sites. CSWGP language was used in 17 of the 26 General Conditions for most of the sites. Non-standard permit conditions typically were site-specific, although some were very similar.

4.1.2 Monitoring, Reporting, and SWPPP Special Conditions Content Comparison

The Monitoring, Reporting, and SWPPP Special Conditions specifically address contamination issues at a site. These Conditions are discussed in further detail below.

4.1.2.1 Monitoring

Special Condition S4 – Monitoring Requirements typically consists of a table that specifies:

- Parameters of interest
- Monitoring schedule
- Sampling method
- Laboratory test methods

Additional detail for each of these items was typically provided beyond that shown in the table. Minimum sampling frequencies for site contaminants of concern were typically once per month, sometimes once every 2 weeks; sampling frequencies for general water quality parameters were daily, weekly, per defined rain event, or when an oily sheen was evident. Sampling frequency typically was relaxed if first phase sampling indicated continued compliance (not an option for the CSWGP). Temperature, dissolved oxygen, turbidity, pH, and total petroleum hydrocarbons were the typical parameters tested.

Permits for three sites required submittal of a Construction Stormwater/Dewatering Plan and permits for two sites provided detailed site inspection requirements to be conducted during construction (provided in Appendix D).

Table 4-1. CSWGP Special Conditions use in existing CSWIPs.

CSWGP Special Condition	CSWIP	
	Times Used	% Times Used
Standard		
S1. Permit Coverage	15	100
S2. Application Requirements	0	0
S3. Compliance with Standards	10	67
S4. Monitoring Requirements	15	100
S5. Reporting and Recordkeeping Requirements	15	100
S6. Permit Fees	0	0
S7. Solid and Liquid Waste Disposal	15	100
S8. Discharges to 303(d) or TMDL Water Bodies	0	0
S9. Stormwater Pollution Protection Plan	13*	87
S10. Notice of Termination	0	0
Non-standard		
Partial Transfers Subject to Common Plan of Development	5	33
Operations and Maintenance	5	33
Application for Permit Renewal	4	27
Spill Plan	4	27
Acute Toxicity	3	20
Chronic Toxicity	3	20
Chitosan Dosage Rate and Operation	2	13
BMPs	2	13
Engineering Documents	2	13
Non-routine and Unanticipated Discharges	2	13
Study Work Plan	1	7
Sale of Parcels	1	7
Prohibited Discharges	1	7
Dilution Prohibited	1	7
Benzo(a)pyrene Monitoring Report for the treated Groundwater	1	7
Engineering Design Report and Operating and Maintenance Manual for the North Point/Phase III Area Stormwater Treatment System	1	7
Outfall Evaluation	1	7
Copper, Benzo(a)pyrene, PCP, and Total Residual Chlorine Monitoring Report for L-5 and Stormwater Data for Outfalls 001, 002, 003, and 004	1	7
Boiler Blow Down Report	1	7
Stormwater Catch Basins Monitoring	1	7
Interim Action Cleanup SWPP for Cells 1, 2, 3, and 4	1	7

* Spill Plans required in the remaining two sites.

CSWGP – Construction stormwater general permit

CSWIP – Construction stormwater individual permit

Table 4-2. CSWGP General Conditions use in existing CSWIPs.

CSWGP General Condition	CSWIP	
	Times Used	% Times Used
Standard		
G1. Discharge Violations	3	20
G2. Signatory Requirements	15	100
G3. Right of Inspection and Entry	15	100
G4. General Permit Modification and Revocation	14	93
G5. Revocation of Coverage under the Permit	0	0
G6. Reporting a Cause for Modification	11	73
G7. Compliance with Other Laws and Statutes	15	100
G8. Duty to Reapply	10	67
G9. Transfer of General Permit Coverage	15	100
G10. Removed Substances	15	100
G11. Duty to provide Information	14	93
G12. Other Requirements of 40 CFR	14	93
G13. Additional Monitoring	14	93
G14. Penalties for Violating Permit Conditions	14	93
G15. Upset	7	47
G16. Property Rights	14	93
G17. Duty to Comply	14	93
G18. Toxic Pollutants	14	93
G19. Penalties for Tampering	14	93
G20. Reporting Planned Changes	14	93
G21. Reporting Other Information	11	73
G22. Reporting Anticipated Non-compliance	11	73
G23. Requests to be Excluded from Coverage under the Permit	0	0
G24. Appeals	2	13
G25. Severability	2	13
G26. Bypass Prohibited	3	20
Non-standard		
Payment of Fees	15	100
Compliance Schedules	14	93
Permit Actions	13	87
Plan Review Required	5	33
Reduced Production for Compliance	5	33
Reporting Requirements Applicable to Existing Manufacturing, Commercial, Mining, and Silvicultural Dischargers	4	27

CSWGP – Construction stormwater general permit

CSWIP – Construction stormwater individual permit

Table 4-3. Comparison of CSWGP versus CSWIP Special Condition content.

CSWGP Special Condition	CSWIP														
	BNSF	**Cascade Pole**	**East Bay**	Issaquah	King Co.	McCormick	Northwest	**Port of Ridgefield**	Quadrant Skagit	Quadrant Snoqualmie	Redmond	ST Light Rail	Trilogy	**WSDOT Bremerton**	WSDOT SR 539
S1. Permit Coverage	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
S2. Application Requirements	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S3. Compliance with Standards	–	–	–	N	N	N	N	–	N	N	N	N	N	–	Y
S4. Monitoring Requirements	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
S5. Reporting and Recordkeeping Requirements	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
S6. Permit Fees	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S7. Solid and Liquid Waste Disposal	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
S8. Discharges to 303(d) or TMDL Water Bodies	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
S9. Stormwater Pollution Protection Plan	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N *
S10. Notice of Termination	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Bold – remediation site

N – Individual permit language did not match General permit

– Did not appear in Individual permit

* Wording was very similar

CSWGP – Construction stormwater general permit

CSWIP – Construction stormwater individual permit

Table 4-4. Comparison of CSWGP versus CSWIP General Condition content.

CSWGP General Condition	CSWIP														
	BNSF	**Cascade Pole**	**East Bay**	Issaquah	King Co.	McCormick	Northwest	**Port of Ridgefield**	Quadrant Skagit	Quadrant Snoqualmie	Redmond	ST Light Rail	Trilogy	**WSDOT Bremerton**	WSDOT SR 539
G1. Discharge Violations	–	–	–	Y	–	–	–	–	–	–	–	Y	–	–	Y
G2. Signatory Requirements	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*
G3. Right of Inspection and Entry	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
G4. General Permit Modification and Revocation	N	N	N	N	N	N	N	–	N	N	N	N	N	N	N
G5. Revocation of Coverage under the Permit	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
G6. Reporting a Cause for Modification	–	–	–	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
G7. Compliance with Other Laws and Statutes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
G8. Duty to Reapply	–	–	–	Y	Y	Y	Y	–	Y	Y	Y	Y	Y	–	Y
G9. Transfer of General Permit Coverage	N	N	N	N	N	N	N		N	N	N	N	N	N	N
G10. Removed Substances	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
G11. Duty to Provide Information	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G12. Other Requirements of 40 CFR	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G13. Additional Monitoring	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G14. Penalties for Violating Permit Conditions	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G15. Upset	Y	Y	Y	Y	–	–	–	Y	–	–	–	Y	–	–	Y
G16. Property Rights	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G17. Duty to Comply	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G18. Toxic Pollutants	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G19. Penalties for Tampering	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	–	Y
G20. Reporting Planned Changes	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	Y*	–	Y*
G21. Reporting Other Information	Y	–	–	Y	Y	Y	Y	–	Y	Y	Y	Y	Y	–	Y
G22. Reporting Anticipated Non–compliance	N	–	–	Y	Y*	Y*	Y*	–	Y*	Y*	Y*	Y	Y*	–	Y*
G23. Requests to be Excluded from Coverage under the Permit	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
G24. Appeals	–	–	–	N	–	–	–	–	–	–	–	Y*	–	–	–
G25. Severability	–	–	–	Y	–	–	–	–	–	–	–	Y	–	–	–
G26. Bypass Prohibited	–	–	–	Y	–	–	–	–	–	–	–	Y	–	–	Y

Bold – remediation site
Y – CSWIP language matched CSWGP
N – CSWIP language did not match CSWGP
– Did not appear in CSWIP

* Wording was very similar
CSWGP – Construction stormwater general permit
CSWIP – Construction stormwater individual permit

4.1.2.2 Reporting

Special Condition S5 – Reporting and Recordkeeping Requirements typically included five standard subsections:

- Reporting
- Records Retention
- Recording Results
- Additional Monitoring by the Permittee
- Noncompliance Notification

Requirements added to one or two permits included:

- High Turbidity Phone Reporting
- Discharge Monitoring Reports (DMRs)
- Access to Plans and Records
- Dangerous Waste Discharge Notification
- Spill Notification
- Other Noncompliance Reporting
- Maintaining a Copy of this Permit
- Reporting Permit Violations
- Other Reporting

4.1.2.3 SWPPP Content

Special Condition S9 – Stormwater Pollution Prevention Plans typically were stipulated by identifying: 1) General Requirements and 2) SWPPP Contents and Requirements. One permit included additional Specific Requirements, one permit referred to the SMMWW, and two permits included the following specific items:

- The SWPPP Shall Meet the Following Objectives
- Stormwater BMPs
- Narrative Contents and Requirements (the 12 elements)
- Map Contents and Requirements
- Modifications

Two of the permits required Spill Plans instead of a SWPPP; one permit included both.

4.1.3 Remediation Site Comparison

Permits for the five remediation sites included detailed requirements in the following standard Special Conditions:

- S1 – Discharge Limits (renamed from Permit Coverage)
- S4 – Monitoring Requirements

- S5 – Reporting and Recordkeeping Requirements
- S7 – Solid Waste Disposal
- S9 – SWPPP (three sites only)

and in the following non-standard Special Conditions:

- Operations and Maintenance (five sites)
- Spill Plan (four sites)
- Application for Permit Renewal (four sites)
- Acute Toxicity (three sites)
- Chronic Toxicity (three sites)
- Engineering Documents (two sites)
- Chitosan Dosage Rate and Operation (two sites)
- Non-routine and Unanticipated Discharges (two sites)
- BMPs (one site)
- Prohibited Discharges (one site)
- Dilution Prohibited (one site)
- Benzo(a)pyrene Monitoring Report for the Treated Groundwater (one site)
- Outfall Evaluation (one site)
- Copper, Benzo(a)pyrene, PCP, and Total Residual Chlorine Monitoring Report for L-5 and Stormwater Data for Outfalls 001, 002, 003, and 004 (one site)
- Boiler Blow Down report (one site)
- Stormwater Catch Basins Monitoring (one site)
- Interim Action Cleanup SWPPP for Cells 1, 2, 3, and 4 (one site)

These Special Conditions are provided in Appendices E through I. The website Fact Sheets for the BNSF Skykomish, East Bay, and WSDOT Bremerton sites provide water treatment system diagrams, which have been added as the last pages of Appendices E, G, and I. The Fact Sheets provide detailed calculations for treatment and/or risk assessment based on the contaminants and receiving waters of concern.

The remediation sites also included the following non-standard General Conditions:

- Payment of Fees (all five permits)
- Permit Actions (all five permits)
- Compliance Schedules (not in WSDOT permit)

- Plan Review Required (all five permits)
- Reduced Production for Compliance (all five permits)
- Reporting Requirements Applicable to Existing Manufacturing, Commercial, Mining, and Silvicultural Dischargers (not in WSDOT permit)

The last three General Conditions were only included in remediation site permits (as opposed to other construction site permits).

Narrative portions of SWPPPs for the BNSF Skykomish, Budd Inlet, and East Bay sites are provided in Appendices J through L.

The BNSF Skykomish SWPPP did not explicitly call out the 12 required elements or other SMMWW listed items (approximately half were included somewhere in the plan). An engineering plan set was referred to, with one reference to planned excavation shown on one sheet; no stormwater sheets were referenced. The TCP Project Manager indicated that the plan set was reviewed by a WQP engineer and that the major SWPPP requirements had been addressed.

The Budd Inlet SWPPP included the 12 required elements and some of the other SMMWW listed items. Plan sheets provided in the SWPPP included site layout, temporary sediment and erosion control (TESC), TESC details, and existing interim (stormwater) treatment plan view.

The East Bay SWPPP included the 12 required elements and most of the other SMMWW listed items. A plan set was referred to (not reviewed) that included a vicinity map with all discharge points, a site plan with temporary erosion control measures, and a soils report.

4.2 Best Management Practices at Construction Sites

The BMPs most frequently used on construction sites in Western Washington were reviewed from four main sources:

- Ecology's 2005 SMMWW – Volume II Construction Stormwater Pollution Prevention
- City of Seattle 2009 Director's Rules, Stormwater Manual – Volume 2 Construction Stormwater Control Technical Requirements Manual
- King County 2009 Surface Water Design Manual, Appendix D – Erosion and Sediment Control Standards
- WSDOT 2008 Highway Runoff Manual, Chapter 5 – Stormwater Best Management Practices

The purpose of the review was to determine which construction BMPs are most commonly used; identify unique BMPs used on City of Seattle, King County, or WSDOT construction sites; and determine how BMPs from these sources are categorized. The construction BMPs are compiled in Table 4-5, and are grouped under three headings:

1) Source Control BMPs
2) Runoff, Conveyance, and Treatment BMPs
3) Other BMPs

A brief discussion of other BMPs is presented in Section 5.1. The BMPs presented in the City of Seattle Stormwater Manual, King County Surface Water Design Manual, and WSDOT Highway Runoff Manual are tailored for use in the respective jurisdictions where projects are physically built.

The SMMWW is the primary source of required BMPs cited in the CSWGP, Industrial Stormwater General Permit, Phase I and II Municipal Stormwater Permits, and other permits issued by Ecology. Volume II of the SMMWW lists a total of 46 BMPs in two categories

1) Source Control – BMPs C101 through C180
2) Runoff Conveyance and Treatment – BMPs C200 through C251

The City of Seattle Stormwater Manual lists a total of 50 BMPs grouped in four categories according to the method of controlling erosion, sedimentation, and other pollutants at construction sites:

1) Cover Practices – BMPs E1.10 through E1.50
2) Erosion Control – BMPs E2.10 through E2.95
3) Sediment Control – BMPs E3.10 through E3.70
4) Standards and Specifications – BMPs C1.10 through C1.55

Of these BMPs, 38 are identical to or variations of the BMPs listed in the SMMWW. The other 12 BMPs address controls associated with city streets, water bodies, and buildings; control of other pollutants; protection of very steep slopes; and temporary dewatering (discussed further in Section 5.1).

The King County Surface Water Design Manual provides BMPs considered for small projects (i.e., single family residential or agricultural properties that meet certain size requirements) and large projects. Different sets of BMP requirements are identified for use at the two types of sites. The large site requirements lists 33 BMPs grouped in nine categories under D3; 3 additional BMPs comparable to the other manuals are provided in two other categories under D4 and D7:

1) Clearing Limits – BMPs D3.1 through D3.1.2
2) Cover Measures – BMPs D3.2.1 through D3.2.9
3) Perimeter Protection – BMPs D3.3.1 through D3.3.6
4) Traffic Area Stabilization – BMPs D3.4.1 through D3.4.3

Table 4-5. BMPs frequently used at construction sites.

Ecology SMMWW - Volume II	Seattle Director's Rule	King Co. Surface Water Design Manual	WSDOT
# BMPs = 46	**# BMPs = 50**	**# BMPs = 36**	**# BMPs = 36**
Source Control BMPs			
BMP C101: Preserving Natural Vegetation	BMP E1.30: Preserving Natural Vegetation	C.3.5: Mark Clearing Limits/Minimize Clearing	6A-2.7 Preserving Natural Vegetation
BMP C102: Buffer Zones	BMP E1.35: Buffer Zones	NA	NA
BMP C103: High Visibility Plastic or Metal Fence	NA	D.3.1.1: Plastic or Metal Fence	6A-2.11 Fencing
BMP C104: Stake and Wire Fence	NA	D.3.1.2: Stake and Wire Fence	NA
BMP C105: Stabilized Construction Entrance	BMP E2.10: Stabilized Construction Entrance	D.3.4.1: Stabilized Construction Entrance	6A-2.12 Stabilized Construction Entrance
BMP C106: Wheel Wash	BMP E2.15: Tire Wash	D.3.4.3: Wheel Wash	6A-2.13 Tire Wash
BMP C107: Construction Road/Parking Area Stabilization	BMP E2.20: Construction Road Stabilization	D.3.4.2: Construction Road/Parking Area Stabilization	6A-2.14 Construction Road Stabilization
BMP C120: Temporary and Permanent Seeding	BMP E1.10: Temporary Seeding	D.3.2.6: Temporary and Permanent Seeding	6A-2.1 Temporary Seeding
NA	BMP E1.40: Permanent Seeding and Planting	NA	NA
BMP C121: Mulching	BMP E1.15: Mulching, Matting, and Compost Blankets	D.3.2.2: Mulching	6A-2.2 Mulching
BMP C122: Nets and Blankets	NA	D.3.2.3: Nets and Blankets	6A-2.3 Blankets
BMP C123: Plastic Covering	BMP E1.20: Clear Plastic Covering	D.3.2.4: Plastic Covering	6A-2.4 Plastic Covering
BMP C124: Sodding	BMP E1.45: Sodding	D.3.2.7: Sodding	6A-2.8 Sodding
BMP C125: Topsoiling	BMP E1.50: Topsoiling	NA	6A-2.9 Topsoiling
BMP C126: Polyacrylamide for Soil Erosion Protection	BMP E1.25: Polyacrylamide for Soil Erosion Protection	D.3.2.8: Polyacrylamide for Soil Erosion Protection	6A-2.5 Polyacrylamide for Soil Erosion Protection
BMP C130: Surface Roughening	BMP E2.75 Surface Roughening	D.3.2.1: Surface Roughening	6A-2.16 Surface Roughening
BMP C131: Gradient Terraces	BMP E2.50: Gradient Terraces	NA	NA
BMP C140: Dust Control	BMP E2.45: Dust Control	D.3.8: Dust Control	6A-2.15 Dust Control
BMP C150: Materials On Hand	NA	NA	NA
BMP C151: Concrete Handling	NA	NA	6A-2.33 Concrete Handling
BMP C152: Sawcutting and Surface Pollution Prevention	BMP C1.35 Sawcutting, Paving, and Pollution Prevention	NA	NA
BMP C153: Material Delivery, Storage, and Containment	BMP C1.15: Material Delivery, Storage, and Containment	NA	NA
BMP C160: Certified Erosion and Sediment Control Lead	BMP C1.10: Certified Erosion and Sediment Control Lead	D.4.1: ESC Supervisor	NA
BMP C161: Payment of Erosion Control Work	NA	NA	NA
BMP C162: Scheduling	NA	NA	NA
Runoff Conveyance and Treatment BMPs			
BMP C180: Small Project Construction Stormwater Pollution Prevention	NA	D.7.2: Small Site ESC Requirements	NA
BMP C200: Interceptor Dike and Swale	BMP E2.80: Earth Dike and Drainage Swale	D.3.6.1: Interceptor Dike and Swale	6A-2.19 Interceptor Dike and Swale
BMP C201: Grass-Lined Channels	BMP E2.90: Grass-Lined Channels	D.3.6.4: Ditches	6A-2.10 Conveyance Channel Stabilization
BMP C202: Channel Lining	BMP E2.60 Channel Lining	NA	NA
BMP C203: Water Bars	BMP E2.25: Water Bars	NA	NA
BMP C204: Pipe Slope Drains	BMP E2.65: Pipe Slope Drains	D.3.6.2: Pipe Slope Drains	6A-2.17 Pipe Slope Drains
BMP C205: Subsurface Drains	BMP E2.70: Subsurface Drains	D.3.6.3: Subsurface Drains	NA
BMP C206: Level Spreader	BMP E2.30: Level Spreader	D.3.6.6: Level Spreader	6A-2.18 Level Spreader
BMP C207: Check Dams	BMP E2.35: Check Dams		6A-2.21 Check Dams
BMP C208: Triangular Silt Dike (Geotextile-Encased Check Dam)	BMP E2.40: Triangular Silt Dike (Geotextile-Encased Check Dam)	D.3.3.4: Triangular Silt Dike (Geotextile Encased Check Dam)	6A-2.22 Triangular Silt Dike (Geotextile-Encased Check Dam)
BMP C209: Outlet Protection	BMP E2.85: Outlet Protection	D.3.6.5: Outlet Protection	6A-2.23 Outlet Protection

Table 4-5. BMPs frequently used at construction sites.

Ecology SMMWW - Volume II	Seattle Director's Rule	King Co. Surface Water Design Manual	WSDOT
# BMPs = 46	**# BMPs = 50**	**# BMPs = 36**	**# BMPs = 36**
BMP C220: Storm Drain Inlet Protection	BMP E3.25: Storm Drain Inlet Protection	D.3.5.3: Storm Drain Inlet Protection	6A-2.30 Storm Drain Inlet Protection
BMP C230: Straw Bale Barrier	NA	NA	6A-2.28 Straw Bale Barrier
BMP C231: Brush Barrier	BMP E3.15: Brush Barrier	D.3.3.2: Brush Barrier	NA
BMP C232: Gravel Filter Berm	BMP E3.20: Gravel Filter Berm	NA	6A-2.29 Filter Berm
BMP C233: Silt Fence	BMP E3.10: Filter Fence	D.3.3.1: Silt Fence	6A-2.27 Silt Fence
BMP C234: Vegetated Strip	BMP E3.30: Vegetated Strip	D.3.3.3: Vegetated Strip	6A-2.24 Vegetated Strip
BMP C235: Straw Wattles	BMP E3.35: Straw Wattles, Compost Socks, and Compost Berm	D.3.2.5: Straw Wattles	6A-2.25 Wattles
NA	NA	D.3.3.6: Compost Socks	6A-2.26 Compost Sock
BMP C240: Sediment Trap	BMP E3.40: Sediment Trap	D.3.5.1: Sediment Trap	6A-2.31 Sediment Trap
BMP C241: Temporary Sediment Pond	BMP E3.45: Temporary Sediment Pond (or Basin)	D.3.5.2: Sediment Pond	6A-2.32 Temporary Sediment Pond
BMP C250: Construction Stormwater Chemical Treatment	BMP E3.55: Construction Stormwater Chemical Treatment	NA	6A-2.35 Construction Stormwater Chemical Treatment
BMP C251: Construction Stormwater Filtration	BMP E3.60: Construction Stormwater Filtration	NA	6A-2.36 Construction Stormwater Filtration
Other BMPs			
NA	BMP E2.55: Bioengineered Protection of Very Steep Slopes	D.3.7: Dewatering Control	NA
NA	BMP E2.95: Turbidity Curtain	D.3.2.9: Compost Blankets	NA
NA	BMP E3.50: Portable Sediment Tank	D.3.3.5: Compost Berms	NA
NA	BMP E3.65: Cleaning Inlets and Catch Basins	D.7.4.4: Control of Other Pollutants	NA
NA	BMP E3.70: Street Sweeping and Vacuuming	D.3.9: Flow Control	NA
NA	BMP C1.20: Use of Chemicals During Construction	NA	NA
NA	BMP C1.25: Demolition of Buildings	NA	NA
NA	BMP C1.30: Building Repair, Remodeling, and Construction	NA	NA
NA	BMP C1.40: Temporary Dewatering	NA	NA
NA	BMP C1.45: Solid Waste Handling and Disposal	NA	NA
NA	BMP C1.50: Disposal of Asbestos and PCBs	NA	NA
NA	BMP C1.55: Airborne Debris Curtain	NA	NA
NA	NA	NA	6A-2.6 Bonded Fiber Matrix & Mechanically Bonded Fiber Matrix
NA	NA	NA	6A-2.20 Stormwater Infiltration
NA	NA	NA	6A-2.34 High pH Neutralization

5) Sediment Retention – BMPs D3.5.1 through D3.5.3
6) Surface Water Collection – BMPs D3.6.1 through D3.6.6
7) Dewatering Control – BMPs D3.7
8) Dust Control – BMPs D3.8
9) Flow Control – BMPs D3.9
10) ESC Supervisor – BMP D4.1
11) Small Site ESC Requirements – BMP D7.2
12) Control of Other Pollutants – BMP D7.4.4

Of these BMPs, 30 are identical to or variations of the BMPs listed in the SMMWW; the other 6 BMPs address additional composting methods, control of other pollutants, and dewatering and flow control requirements (discussed further in Section 5.1).

The WSDOT Highway Runoff Manual, Chapter 5 – Stormwater Best Management Practices discusses three categories of BMPs required to create an effective TESC plan:

1) Design BMPs
2) Procedural BMPs
3) Physical BMPs

Appendix 6A of Chapter 6 – Temporary Erosion and Sediment Control Design Guidelines and Process lists 36 physical BMPs for use at construction sites that correspond to 33 BMPs listed in Ecology's SMMWW; 3 of the BMPs are unique to the Highway Runoff Manual and are discussed in Section 5.1. The BMPs are not listed according to the three categories identified above, but are all lumped together in Appendix 6A. Each BMP includes a narrative description and supporting design parameters, as well as a reference to the associated standard specification.

4.3 Best Management Practices at Remediation Sites

BMP applications at remediation sites were reviewed for the five remediation sites with CSWIPs, for sites with gasoline releases associated with underground storage tanks (developed by EPA), and at sites located in states other than Washington.

4.3.1 Existing Ecology Permitted Sites

Herrera reviewed SWPPPs and Fact Sheets for:

- BNSF Skykomish
- Budd Inlet – Port of Olympia
- East Bay Development – Port of Olympia

and only the Fact Sheets for:

- Port of Ridgefield – Lake River Industrial Site
- WSDOT Bremerton Transportation and Pedestrian Project

A comparison of the BMPs presented in the respective SWPPPs is included in Table 4-6 (only SWPPPs for the three identified sites were readily available for review). The BMPs in the BNSF Skykomish SWPPP were presented in three categories: 1) stabilization practices, 2) structural practices, and 3) inspections and maintenance. The BMPs in the Budd Inlet and East Bay Development SWPPPs were presented according to the 12 SWPPP elements specified in Volume II of the SMMWW.

The following summaries describe each site, the type of wastewater regulated by the permit, pollutants addressed, and BMPs/treatment technologies used.

4.3.1.1 BNSF Skykomish

The BNSF Railway Company site is a former railway maintenance and fueling facility located in the town of Skykomish. Former activities at the site resulted in contamination of soil, groundwater, and sediment along the Skykomish River and in the former channel of Maloney Creek. The wastewater discharge permit regulates dewatering associated with soil remediation within the levee zone at the site. The treatment system for construction dewatering addresses diesel fuel, Bunker C fuel oil, and total settleable solids and consists of the following:

- Gravity separation with sedimentation/oil-water separation tanks
- Chitosan-enhanced sand filtration – four automatic back-flush sand filters
- Granular Activated Carbon (GAC) adsorption – two columns of 10,000 pounds of GAC each

In addition to the treatment system, two cofferdams were constructed in the river channel to exclude fish and to prevent the release of sediment and soil contaminants downstream; oil absorbent booms were placed outside of the outer cofferdam to provide tertiary containment.

Treated water is permitted for discharge into the South Fork Skykomish River, with monitoring required as shown in Table 4-7.

4.3.1.2 Budd Inlet

The Budd Inlet site is located in Olympia. Various operators, including Cascade Pole, used the site for wood-treating operations from 1939 to 1986. Wood-treating chemicals containing creosote, PCP dissolved in a carrier oil, and copper were used at the site. The permit regulates discharge of treated ground water and stormwater from the site. The containment and treatment systems are designed to provide hydraulic gradient control, non-aqueous phase liquid (NAPL) recovery, and extraction and treatment of aqueous phase contamination.

Groundwater Containment and Treatment System:

- 350-foot long sheet pile wall and 3,528-foot long slurry wall
- 11 groundwater extraction wells

Table 4-6. Comparison of BMPs planned for remediation sites with Construction Stormwater Individual Permits.

SWPPP Construction Element	BMP No.*	BMP Title	BNSF Skykomish	Budd Inlet - Port of Olympia	East Bay Development - Port of Olympia
Element #1 – Mark Clearing Limits					
	C101	Preserving Natural Vegetation	X	X	X
	C103	High Visibility Plastic or Metal Fence	X	X	X
	C104	Stake and Wire Fence		X	
Element #2 – Establish Construction Access					
	C105	Stabilized Construction Entrance		X	X
	C106	Wheel Wash	X	X	X
	C107	Construction Road/Parking Area Stabilization		X	X
	Alt	Regular vacuum-type street sweeping on adjacent roads			X
Element #3 – Control Flow Rates					
	C240	Sediment Trap		X	X
	C241	Temporary Sediment Pond			X
	C251	Construction Stormwater Filtration		X	
	Alt	Temporary Infiltration Trench		X	
	Alt	Plugging existing catch basins, and berms; Temporary curbs; Well points, wells, utility trenches			X
Element #4 – Install Sediment Controls					
	C121	Mulching		X	
	C150	Materials on Hand		X	
	C220	Stormdrain Inlet protection	X	X	X
	C230	Straw Bale Barrier			X
	C231	Brush Barrier			X
	C232	Gravel Filter Berm			X
	C233	Silt Fence	X	X	X
	C234	Vegetated Strip			X
	C235	Straw Wattles			X
	C240	Sediment Trap		X	X
	C241	Temporary Sediment Pond			X
	C250	Construction Stormwater Chemical Treatment			X
	C251	Construction Stormwater Filtration			X
	Alt	Infiltration Trench		X	
	Alt	Portable Water Storage Tanks for Sedimentation			X

Table 4-6 (continued). Comparison of BMPs planned for remediation sites with Construction Stormwater Individual Permits.

SWPPP Construction Element	BMP No. *	BMP Title	BNSF Skykomish	Budd Inlet - Port of Olympia	East Bay Development - Port of Olympia
Element #5 – Stabilize Soils					
	C120	Temporary and Permanent Seeding			X
	C121	Mulching		X	X
	C122	Nets and Blankets			X
	C123	Plastic Covering	X	X	X
	C124	Sodding			X
	C125	Topsoiling	X	X	X
	C130	Surface Roughening			X
	C131	Gradient Terraces			X
	C140	Dust Control	X	X	
	C150	Materials on Hand		X	
	Alt	Early Application of Gravel Base on Areas to be Paved		X	X
Element #6 – Protect Slopes					
	C121	Mulching		X	
Element #7 – Protect Drain Inlets					
	C220	Stormdrain Inlet protection	X	X	X
	Alt	Catch Basin Filters (storm drains wrapped in plastic as an alternative BMP)			X
Element #8 – Stabilize Channels and Outlets					
	C202	Channel Lining			X
	C207	Check Dams			X
	C209	Outlet Protection			X
Element #9 – Control Pollutants					
	C106	Wheel Wash			X
	C140	Dust Control	X	X	X
	C151	Concrete Handling		X	X
	C152	Sawcutting and Surfacing Pollution Prevention		X	X
	C153	Material Delivery, Storage, and Containment		X	X
	C220	Stormdrain Inlet protection	X	X	X
	Alt	Inspection		X	X
	Alt	Secondary containment		X	X
	Alt	Drip pans		X	X
	Alt	Temporary plastic ground cover		X	X
	Alt	Timely cleanup		X	X

Table 4-6 (continued). Comparison of BMPs planned for remediation sites with Construction Stormwater Individual Permits.

SWPPP Construction Element	BMP No. *	BMP Title	BNSF Skykomish	Budd Inlet - Port of Olympia	East Bay Development - Port of Olympia
Element #10 – Control Dewatering					
	C151	Concrete Handling		X	X
	C152	Sawcutting and Surfacing Pollution Prevention			X
	C241	Sediment Pond		X	
	C251	Construction Stormwater Filtration			X
Element #12 – Manage the Project					
	C160	Certified Erosion and Sediment Control Lead	X		X
	C162	Scheduling	X	X	
Additional Advanced BMPs					
	C250	Construction Stormwater Chemical Treatment			X
	C251	Construction Stormwater Filtration		X	X
Additional Construction					
	C153	Material Delivery, Storage and Containment			X
	C162	Scheduling			X
	C209	Outlet protection		X	
	C230	Straw Bale Barrier		X	
	C235	Straw Wattles		X	

* Based on SWMWW numbering system

Table 4-7. Surface water discharge monitoring requirements, BNSF Skykomish.

Parameter	Minimum Sampling Frequency	Sample Type	Test Method
Flow	Daily	Metered	NA
Chitosan Acetate	Daily	Grab	Chitosan Field Screening Test
Oily sheen	Daily	Observed	Visual
pH	Weekly	Grab	EPA 150.1
Dissolve oxygen	Weekly (for a period of 5 weeks)	Grab	Field Metering
Turbidity	Weekly	Grab	EPA 180.1 or equivalent
Benzene	Monthly	Grab	SW8260B
BTEX	Monthly	Grab	SW8260B
TPH [a]	Weekly (two samples: one before and one after GAC treatment)	Grab	TPH-Dx (no silica gel filtration)
Lead [b]	Weekly	Grab	EPA 200.8
Arsenic [b]	Weekly	Grab	EPA 200.8
Anthracene [c]	Monthly	Grab	SW8270-SIM
Fluorene [c]	Monthly	Grab	SW8270-SIM
Naphthalene [c]	Monthly	Grab	SW8270-SIM
Pyrene [c]	Monthly	Grab	SW8270-SIM
cPAHs [c]	Monthly	Grab	EPA 8270C-HVI
Acenaphthene [c]	Monthly	Grab	SW8270-SIM
Fluoranthene [c]	Monthly	Grab	SW8270-SIM

[a] For each sampling event, the Permittee shall collect one sample before and after the first Granular Activated Carbon (GAC) column for TPH analysis. Results from samples collected before the GAC treatment will be used to evaluate the performance and removal efficiency of the GAC columns (see S4, O&M of the permit for details). The Permittee shall change out the GAC column as often as necessary to ensure compliance with the effluent limits.

[b] For surface water discharge, the Permittee shall perform total recoverable metals analyses for arsenic and lead. For groundwater discharge, the Permittee shall perform total metals analyses for arsenic and lead.

[c] The sampling frequency for the PAH compounds will be reduced from weekly to monthly, if the monitoring data collected during the first phase of remediation (i.e. levee remediation) clearly support TPH as a surrogate for PAH.

- Phase separation to remove LNAPL and DNAPL for disposal
- Biological treatment in two submerged fixed film bioreactors to degrade organic contaminants
- Solids from biological treatment removed by a parallel plate clarifier
- Filtration by four particulate filters in parallel
- Effluent filtered through a GAC treatment system before it is discharged

Stormwater Treatment System:

- Sediment removal in settling tanks
- Multimedia filtration followed by GAC treatment

Treated water is permitted for discharge into Budd Inlet, with monitoring required as shown in Table 4-8.

4.3.1.3 Port of Olympia/East Bay Development

The East Bay site is located on East Bay adjacent to Budd Inlet in Olympia. The site was used since the late 1880s for a variety of timber-related industries, as well as commercial and other industrial activities and storage. The permit regulates discharge of treated groundwater and stormwater generated during the construction of roadways and utilities for the development project. The treatment system is designed to address heavy metals, PAHs, turbidity, and pH, and consists of the following components:

- Influent settling storage tanks
- Chitosan treatment
- Sand filtration
- Bag filtration
- GAC treatment
- Post-treatment holding tank for additional settling of solids

In addition, the permit specifies that runoff from soil stockpiles shall be managed during construction.

Treated water is permitted for discharge into East Bay of Budd Inlet, with monitoring required as shown in Table 4-9.

Table 4-8. Surface water discharge monitoring requirements, Budd Inlet.

Parameter	Minimum Sampling Frequency	Sample Type
Final Effluent [a]		
Flow	Continuous [b] When discharging [b]	Recording Recording
Benzo(a)pyrene [c]	Once per 2 weeks Once per month	24-hour composite [d] Grab
Total suspended solids	Once per 2 weeks Once per month	24-hour composite [d] Grab
Pentachlorophenol	Once per 2 weeks Once per month	24-hour composite [d] Grab
pH	Once per 2 weeks Once per month	Grab [e] Grab [e]
Acute and Chronic WET Toxicity Characterization	Twice each year for 1 year	Composite
The Permittee must record and report the: • Number of minutes the pH value measured below or above the permitted range for each day • Total minutes for the month • Periods when values were above and below the permitted range separately • Monthly instantaneous maximum and minimum pH.		

[a] Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.

[b] "Continuous" means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance. "When discharging" means during the treated stormwater discharge.

[c] The Benzo(a)pyrene testing will be conducted with Method 8270 Selected Ion Monitoring (SIM). The detection level will be 0.031 µg/L.

[d] 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.

[e] Grab means an individual sample collected over a 15-minute, or less, period.

Table 4-9. Surface water discharge monitoring requirements, Port of Olympia/East Bay Development.

Parameter	Minimum Sampling Frequency	Sample Type
Influent [a]		
Benzo(a)pyrene	Monthly [b]	Grab [c]
Total arsenic	Monthly [b]	Grab [c]
Total copper	Monthly [b]	Grab [c]
Total cadmium	Monthly [b]	Grab [c]
Total lead	Monthly [b]	Grab [c]
Total nickel	Monthly [b]	Grab [c]
Total zinc	Monthly [b]	Grab [c]
Turbidity	Continuous [d]	Metered and recorded
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin	One time by August 31, 2009	Grab [c]
Final Effluent [e]		
Flow	Continuous [d]	Metered and recorded
Benzo(a)pyrene	Monthly [b]	Grab [c]
Total arsenic	Monthly [b]	Grab [c]
Total copper	Monthly [b]	Grab [c]
Total cadmium	Monthly [b]	Grab [c]
Total lead	Monthly [b]	Grab [c]
Total nickel	Monthly [b]	Grab [c]
Total zinc	Monthly [b]	Grab [c]
Turbidity	Continuou s [d]	Metered and recorded
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin	One time by August 31, 2009	Grab [c]
pH	Continuous [d]	Metered and recorded
Acute and Chronic WET Toxicity Characterization	Twice for 1 year and as needed	Composite

The Permittee must record and report the:

- Number of minutes the pH value measured below or above the permitted range for each day.
- Total minutes for the month.
- Periods when values were above and below the permitted range separately.
- Monthly instantaneous maximum and minimum pH.

[a] Influent samples must be taken before settling tanks.
[b] Monthly means once every calendar month during alternate weeks.
[c] Grab means an individual sample collected over a 15-minute, or less, period.
[d] Continuous means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance.
[e] Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.
[d] 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.

4.3.1.4 Port of Ridgefield (Lake River Industrial Site)

The Lake River Industrial Site is located in Ridgefield on land formerly leased to the Pacific Wood Treating Corporation (PWT). The PWT surface treated and pressure treated specialty wood products with oil-based solutions containing creosote, PCP, and a water-based mixture of copper, chromium, and chromated copper arsenic (CCA) or copper, chromium, and zinc. Steam enhanced remediation (SER) technology is being used to address free product in groundwater. The permit regulates discharges from the liquid phase of ground water remediation through:

Vapor Phase Extraction and Treatment:

- Steam injected into the ground
- Liquids and vapors extracted under a vacuum
- Vapor condensation
- Carbon adsorption

Liquid Phase Treatment:

- Light non-aqueous phase liquid (LNAPL) floats to the top of the tank from extracted groundwater
- Dense non-aqueous phase liquid (DNAPL), silt, sand, sludge sink to bottom of tank
- Water is cooled and sent to stirred reaction tanks
- Water is treated with bleach; contaminants are electrically charged with ferric sulfate and coagulated with lime
- pH is adjusted with sulfuric acid
- Water enters agitation tanks, treated with polymers to aid coagulation and settling
- Sludge from coagulation and settling is removed in a clarifying vessel
- Heavy sludge and wastewater enter clarifier vessel
- Sludge is pumped out and pressed into solid filter cake for disposal
- Wastewater from clarifier is pumped through sand filters and three GAC units
- Wastewater is cooled further to 65 degrees F prior to discharge

Treated water is permitted for discharge into Lake River, with monitoring required as shown in Table 4-10.

Table 4-10. Surface water discharge monitoring requirements, Port of Ridgefield Industrial Site.

Parameter	Minimum Sampling Frequency	Sample Type
Final Effluent [a]		
Flow	Batch	Recording
Pentachlorophenol	Monthly	24-hour composite [b]
Total suspended solids	Monthly	24-hour composite [b]
Benzo(a)pyrene [c]	Monthly	24-hour composite [b]
Total arsenic	Monthly	24-hour composite [b]
Total copper	Monthly	24-hour composite [b]
Total manganese	Monthly	24-hour composite [b]
Total residual chlorine	Monthly	24-hour composite [b]
Temperature [c]	Daily	Grab [d]
pH	Twice per month	Grab [d]
Acute and Chronic WET Toxicity Characterization	Quarterly for 1 year and as needed	24-hour composite [b]
The Permittee must record and report the: • Number of minutes the pH value measured below or above the permitted range for each day. • Total minutes for the month. • Periods when values were above and below the permitted range separately. • Monthly instantaneous maximum and minimum pH.		

[a] Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.

[b] 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.

[c] Temperature grab sampling must occur when the effluent is at or near its daily maximum temperature which is usually in the late afternoon. If temperature is measured continuously, the Permittee must determine and report a daily maximum from half-hour measurements in a 24-hour period. To determine the daily average, use the temperature on the half-hour from the chart for the 24-hour period and calculate the average of the values. Continuous monitoring instruments must achieve an accuracy of 0.2 degrees C and the Permittee must verify accuracy annually.

[d] Grab means an individual sample collected over a 15-minute, or less, period.

4.3.1.5 WSDOT Downtown Bremerton Transportation Center and Pedestrian Access Project

The WSDOT Bremerton site was located at the Bremerton Ferry Terminal. The waste discharge permit regulated groundwater from construction dewatering and stormwater treated to remove petroleum hydrocarbons, chlorinated compounds, metals, and sediment. The treatment system consisted of the following components:

- Excavation pit water pumped to weir tanks for oil removal
- Chitosan treatment and aeration in tanks to remove sediment/turbidity
- Sand filtration to remove additional sediment
- GAC treatment for organics
- Pass through final clarifier tank

Treated water was permitted for discharge to the City of Bremerton West Treatment Plant.

4.3.2 EPA Guidance for Gasoline Release Cleanups

In 1989, EPA published a Model NPDES Permit for Discharges Resulting from the Cleanup of Gasoline Released from Underground Storage Tanks (Appendix M). The document was developed to specifically address gasoline release sites; it was not intended for use where non-gasoline petroleum products were the primary source of contamination. It seems that the model permit could be used as a framework for a variety of other site cleanup applications. Key elements of the permit include chemical-specific effluent limitations, general conditions, and special conditions (including BMPs and bio-monitoring requirements).

The model permit requires development of a BMP Plan by the responsible party to address the following issues using the associated engineered features:

- Prevention of run-on/interception of runoff – dikes, diversion channels, flood walls, terraces, grading, and revegetation
- Prevention of infiltration – capping, grading, revegetation
- Collection and transfer of water – flumes, downpipes, waterway diversion structures
- Storage and discharge of water – seepage basins, ditches, sedimentation basins, storage ponds

Free product recovery is briefly described as either using trenches or by pumping groundwater to create a cone of depression; water treatment is described by using air stripping and carbon adsorption (other options include bio-restoration, reverse osmosis, steam stripping, and ozonation).

4.3.3 Other Sites

When effluent criteria cannot be met with standard BMPs or physical site constraints prevent installation of BMPs, such as settling ponds and diked ditches, advanced proprietary treatment systems may be appropriate. These systems are expensive to operate and maintain relative to settling ponds, but they can provide superior treatment and require a relatively small site footprint. Most of these systems consist of a primary settling tank followed by some form of advanced filtration or clarification. The most common secondary or tertiary treatment systems used are:

- Sand filtration
- Chemically enhanced sand filtration
- Electrocoagulation
- Reverse osmosis
- Ultra filtration
- Ion exchange
- Chemical treatment

These systems can frequently be rented and installed onsite and usually do not require excavation during installation.

Vendors promoting these types of treatment systems were contacted to determine their applicability to both industrial and construction sites. The primary differences between industrial and construction site applications deal with variability of flow and contaminant concentrations, where industrial sites tend to be more stable in both areas of concern. For this reason, many vendors do not recommend their products at construction sites. Example treatment systems recommended by vendors for construction sites are provided in a Herrera report currently being prepared for Ecology titled *Review of Treatment Technologies for Industrial Stormwater Runoff in the Lower Duwamish Waterway*; this report will be completed in July 2011.

An Internet search also was conducted to find readily available remediation site SWPPPs. SWPPPs from New York and Nevada were reviewed to evaluate practices in other states, both written in 2010. Neither state appears to catalogue BMPs by number or title, as Ecology does, so more narrative descriptions of activities are provided. Neither of the SWPPPs explicitly called out the 12 required elements.

4.3.3.1 New York – Honeywell Site

Proposed erosion and sediment control measures were designed in accordance with the latest versions of 1) *NYSDEC Standards and Specifications for Erosion and Sediment Control* and 2) *NYSDEC State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activity*.

The control measures and BMPs noted below will be implemented as required to abate and control potential sediment transport in stormwater discharges from the construction site:

1. A stabilized construction entrance will be located at each construction entrance and exit location(s). If deemed necessary by the qualified inspector, construction vehicles will be washed down in stabilized areas prior to leaving the site.

2. Staging/laydown areas for vehicles and construction equipment will be located on stabilized portions of the site as indicated on Sheet SP-1 and detailed on Sheet MD-4. If deemed necessary by a trained contractor or qualified inspector, vehicles and equipment will be washed down in stabilized areas prior to exiting site.

3. Temporary stone check dams to be placed in swales to prevent erosion, reduce flow velocities, and promote sedimentation as required. The check dams will be installed, as required, at intervals such that the crest of the downstream dam is at the elevation of the toe of the upstream dam. Maintenance will include inspection, cleaning, and/or replacement of stone, as required.

Honeywell will initiate stabilization measures in accordance with the New York State *Standards and Specifications for Erosion and Sediment Control* as soon as practicable. For portions of the site where soil disturbance activities have temporarily or permanently ceased, stabilization measures must be implemented within 14 days of the conclusion of activities or within 7 days if authorized to exceed 5 acres of disturbance at one time. This requirement does not apply if the installation of stabilization measures is precluded by snow cover or frozen ground conditions; however, measures will be implemented as soon as practicable.

Listed below is a description of additional controls and measures to be implemented at the site to minimize sediment transport:

1. Proper precautions will be taken so materials do not spill onto public thoroughfares (i.e., leaking hydraulic lines, fuel leaks). If materials are dropped onto these areas they will be swept clear or removed as soon as practicable so that they do not enter surface and subsurface drainage systems.

2. Honeywell will provide dust control measures before dust migrates off-site. Measures may include water application or mulching but will not include the use of chemical additives.

3. Solid waste disposal dumpsters and containers will be covered and emptied regularly. Waste will be disposed of properly in accordance with local, State, and/or federal regulations.

4. Portable toilets will be installed and cleaned regularly with their contents properly disposed of. They will be secured in place so they will not be knocked over by construction activities

5. Building materials will be properly stored and contained on-site.

6. Oil and fuel containers will have appropriate secondary containment.

4.3.3.2 Nevada – Tronox Site

BMPs will be implemented during soil removal and associated building abetment and demolition activities to: 1) prevent and/or minimize accelerated erosion and sedimentation; and 2) control, minimize and/or prevent releases of impacted soils entrained with stormwater discharges at and from the site. All erosion and sediment controls will be constructed according to the *Nevada Best Management Practices Handbook* and the *Nevada Contractors Field Guide for Construction Site Best Management Practices*.

Table 4-11 presents BMPs required for each major soil disturbing activity, as applicable.

4.4 Best Management Practices at Industrial Sites

Additional BMPs/treatment technologies applicable to regulating stormwater during construction, excavation, or demolition activities at MTCA cleanup sites were researched via NPDES Waste Discharge Permits provided by Ecology for three industrial sites:

- Nucor Steel Seattle, Inc. (permit WA-0031305)
- The Oeser Company (permit WA-003081-3)
- McFarland Cascade Pole and Lumber Company (permit WA-0040553)

The following summaries describe each site, the type of wastewater regulated by the permit, pollutants addressed, and BMPs/treatment technologies used.

Nucor Steel Seattle, Inc.

The Nucor Steel site is an active steel mill located in Seattle. The wastewater discharge permit addresses stormwater, groundwater infiltration, and occasional non-contact cooling water. The wastewater treatment system is designed to address sediment, pH, and PCBs and consists of the following components:

- Wastewater is collected by a conveyance system to a junction box
- pH adjustment through CO_2 sparging
- Fine particulate pretreatment through sedimentation – coagulant and flocculent enhancing chemicals added
- Permanent particulate filters remove fine particles and protect carbon filters
- Activated carbon adsorption using five 400-pound carbon adsorption units operating in parallel
- Residual contaminants removed by two 4,000-pound carbon polishing filters

Table 4-11. Required construction stormwater control BMPs, Tronox site remediation.

Construction Activity	BMPs
Mobilize personnel and equipment	Not applicable
Setup support facilities	Good housekeeping
Install erosion and sediment control measures	Fiber rolls, silt fence, rock filled bags (install fiber rolls, silt fence barrier and J-hooks, and rock filled bag barrier at site perimeter; install fiber rolls and rock filled bag barriers at existing storm drain system inlets)
Construct access roads and haul roads	Existing berms
Establish decontamination area and track-out stations	Existing and planned berms, gravel pad including dry decontamination procedures at exclusion zone (excavation area) exits as needed, wheel wash stations at site exits
Abatement and demolition of buildings within proposed excavation areas	Good housekeeping Existing upgradient berms or diversions Fiber rolls downgradient of building removal (contractor may implement alternative BMPs upon engineer approval)
Removal of above ground structures within proposed excavation areas	Good housekeeping
Remove utilities within proposed excavation areas	Good housekeeping Fiber rolls down-gradient of utility excavation (contractor may implement alternative BMPs upon owner approval)
Clear and grub in proposed excavation areas	Good housekeeping Existing features (berms at Site perimeter)
Excavate soil at proposed areas in four phases	Slope shaping (grading) Existing downgradient berms Fiber rolls (install fiber rolls up-gradient of proposed excavation areas)
Potentially stockpile soil for subsequent transport and off-Site disposal	Boundary berms at stockpile perimeter
Transport of materials generated during abatement, demolition and excavation for disposal at a landfill	Decontamination Stations Trackout Pads Existing berms along the haul road Removal of visual contamination on haul routes prior to anticipated rain events Full time street sweeper during on-road hauling activities
Construct detention basins (excavate beta-ditch, close gaps in existing retention perimeter berm at Site boundary by installing earthen mounts)	Existing berms, boundary berms/slopes
Demobilization	Not applicable

The Oeser Company

The Oeser Company is an active pressure wood treating facility located in Bellingham. Regulated wastewater at the site consists of contaminated stormwater; the facility does not discharge process wastewater. The stormwater treatment system is designed to address oil and grease, PCP, and pH, and is comprised of the following components:

- Oil/water separator and coalescing plate filter
- One 800-gallon pump/surge tank
- Two bag filters (10 micron and 5 micron)
- Two GAC filters – lignite carbon is used for better removal of dissolved solids

McFarland Cascade Pole and Lumber Company

The McFarland Cascade Pole and Lumber Company site is located on the Tacoma Tide Flats in Tacoma. The facility uses pressure treating and dip treating methods to produce preserved lumber and other wood products. Regulated discharges at the site consist of treated stormwater and bypasses/overflows to the stormwater treatment/reuse system. The stormwater treatment system is designed to address total suspended solids (TSS), oil and grease, PAHs, pH, arsenic and chromium, and PCP. Two different treatment systems used at the site are summarized below.

Stormwater Treatment System for PCP/Creosote Area:

- Catch basins fitted with inserts and/or hay bales (for floating and settleable solids)
- Oil-water separator (sinking solids, floating solids, oils, and greases)
- Mixed media filters (layers of gravel, sand, and garnet to remove fine solids)
- GAC units with influent and effluent monitoring to evaluate when breakthrough occurs
- Backwash water settling/storage tank
- pH treatment prior to discharge to the Blair Waterway

Stormwater Treatment System for Inorganic Copper-Azole Area:

- In-ground deflective separating units
- Automatic filtration unit with self-cleaning mechanism
- Everfilt mixed-media filter system with automatic backwash

- GAC treatment
- Backwash water settling storage tank
- pH treatment prior to discharge to the Puyallup River

5.0 Other Potential BMPs

BMPs discussed below are not identified in the SMMWW.

5.1 Stormwater Runoff

5.1.1 Source Control

The City of Seattle Stormwater Manual lists unique source control BMPs designed to control pollutants associated with construction, demolition, and remodeling activities at construction sites. The BMPs include:

- BMP E2.55: Bioengineered Protection of Very Steep Slopes
- BMP E2.95: Turbidity Curtain
- BMP E3.50: Portable Sediment Tank
- BMP E3.65: Cleaning Inlets and Catch Basins
- BMP E3.70: Street Sweeping and Vacuuming
- BMP C1.20: Use of Chemicals During Construction
- BMP C1.25: Demolition of Buildings
- BMP C1.30: Building Repair, Remodeling, and Construction
- BMP C1.40: Temporary Dewatering
- BMP C1.45: Solid Waste Handling and Disposal
- BMP C1.50: Disposal of Asbestos and PCBs
- BMP C1.55: Airborne Debris Curtain

Appendix 6A of the WSDOT Highway Runoff Manual lists one BMP for source control not listed in the SMMWW:

- 6A-2.6 Bonded Fiber Matrix & Mechanically Bonded Fiber Matrix

The following alternative source control BMPs were listed in the Budd Inlet and/or East Bay Development SWPPPs:

- Regular vacuum-type street sweeping on adjacent roads
- Plugging existing catch basins, and berms; temporary curbs; well points, wells, utility trenches
- Portable water storage tanks for sedimentation
- Early application of gravel base on areas to be paved
- Catch basin filters (storm drains wrapped in plastic as an alternative BMP)

- Inspection
- Secondary containment
- Drip pans
- Temporary plastic ground cover
- Timely cleanup

5.1.2 Passive Treatment

Appendix 6A of the WSDOT Highway Runoff Manual lists one passive treatment BMP not listed in the SMMWW:

- 6A-2.20 Stormwater Infiltration

The following alternative passive treatment BMP was listed in the Budd Inlet SWPPP:

- Temporary Infiltration Trench

5.1.3 Active Treatment

Appendix 6A of the WSDOT Highway Runoff Manual includes the following active treatment BMP to address the caustic nature of concrete mixed with stormwater:

- 6A-2.34 High pH Neutralization

The following alternative active treatment BMP was listed in the East Bay Development SWPPP:

- Portable Water Storage Tanks for Sedimentation

5.2 Structures

Contamination typically associated with building materials that may be found on building exteriors and interiors include asbestos, lead-based paint, and PCBs. Other contaminants may be found adhering to structure surfaces as dust coatings or absorbed into the materials by way of spills or vapors. MTCA applies to cleanup of contaminated structures; however, in most cases either other regulations apply (e.g., Puget Sound Clean Air Agency [PSCAA] for asbestos and Toxic Substances Control Act [TSCA] for PCBs) or the contamination is regulated once it enters the environment (i.e., soil or water). Neither PSCAA nor TSCA explicitly address stormwater controls.

An Internet search for stormwater control requirements associated with demolition and abatement did not identify standard approaches. The trigger for implementation of stormwater runoff controls is land disturbance, which may or may not be necessary for demolition or abatement. Seattle Building Code (SBC) Section 106 requires a demolition permit to remove structures, including accessory structures with more than 120 square feet of projected roof area (including overhangs). Before any ground disturbance related to demolition, including construction access and staging areas, the permit holder must install erosion control measures.

BMPs for structure demolition are limited to "good housekeeping" and standard dust control measures (e.g., misting, containment). Asbestos abatement typically is required before demolition. Building interior abatement requires containment if the structure is sound; however, no asbestos abatement is required prior to demolition if the building structure is unsound. Abatement of friable exterior materials typically requires containment, non-friable materials do not. There are no abatement requirements that address stormwater runoff specifically. Federal Asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAPs) specify zero visible air emissions during construction activities. To meet the zero visible emissions requirement, NESHAPs require sufficiently wetting asbestos-containing materials to prevent release of fibers before, during, and after renovation/demolition activities and until disposal. Typically, rainfall during abatement is considered beneficial by contractors from a wetting standpoint.

The following is a description of facility engineering controls taken from the *Best Management Practices for the Control of Asbestos at Construction and Demolition Materials Processing Facilities in Washington State*, prepared by the King County Solid Waste Division GreenTools Program:

- Facilities should be designed to minimize employee exposure to dust. This will help prevent adverse health effects from both "nuisance" and hazardous types of dust, including asbestos. Misters should be located in the unloading areas and other locations prone to dust emissions.

- Equipment used to crush or grind C&D [construction & demolition debris] should be ventilated using local exhaust ventilation. The ventilation system should be designed by a professional experienced in industrial ventilation. Where feasible, employee work stations should be located away from areas where dust emissions may occur.

- The transfer of fines can also generate significant amounts of dust. Enclosing conveyor belts, providing local exhaust ventilation and minimizing the open area of the containers used to collect fines can help to reduce dust emissions.

Some cities were found to have protocols applicable to demolition projects in their jurisdictions. The City of Brier, Washington demolition permit application states that any soils contamination shall be cleaned up and addressed before demolition work begins and that any storm drains or

catch basins on site will have filter fabric placed in the grate before demolition work begins. The city of Camarillo, California, demolition permit application states that if the area of land to be cleared or disturbed by the demolition is less than 1 acre [no minimum area designated], the applicant shall submit a Stormwater Pollution Control Plan that should include, at a minimum, the following BMPs taken from the 2003 California Stormwater Construction BMP Handbook:

- Stockpile Management
- Perimeter & sediment control BMPs
- Spill Prevention and Control
- Solid Waste Management
- Hazardous Waste Management
- Street Sweeping and Vacuuming
- Storm Drain Inlet Protection
- Stabilized Construction Entrance/Exit
- Illicit Connection/Discharge
- Vehicle & Equipment Maintenance
- Sanitary/Septic Waste Management
- Wind Erosion

In addition to the above BMPs, the following minimum requirements should be met on the construction site:

- Sediments generated on the project site shall be retained using structural drainage controls.

- No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities, or adjacent properties by wind or runoff.

- Non-stormwater runoff from equipment and vehicle washing and any other activity shall be contained at the project site.

This is the only set of requirements associated with demolition directly related to stormwater runoff control that was found.

6.0 Logistical Issues for Developing a Construction Stormwater Individual Permit Template

6.1 NPDES and MTCA Procedural Limitations

6.1.1 Construction Stormwater Permit Limitations

The major limitation of the NPDES process is that there is no specified requirement for a permit when construction disturbances cover less than 1 acre. Ecology can require a permit for any size construction site, but this would likely only happen if a WQP permit writer was informed by someone in the TCP that a remedial action was planned. This is more likely to occur when a formal cleanup agreement is in place and site activities are explicitly scheduled. Construction performed under Independent Cleanups, conducted without Ecology involvement, are difficult to forecast.

There may be situations in which a cleanup is performed as a demolition project, with essentially no ground disturbance, and hence, no trigger for an Ecology Construction Stormwater Permit. Contaminated materials may be exposed to precipitation and subsequent stormwater transport. Typically, planned demolition of contaminated structures is not reported to Ecology under MTCA, but is reported to PSCAA when asbestos is known to be present. If demolition is part of a formal cleanup action, it can be addressed in the order or agreement. If demolition is conducted as an Independent Cleanup, there would be no mechanism for WQP involvement. Local government permit triggers for demolition vary.

The Construction Stormwater Permit requires a SWPPP to be developed prior to construction. The SWPPP is typically not reviewed as part of the permit issuance process and it is incumbent upon the contractor to have included all necessary BMPs and identified all stormwater discharge points associated with the work. Quality of the SWPPP and performance of the contractor can only be determined based on field oversight, which requires that the construction schedule be made available to the inspector. If there is no formal cleanup documentation covering this aspect of the work, notification is unlikely to occur. The WQP can get involved prior to construction by adding SWPPP review as a condition of the permit, which has been done in the past.

Scheduling poses another limitation, in that a significant lead-time is required for CSWIP development. The following timeline applies to a request for CSWGP coverage; a CSWIP would likely take longer. For a CSWGP, the operator must submit the NOI at least 60 days before discharging stormwater from construction activities and must submit it on or before the date of the first public notice. The 30-day public comment period required by Chapter 173-226-130(5) WAC begins on the publication date of the second public notice. Unless Ecology responds to the complete application in writing, based on public comments, or any other relevant factors, coverage under the CSWGP will automatically commence on the 31st day following receipt by Ecology of a completed NOI, or the issuance date of the permit, whichever is later, unless

Ecology specifies a later date in writing. This process typically is not recognized by PLPs or their consultants following MTCA and is not built into the cleanup schedule or budget.

Applicants who propose to discharge to a stormwater or sanitary sewer system operated by Seattle or King County must also submit a copy of the NOI to the appropriate jurisdiction.

6.1.2 Limitations Imposed by MTCA

MTCA imposes ARARs on site cleanup projects, requiring PLPs to obtain an NPDES permit for all remedial actions. Although only substantive portions of some laws are required under formal cleanups, CWA requirements must be met in full for Ecology to retain its delegated authority for the NPDES program. The time necessary to obtain permits can be long for Independent Cleanups. The need for a local permit, such as for land disturbing activity, would trigger the SEPA process. Requesting a CSWIP also would trigger the SEPA process (required at sites where more than 1 acre is disturbed). Although Ecology may require a CSWIP for smaller site disturbances, there does not appear to be a mechanism to force a PLP to request such a permit. TCP staff would need to track cleanup schedules of Independent Cleanup sites in order to notify NPDES permit writers that a site of concern should be addressed. There is no mechanism for this to happen, as things stand today. Alternatively, within the City of Seattle, a construction SWPPP is required for any ground disturbance at a contaminated site. Currently, there is no notification arrangement between Ecology and the City.

MTCA includes the following limited language with regard to construction inspections:

> "The department may perform site inspections and construction oversight. The department may require that construction activities be halted at a site if construction or any supporting activities are not consistent with approved plans, are not in compliance with environmental regulations or accepted construction procedures, or endanger human health or the environment" (Chapter 173-340-400(6)(a)).

Formal Agreements typically include a construction schedule that would inform Ecology of planned field work; however, Independent Cleanups are not required to provide notification of cleanup actions. This would make timely notification to the WQP less than likely. Alternatively, within the City of Seattle, a pre-construction site inspection is required as a condition of the Grading Permit that includes a review of the Erosion Control Plan. Currently, there is no notification arrangement between Ecology and the City. This applies also to situations in which ground disturbing activity is planned at a contaminated site that does not contribute toward cleanup (if conducted at an Independent cleanup site, the TCP likely would not be notified by the project proponent).

MTCA applies to cleanup of contaminated structures; however, the trigger for implementation of a CSWGP is land disturbance, which may or may not be necessary for demolition or abatement.

Available BMPs for structure demolition are limited to "Good Housekeeping" and standard dust control measures.

6.2 Administrative Options

The following outlines the administrative options available to address construction stormwater runoff controls at MTCA cleanup sites:

- Cleanup conducted under an Order or Agreement – incorporate erosion control requirements directly into the legal instrument to include development of a SWPPP, review of the SWPPP, a pre-construction inspection, periodic inspections during the cleanup process, and monitoring

- Independent Cleanup through the VCP – require a SWPPP as part of the planning process

- Independent Cleanup not through the VCP or construction activities on contaminated sites – no direct mechanism

Ground-disturbing activities within all three municipal jurisdictions along the LDW require grading permits. In Tukwila, there is no minimum area of disturbance threshold, but it is up to the project proponent to notify the City of the presence of contamination. There is no special provision for reporting this in the City code. In Seattle, the presence of contamination triggers the requirement for a Grading Permit regardless of the planned area of disturbance and DPD conducts a site inspection to evaluate erosion control measures, both planned and in place, prior to construction. Currently, there is no mechanism for communicating this process to Ecology. Seattle's demolition permit process does not appear to provide the same level of review when dealing with contaminated buildings. In King County, projects that result in replacement of 2,000 square feet of impervious surface or disturb more than 7,000 square feet of ground require a Grading Permit. There is no special provision for reporting the presence of contamination.

All three jurisdictions require control of contaminants in stormwater runoff, regardless of the activity being performed. All three jurisdictions require use of BMPs identified in stormwater manuals deemed to be functionally equivalent to the SMMWW.

APPENDIX A

Phase I Municipal Stormwater Permit Equivalent Programs for Runoff Controls for New and Redevelopment and Construction Sites

APPENDIX 10 – Equivalent Programs for Runoff Controls for New and Redevelopment and Construction Sites

Ecology determined that the following enforceable documents, including codes, ordinances, director's rules, public rules and/or manuals, are functionally equivalent to Appendix I and the required portions of Ecology's 2005 *Stormwater Management Manual for Western Washington.* If Ecology's determination of equivalency is conditioned, the conditions are listed below. Permittees must comply with listed conditions, if applicable, in order to achieve equivalency and comply with associated permit requirements. Links to the documents listed in this appendix can be found on Ecology's website.

A. King County

King County is meeting relevant permit requirements and achieves equivalency with Department of Ecology's *2005 Stormwater Management Manual for Western Washington* by adopting and implementing the regulations and rules listed below.

1. King County Code Chapter 9.04 Surface Water Runoff Policy, as amended by Ordinance 16264 approved October 20, 2008.
2. King County Code Chapter 9.12 Water Quality, as amended by Ordinance 16264 approved October 20, 2008.
3. King County Code Chapter 16.82 Clearing and Grading.
4. 2009 King County Surface Water Design Manual (SWDM) as amended in agreement with King County Memo *Impervious Surface Percentage Exemption*, March 22, 2010.
5. 2009 King County Stormwater Pollution Prevention Manual (SPPM).
6. King County Code Chapter 21A.24.045 and 318 through 342 Critical Areas[1].

B. City of Seattle

City of Seattle is meeting relevant permit requirements and achieves equivalency with Department of Ecology's *2005 Stormwater Management Manual for Western Washington* by adopting and implementing the regulations and rules listed below.

1. Seattle Municipal Code chapters 22.800 - 22.808 titled "Stormwater and Drainage Control Code" as adopted in 2009.
2. Seattle Municipal Code chapter 22.170 titled "Grading Code" as adopted in 2009.
3. Joint Seattle Public Utilities (SPU)/Department of Planning and Development (DPD) Directors' Rule titled "Source Control Technical Requirements Manual" as approved by the Director of SPU and the Director of the DPD in 2009.
4. Joint SPU/DPD Directors' Rule titled "Construction Stormwater Control Technical Requirements Manual" as approved by the Director of SPU and the Director of DPD in 2009.

[1] The wetlands protection requirement (Minimum Requirement #8) is not contained in the SWDM, but rather is satisfied by the wetland protection requirements contained in King County's Critical Areas Code.

5. Joint SPU/DPD Directors' Rule titled "Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual" as approved by the Director of SPU and the Director of DPD in 2009.
6. Joint SPU/DPD Directors' Rule titled "Stormwater Code Enforcement Manual" as approved by the Director of SPU and the Director of DPD in 2009.

C. City of Tacoma

City of Tacoma is meeting relevant permit requirements and achieves equivalency with Department of Ecology's *2005 Stormwater Management Manual for Western Washington* by adopting and implementing the regulations and rules listed below.

1. City of Tacoma Surface Water Management Manual (2008) as amended in agreement with "March 16, 2009 Tacoma Letter to Department of Ecology" concluding the Department of Ecology review process.
2. Tacoma Municipal Code Chapter 12.08 Wastewater and Surface Water Management.

D. Pierce County

Pierce County is meeting relevant permit requirements and achieves equivalency with Department of Ecology's *2005 Stormwater Management Manual for Western Washington* by adopting and implementing the regulations and rules listed below.

1. Pierce County Stormwater Management and Site Development Manual (2008), as amended in agreement with "Pierce County's letter to Department of Ecology dated March 6, 2009" concluding the Department of Ecology review process.
2. Pierce County Code Title 11"Storm Drainage and Surface Water Management" and Title 17A"Construction and Infrastructure Regulations – Site Development and Stormwater Drainage," as amended by Ordinance No. 2008-59s.
3. Pierce County Code Title 18E "Development Regulations-Critical Areas".

E. Clark County

Clark County is meeting relevant permit requirements and achieves equivalency with Department of Ecology's *2005 Stormwater Management Manual for Western Washington* by adopting and implementing the regulations and rules listed below.

1. Clark County Stormwater Manual (2009).
2. Clark County Stormwater Pollution Control Manual – Best Management Practices for Businesses and Government Agencies (2009).
3. Clark County Stormwater Facility Maintenance Manual (2009).
4. Clark County Code Chapter 40.385 Stormwater and Erosion Control.
5. Clark County Code Chapter 13.26A Water Quality.
6. Clark County Code Chapter 40.450 Wetland Permits.
7. Clark County Development and Redevelopment Flow Control Mitigation Program (Clark County's Flow Control Program), with Conditions.
    a. Conditions: The County must implement Clark County's Flow Control Program in addition to the following items:
        i. The County will report the amount of the flow control obligation incurred in each of the calendar years, beginning with 2009, as an attachment to the annual

report required by the Permit. These progress reports shall include the information identified in Clark County's Flow Control Program. In addition to the annual progress report above, the County will submit quarterly, Tables 1, 2, and 3 from Clark County's Flow Control Program for the first year (2010). The tables will be submitted no later than 15 days following the end of the calendar quarter, starting April 2010.

ii. The County shall maintain funding sources adequate to comply with these requirements.

iii. The County shall keep all records associated with this section for at least five years and shall make records available to Ecology upon request.

iv. The County shall immediately notify Ecology of any occurrence which is likely to result in noncompliance with the requirements of this section. Such notification will state the nature of the potential non-compliance, the reason(s) for the occurrence, and the actions taken by the County to address the potential noncompliance.

b. Conditions: Required actions for failure to mitigate runoff from new development and redevelopment to the historic condition:

i. If the County fails to implement the items in (7.a) above and as further described in Clark County's Flow Control Program it must, notify Ecology in writing of non-compliance with this provision in accordance with General Permit Condition G20 and immediately initiate amendment of its development regulations to require flow control at new and redevelopment sites equivalent to that required in S5.C.5 of the Permit. Furthermore, the County shall not grant any approvals or permits for development or redevelopment projects which do not mitigate post-project runoff to the historical land cover in accordance with the Permit and which are submitted after April 13, 2009 until the County has brought itself into full compliance with the requirements above. In the event of non-compliance with these provisions, the County shall remain responsible for providing the entire flow control obligation thus far incurred.

c. Conditions: Any permittee interested in adopting and implementing Clark County's Flow Control Program must meet the conditions in (7.a) above including the provisions in Clark County's Flow Control Program and the requirements listed below. In addition, review is required by Ecology.

i. A financial plan capable of supporting the capital program. The financial plan shall identify a reliable funding source to guarantee timely construction of capital projects and to provide operation and maintenance.

ii. Administrative procedures to track flow control obligations and construction of capital facilities, and to produce annual reports.

iii. Engineering capability to determine amount of credits earned by capital facilities.

iv. Staffing for current tracking and reporting; to develop a program to identify and prioritize capital projects; to manage construction of capital projects; and to maintain capital projects.

8. Clark County version of the Western Washington Hydrologic Model, dated January 20, 2010 with Conditions:
   a. Conditions: Validation and calibration of the Clark County hydrology model.
      i. For validation and possibly recalibration purposes, the County shall collect at least three years of continuous flow records for Mill Creek and Gee Creek in addition to the records used for the initial calibration in a final report submitted to Ecology entitled "Development of Clark County Version of the Western Washington Hydrology Model, January 20, 2010.
      ii. By October 1, 2010, the County shall contract with an engineering firm of sufficient expertise in HSPF model calibration to develop procedures for collecting the data necessary for model validation. By February 1, 2014, the County shall perform the model validation analysis, and make recommendations for any adjustments to the model parameters.
      iii. By July 1, 2014, the County shall submit a final report to Ecology including recommendations for any adjustments to the model parameters.

F. <u>WSDOT Highway Runoff Manual</u>

The Department of Ecology completed its review of the June 2008 Highway Runoff Manual and found that it meets minimum design requirements and best management practices for public road projects equivalent to Ecology's *2005 Stormwater Management Manuals for Western Washington* and *Eastern Washington.*

APPENDIX B

EPA Form 1 for Construction Stormwater Individual Permit Application

Disclaimer

This is an updated PDF document that allows you to type your information directly into the form, print it, and save the completed form.

Note: This form can be viewed and saved only using Adobe Acrobat Reader version 7.0 or higher, or if you have the full Adobe Professional version.

Instructions:

1. Type in your information
2. Save file (if desired)
3. Print the completed form
4. Sign and date the printed copy
5. Mail it to the directed contact.

United States
Environmental Protection
Agency

Office of
Enforcement
Washington, DC 20460

EPA Form 3510-1
Revised August 1990

Permits Division

Application Form 1 – General Information

Consolidated Permits Program

This form must be completed by all persons applying for a permit under EPA's Consolidated Permits Program. See the general instructions to Form 1 to determine which other application forms you will need.

DESCRIPTION OF CONSOLIDATED PERMIT APPLICATION FORMS

The Consolidated Permit Application Forms are:

Form 1 – General Information (*included in this part*);

Form 2 – Discharges to Surface Water (*NPDES Permits*):

2A. Publicly owned Treatment Works (*Reserved - not included in this package*),

2B. Concentrated Animal Feeding Operations and Aquatic Animal Production Facilities (not included in this package),

2C. Existing Manufacturing, Commercial, Mining, and Silvicultural Operations (*not included in this package*), and

2D. New Manufacturing, Commercial, Mining, and Silvicultural Operations (*Reserved - not included in this package*);

Form 3 – Hazardous Waste Application Form (*RCRA Permits - not included in this package*);

Form 4 – Underground Injection of Fluids (*UIC Permits - Reserved - not included in this package*); and

Form 5 – Air Emissions in Attainment Areas (*PSD Permits - Reserved - not included in this package*).

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Form 1 (*two copies*)

SECTION A – GENERAL INSTRUCTIONS

Who Must Apply

With the exceptions described in Section C of these instructions, Federal laws prohibit you from conducting any of the following activities without a permit.

NPDES (*National Pollutant Discharge Elimination System Under the Clean Water Act, 33 U.S.C. 1251*). Discharge of pollutants into the waters of the United States.

RCRA (*Resource Conservation and Recovery Act, 42 U.S.C. 6901*). Treatment, storage, or disposal of hazardous wastes.

UIC (*Underground Injection Control Under the Safe Drinking Water Act, 42 U.S.C. 300f*). Injection of fluids underground by gravity flow or pumping.

PSD (*Prevention of Significant Deterioration Under the Clean Air Act, 72 U.S.C 7401*). Emission of an air pollutant by a new or modified facility in or near an area which has attained the National Ambient Air Quality Standards for that pollutant.

Each of the above permit programs is operated in any particular State by either the United States Environmental Protection Agency (*EPA*) or by an approved State agency. You must use this application form to apply for a permit for those programs administered by EPA. For those programs administered by approved states, contact the State environmental agency for the proper forms.

If you have any questions about whether you need a permit under any of the above programs, or if you need information as to whether a particular program is administered by EPA or a State agency, or if you need to obtain application forms, contact your EPA Regional office (*listed in Table 1*).

Upon your request, and based upon information supplied by you, EPA will determine whether you are required to obtain a permit for a particular facility. Be sure to contact EPA if you have a question, because Federal laws provide that you may be heavily penalized if you do not apply for a permit when a permit is required.

Form 1 of the EPA consolidated application forms collects general information applying to all programs. You must fill out Form 1 regardless of which permit you are applying for. In addition, you must fill out one of the supplementary forms (*Forms 2 – 5)* for each permit needed under each of the above programs. Item II of Form 1 will guide you to the appropriate supplementary forms.

You should note that there are certain exclusions to the permit requirements listed above. The exclusions are described in detail In Section C of these instructions. If your activities are excluded from permit requirements then you do not need to complete and return any forms.

NOTE: Certain activities not listed above also are subject to EPA administered environmental permit requirements. These include permits for ocean dumping, dredged or fill material discharging, and certain types of air emissions. Contact your EPA Regional office for further information.

Table 1. Addresses of EPA Regional Contacts and States Within the Regional Office Jurisdictions

REGION 1

Permit Contact, Environmental and Economic Impact Office, U.S. Environmental Protection Agency, 1 Congress St., Suite 1100, Boston, MA 02114-2023, Phone: (617) 918-1111, Fax: (617) 918-1809, Toll free within Region 1: (888) 372-7341, http://www.epa.gov/region01/.

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

REGION 2

Permit Contact, Permits Administration Branch, U.S. Environmental Protection Agency, 290 Broadway, New York, NY 10007-1866, Phone: (212) 637-3000, Fax: (212) 637-3526, http://www.epa.gov/region02/.

New Jersey, New York, Virgin Islands, and Puerto Rico.

REGION 3

Permit Contact (*3 EN 23*), U.S. Environmental Protection Agency, 1650 Arch Street, Philadelphia, PA 19103-2029, Phone: (215) 814-5000, Fax: (215) 814-5103, Toll free: (800) 438-2474, http://www.epa.gov/region03/.

Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.

REGION 4

Permit Contact, Permits Section, U.S. Environmental Protection Agency, Atlanta Federal Center, 61 Forsyth Street, SW, Atlanta, GA 30303-3104, Phone: (404) 562-9900, Fax: (404) 562-8174, Toll free: (800) 241-1754, http://www.epa.gov/region04/.
Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

REGION 5

Permit Contact (*5EP*), U.S. Environmental Protection Agency, 77 West Jackson Boulevard, Chicago, IL 60604-3507, Phone: (312) 353-2000, Fax: (312) 353-4135, Toll free within Region 5: (800) 621-8431, http://www.epa.gov/region5/.
Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

REGION 6

Permit Contact (*6AEP*), U.S. Environmental Protection Agency, Fountain Place 12th Floor, Suite 1200, 1445 Ross Avenue, Dallas, TX 75202-2733, Phone: (214) 665-2200, Fax: (214) 665-7113, Toll free within Region 6: (800) 887-6063, http://www.epa.gov/region06/.
Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

REGION 7

Permit Contact, Permits Branch, U.S. Environmental Protection Agency, 901 North 5th Street, Kansas City, KS 66101, Phone: (913) 551-7003, Toll free: (800) 223-0425, http://www.epa.gov/region07/.
Iowa, Kansas, Missouri, and Nebraska.

REGION 8

Permit Contact (*8E-WE*), U.S. Environmental Protection Agency, 999 18th Street, Suite 500, Denver, CO 80202-2466, Phone: (303) 312-6312, Fax: (303) 312-6339, Toll free: (800) 227-8917, http://www.epa.gov/region08/.
Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

REGION 9

Permit Contact, Permits Branch (*E-4*), U.S. Environmental Protection Agency, 75 Hawthorne Street, San Francisco, CA 94105, Phone: (415) 947-8000, Fax: (415) 947-3553, Toll free within Region 9: (866) EPA-WEST, http://www.epa.gov/region09/.
Arizona, California, Hawaii, Nevada, Guam, American Samoa, and Trust Territories.

REGION 10

Permit Contact (*M/S 521*), U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle, WA 98101, Phone: (206) 553-1200, Fax: (206) 553-2955, Toll free: (800) 424-4372, http://www.epa.gov/region10/.
Alaska, Idaho, Oregon, and Washington.

Where to File

The application forms should be mailed to the EPA Regional office whose Region includes the State in which the facility is located (*see Table 1*).

If the State in which the facility is located administers a Federal permit program under which you need a permit, you should contact the appropriate State agency for the correct forms. Your EPA Regional office (*Table 1*) can tell you to whom to apply and can provide the appropriate address and phone number.

When to File

Because of statutory requirements, the deadlines for filing applications vary according to the type of facility you operate and the type of permit you need. These deadlines are as follows:[1]

Table 2. Filing Dates for Permits

FORM (*permit*)	WHEN TO FILE
2A (*NPDES*)	180 days before your present NPDES permit expires.
2B (*NPDES*)	180 days before your present NPDES permit expires[2], or 180 days prior to startup if you are a new facility.
2C (*NPDES*)	180 days before your present NPDES permit expires[2].
2D (*NPDES*)	180 days prior to startup.
3 (*Hazardous Waste*)	Existing facility: Six months following publication of regulations listing hazardous wastes. New facility: 180 days before commencing physical construction.
4 (*UIC*)	A reasonable time prior to construction for new wells; as directed by the Director for existing wells.
5 (*PSD*)	Prior to commencement of construction.

[1] Please note that some of these forms are not yet available for use and are listed as "Reserved" at the beginning of these instructions. Contact your EPA Regional office for information on current application requirements and forms.

[2] If your present permit expires on or before November 30, 1980, the filing date is the date on which your permit expires. If your permit expires during the period December 1, 1980–May 31, 1981, the filing date is 90 days before your permit expires.

Federal regulations provide that you may not begin to construct a new source in the NPDES program, a new hazardous waste management facility, a new injection well, or a facility covered by the PSD program before the issuance of a permit under the applicable program. Please note that if you are required to obtain a permit before beginning construction, as described above, you may need to submit your permit application well in advance of an applicable deadline listed in Table 2.

Fees

The U.S. EPA does not require a fee for applying for any permit under the consolidated permit programs. (*However, some States which administer one or more of these programs require fees for the permits which they issue.*)

Availability of Information to Public

Information contained in these application forms will, upon request, be made available to the public for inspection and copying. However, you may request confidential treatment for certain information which you submit on certain supplementary forms. The specific instructions for each supplementary form state what information on the form, if any, may be claimed as confidential and what procedures govern the claim. No information on Forms 1 and 2A through 2D may be claimed as confidential.

Completion of Forms

Unless otherwise specified in instructions to the forms, each item in each form must be answered. To indicate that each item has been considered, enter "NA," for not applicable, if a particular item does not fit the circumstances or characteristics of your facility or activity.

If you have previously submitted information to EPA or to an approved State agency which answers a question, you may either repeat the information in the space provided or attach a copy of the previous submission. Some items in the form require narrative explanation. If more space is necessary to answer a question, attach a separate sheet entitled "Additional Information."

Financial Assistance for Pollution Control

There are a number of direct loans, loan guarantees, and grants available to firms and communities for pollution control expenditures. These are provided by the Small Business Administration, the Economic Development Administration, the Farmers Home Administration, and the Department of Housing and Urban Development, Each EPA Regional office (*Table 1*) has an economic assistance coordinator who can provide you with additional information.

EPA's construction grants program under Title II of the Clean Water Act is an additional source of assistance to publicly owned treatment works. Contact your EPA Regional office for details.

SECTION B – FORM 1 LINE BY LINE INSTRUCTIONS

This form must be completed by all applicants.

Completing This Form

Please type or print in the unshaded areas only. Some items have small graduation marks in the fill-in spaces. These marks indicate the number of characters that may be entered into our data system. The marks are spaced at 1/6" intervals which accommodate elite type (*12 characters per inch*). If you use another type you may ignore the marks. If you print, place each character between the marks. Abbreviate if necessary to stay within the number of characters allowed for each item. Use one space for breaks between words, but not for punctuation marks unless they are needed to clarify your response.

Item I

Space is provided at the upper right hand corner of Form 1 for insertion of your EPA Identification Number. If you have an existing facility, enter your Identification Number. If you don't know your EPA Identification Number, please contact your EPA Regional office (*Table 1),* which will provide you with your number. If your facility is new *(not yet constructed*), leave this item blank.

Item II

Answer each question to determine which supplementary forms you need to fill out. Be sure to check the glossary in Section D of these instructions for the legal definitions of the **bold faced words**. Check Section C of these instructions to determine whether your activity is excluded from permit requirements.

If you answer "no" to every question, then you do not need a permit, and you do not need to complete and return any of these forms.

If you answer "yes" to any question, then you must complete and file the supplementary form by the deadline listed in Table 2 along with this form. (*The applicable form number follows each question and is enclosed in parentheses.*) You need not submit a supplementary form if you already have a permit under the appropriate Federal program, unless your permit is due to expire and you wish to renew your permit.

Questions (I) and (J) of Item II refer to major new or modified sources subject to Prevention of Significant Deterioration (*PSD*) requirements under the Clean Air Act. For the purpose of the PSD program, major sources are defined as: (A) Sources listed in Table 3 which have the potential to emit 100 tons or more per year emissions; and (B) All other sources with the potential to emit 250 tons or more per year. See Section C of these instructions for discussion of exclusions of certain modified sources.

Table 3. 28 Industrial Categories Listed In Section 169(1) of the Clean Air Act of 1977

Fossil fuel-fired steam generators of more than 250 million BTU per hour heat input;
Coal cleaning plants (*with thermal dryers*);
Kraft pulp mills;
Portland cement plants;
Primary zinc smelters;
Iron and steel mill plants;
Primary aluminum ore reduction plants;
Primary copper smelters;
Municipal incinerators capable of charging more than 250 tons of refuse per day;
Hydrofluoric acid plants;
Nitric acid plants;
Sulfuric acid plants;
Petroleum refineries;
Lime plants;
Phosphate rock processing plants;
Coke oven batteries;
Sulfur recovery plants;
Carbon black plants (*furnace process*);
Primary lead smelters;
Fuel conversion plants;
Sintering plants;
Secondary metal production plants;
Chemical process plants;
Fossil fuel boilers (*or combination thereof*) totaling more than 250 million BTU per hour heat input;

Table 3 (continued)

Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels;
Taconite ore processing plants;
Glass fiber processing plants; and
Charcoal production plants.

Item III

Enter the facility's official or legal name. Do not use a colloquial name.

Item IV

Give the name, title, and work telephone number of a person who is thoroughly familiar with the operation of the facility and with the facts reported in this application and who can be contacted by reviewing offices if necessary.

Item V

Give the complete mailing address of the office where correspondence should be sent. This often is not the address used to designate the location of the facility or activity.

Item VI

Give the address or location of the facility identified in Item III of this form. If the facility lacks a street name or route number, give the most accurate alternative geographic information (*e.g., section number or quarter section number from county records or at intersection of Rts. 425 and 22*).

Item VII

List, in descending order of significance, the four 4-digit standard industrial classification (*SIC*) codes which best describe your facility in terms of the principal products or services you produce or provide. Also, specify each classification in words. These classifications may differ from the SIC codes describing the operation generating the discharge, air emissions, or hazardous wastes.

SIC code numbers are descriptions which may be found in the "Standard Industrial Classification Manual" prepared by the Executive Office of the President, Office of Management and Budget, which is available from the Government Printing Office, Washington, D.C. Use the current edition of the manual. If you have any questions concerning the appropriate SIC code for your facility, contact your EPA Regional office (*see Table 1*).

Item VIII-A

Give the name, as it is legally referred to, of the person, firm, public organization, or any other entity which operates the facility described in this application. This may or may not be the same name as the facility. The operator of the facility is the legal entity which controls the facility's operation rather than the plant or site manager. Do not use a colloquial name.

Item VIII-B

Indicate whether the entity which operates the facility also owns it by marking the appropriate box.

Item VIII-C

Enter the appropriate letter to indicate the legal status of the operator of the facility. Indicate "public" for a facility solely owned by local government(s) such as a city, town, county, parish, etc.

Items VIII-D-H

Enter the telephone number and address of the operator identified in Item VIII-A.

Item IX

Indicate whether the facility is located on Indian Lands.

Item X

Give the number of each presently effective permit issued to the facility for each program or, if you have previously filed an application but have not yet received a permit, give the number of the application, if any. Fill in the unshaded area only. If you have more than one currently effective permit for your facility under a particular permit program, you may list additional permit numbers on a separate sheet of paper. List any relevant environmental Federal (*e.g., permits*

under the Ocean Dumping Act, Section 404 of the Clean Water Act or the Surface Mining Control and Reclamation Act), State (e.g., State permits for new air emission sources in nonattainment areas under Part D of the Clean Air Act or State permits under Section 404 of the Clean Water Act), or local permits or applications under "other."

Item XI

Provide a topographic map or maps of the area extending at least to one mile beyond the property boundaries of the facility which clearly show the following:

The legal boundaries of the facility;

The location and serial number of each of your existing and proposed intake and discharge structures;

All hazardous waste management facilities;

Each well where you inject fluids underground; and

All springs and surface water bodies in the area, plus all drinking water wells within 1/4 mile of the facility which are identified in the public record or otherwise known to you.

If an intake or discharge structure, hazardous waste disposal site, or injection well associated with the facility is located more than one mile from the plant, include it on the map, if possible. If not, attach additional sheets describing the location of the structure, disposal site, or well, and identify the U.S. Geological Survey (*or other*) map corresponding to the location.

On each map, include the map scale, a meridian arrow showing north, and latitude and longitude at the nearest whole second. On all maps of rivers, show the direction of the current, and in tidal waters, show the directions of the ebb and flow tides. Use a 7-1/2 minute series map published by the U.S. Geological Survey, which may be obtained through the U.S. Geological Survey Offices listed below, If a 7-1/2 minute series map has not been published for your facility site, then you may use a 15 minute series map from the U.S. Geological Survey. If neither a 7-1/2 nor 15 minute series map has been published for your facility site, use a plat map or other appropriate map, including all the requested information; in this case, briefly describe land uses in the map area (*e.g., residential, commercial*).

You may trace your map from a geological survey chart, or other map meeting the above specifications. If you do, your map should bear a note showing the number or title of the map or chart it was traced from. Include the names of nearby towns, water bodies, and other prominent points. An example of an acceptable location map is shown in Figure 1-1 of these instructions. (*NOTE: Figure 1-1 is provided for purposes of illustration only, and does not represent any actual facility.)*

U.S.G.S. OFFICES	AREA SERVED
Eastern Mapping Center National Cartographic Information Center U.S.G.S. 536 National Center Reston, VA 22092 Phone No. (703) 860-6336	Ala., Conn., Del., D.C., Fla., Ga., Ind., Ky., Maine, Md., Mass., N.H., N.J., N.Y., N.C., S.C., Ohio, Pa., Puerto Rico, R.I., Tenn., Vt., Va., W. Va., and Virgin Islands
Mid Continent Mapping Center National Cartographic Information Center U.S.G.S. 1400 Independence Road Rolla, MO 65401 Phone No. (314) 341-0851	Ark.. Ill., Iowa, Kans., La., Mich., Minn., Miss., Mo., N. Dak., Nebr., Okla., S. Dak., and Wis.
Rocky Mountain Mapping Center National Cartographic Information Center U.S.G.S. Stop 504, Box 25046 Federal Center Denver, CO 80225 Phone No. (303) 234-2326	Alaska, Colo., Mont., N. Mex., Tex., Utah, and Wyo.
Western Mapping Center National Cartographic Information Center U.S.G.S. 345 Middlefield Road Menlo Park, CA 94025 Phone No. (415) 323-8111	Ariz., Calif., Hawaii, Idaho, Nev., Oreg., Wash., American Samoa, Guam, and Trust Territories

Item XII

Briefly describe the nature of your business (*e.g., products produced or services provided*).

Item XIII

Federal statues provide for severe penalties for submitting false information on this application form.

18 U.S.C. Section 1001 provides that "Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes or uses any false writing or document knowing some to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than five years, or both."

Section 309(c)(2) of the Clean Water Act and Section 113(c)(2) of the Clean Air Act each provide that "Any person who knowingly makes any false statement, representation, or certification in any application, . . . shall upon conviction, be punished by a fine of no more than $10,000 or by imprisonment for not more than six months, or both."

In addition, Section 3008(d)(3) of the Resource Conservation and Recovery Act provides for a fine up to $25,000 per day or imprisonment up to one year, or both, for a first conviction for making a false statement in any application under the Act, and for double these penalties upon subsequent convictions.

FEDERAL REGULATIONS REQUIRE THIS APPLICATION TO BE SIGNED AS FOLLOWS:

A. For a corporation, by a principal executive officer of at least the level of vice president. However, if the only activity in Item II which is marked "yes" is Question G, the officer may authorize a person having responsibility for the overall operations of the well or well field to sign the certification. In that case, the authorization must be written and submitted to the permitting authority.

B. For partnership or sole proprietorship, by a general partner or the proprietor, respectively; or

C. For a municipality, State, Federal, or other public facility, by either a principal executive officer or ranking elected official.

SECTION C – ACTIVITIES WHICH DO NOT REQUIRE PERMITS

1. National Pollutant Discharge Elimination System Permits Under the Clean Water Act. You are not required to obtain an NPDES permit if your discharge is in one of the following categories, as provided by the Clean Water Act (*CWA*) and by the NPDES regulations (*40 CFR Parts 122-125*). However, under Section 510 of CWA a discharge exempted from the federal NPDES requirements may still be regulated by a State authority; contact your State environmental agency to determine whether you need a State permit.

A. DISCHARGES FROM VESSELS. Discharges of sewage from vessels, effluent from properly functioning marine engines, laundry, shower, and galley sink wastes, and any other discharge incidental to the normal operation of a vessel do not require NPDES permits. However, discharges of rubbish, trash, garbage, or other such materials discharged overboard require permits, and so do other discharges when the vessel is operating in a capacity other than as a means of transportation, such as when the vessel is being used as an energy or mining facility, a storage facility, or a seafood processing facility, or is secured to the bed of the ocean, contiguous zone, or waters of the United States for the purpose of mineral or oil exploration or development.

B. DREDGED OR FILL MATERIAL. Discharges of dredged or fill material into waters of the United States do not need NPDES permits if the dredging or filling is authorized by a permit issued by the U.S. Army Corps of Engineers or an EPA approved State under Section 404 of CWA.

C. DISCHARGES INTO PUBLICLY OWNED TREATMENT WORKS (*POTW*), The introduction of sewage, industrial wastes, or other pollutants into a POTW does not need an NPDES permit. You must comply with all applicable pretreatment standards promulgated under Section 307(b) of CWA, which may be included in the permit issued to the POTW. If you have a plan or an agreement to switch to a POTW in the future, this does not relieve you of the obligation to apply for and receive an NPDES permit until you have stopped discharging pollutants into waters of the United States.

(NOTE: Dischargers into privately owned treatment works do not have to apply for or obtain NPDES permits except as otherwise required by the EPA Regional Administrator. The owner or operator of the treatment works itself, however, must apply for a permit and identify all users in its application. Users so identified will receive public notice of actions taken on the permit for the treatment works.)

D. DISCHARGES FROM AGRICULTURAL AND SILVICULTURAL ACTIVITIES. Most discharges from agricultural and silvicultural activities to waters of the United States do not require NPDES permits. These include runoff from orchards, cultivated crops, pastures, range lands, and forest lands. However, the discharges listed below do require NPDES permits. Definitions of the terms listed below are contained in the Glossary section of these instructions.

1. Discharges from Concentrated Animal Feeding Operations. (*See Glossary for definitions of "animal feeding operations" and "concentrated animal feeding operations." Only the latter require permits.*)

2. Discharges from Concentrated Aquatic Animal Production Facilities. (*See Glossary for size cutoffs.*)

3. Discharges associated with approved Aquaculture Projects.

4. Discharges from Silvicultural Point Sources. (*See Glossary for the definition of "silvicultural point source."*) Nonpoint source silvicultural activities are excluded from NPDES permit requirements. However, some of these activities, such as stream crossings for roads, may involve point source discharges of dredged or fill material which may require a Section 404 permit. See 33 CFR 209.120.

E. DISCHARGES IN COMPLIANCE WITH AN ON-SCENE COORDINATOR'S INSTRUCTIONS.

II. Hazardous Waste Permits Under the Resource Conservation and Recovery Act. You may be excluded from the requirement to obtain a permit under this program if you fall into one of the following categories:

Generators who accumulate their own hazardous waste on-site for less than 90 days as provided in 40 CFR 262.34;

Farmers who dispose of hazardous waste pesticide from their own use as provided in 40 CFR 262.51;

Certain persons treating, storing, or disposing of small quantities of hazardous waste as provided in 40 CFR 261.4 or 261.5; and

Owners and operators of totally enclosed treatment facilities as defined in 40 CFR 260.10.

Check with your Regional office for details. Please note that even if you are excluded from permit requirements, you may be required by Federal regulations to handle your waste in a particular manner.

III. Underground Injection Control Permits Under the Safe Drinking Water Act. You are not required to obtain a permit under this program if you:

Inject into existing wells used to enhance recovery of oil and gas or to store hydrocarbons (*note, however, that these underground injections are regulated by Federal rules*); or

Inject into or above a stratum which contains, within 1/4 mile of the well bore, an underground source of drinking water (*unless your injection is the type identified in Item II-H, for which you do need a permit*). However, you must notify EPA of your injection and submit certain required information on forms supplied by the Agency, and your operation may be phased out if you are a generator of hazardous wastes or a hazardous waste management facility which uses wells or septic tanks to dispose of hazardous waste.

IV. Prevention of Significant Deterioration Permits Under the Clean Air Act. The PSD program applies to newly constructed or modified facilities (*both of which are referred to as "new sources"*) which increase air emissions. The Clean Air Act Amendments of 1977 exclude small new sources of air emissions from the PSD review program. Any new source in an industrial category listed in Table 3 of these instructions whose potential to emit is less than 100 tons per year is not required to get a PSD permit. In addition, any new source in an industrial category not listed in Table 3 whose potential to emit is less than 250 tons per year is exempted from the PSD requirements.

Modified sources which increase their net emissions (*the difference between the total emission increases and total emission decreases at the source*) less than the significant amount set forth in EPA regulations are also exempt from PSD requirements. Contact your EPA Regional office (*Table 1*) for further information.

SECTION D – GLOSSARY

NOTE: This Glossary includes terms used in the instructions and in Forms 1, 2B, 2C, and 3. Additional terms will be included in the future when other forms are developed to reflect the requirements of other parts of the Consolidated Permits Program. If you have any questions concerning the meaning of any of these terms, please contact your EPA Regional office (*Table 1*)

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ALIQUOT means a sample of specified volume used to make up a total composite sample.

ANIMAL FEEDING OPERATION means a lot or facility (*other than an aquatic animal production facility*) where the following conditions are met;

A. Animals (*other than aquatic animals*) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12 month period; and

B. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Two or more animal feeding operations under common ownership are a single animal feeding operation if they adjoin each other or if they use a common area or system for the disposal of wastes.

ANIMAL UNIT means a unit of measurement for any animal feeding operation calculated by adding the following numbers: The number of slaughter and feeder cattle multiplied by 1.0; Plus the number of mature dairy cattle multiplied by 1.4; Plus the number of swine weighing over 25 kilograms (*approximately 55 pounds*) multiplied by 0.4; Plus the number of sheep multiplied by 0.1; Plus the number of horses multiplied by 2.0.

APPLICATION means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions. For RCRA, "application" also means "Application, Part B."

APPLICATION, PART A means that part of the Consolidated Permit Application forms which a RCRA permit applicant must complete to qualify for interim status under Section 3005(e) of RCRA and for consideration for a permit. Part A consists of Form 1 (*General Information*) and Form 3 (*Hazardous Waste Application Form*).

APPLICATION, PART B means that part of the application which a RCRA permit applicant must complete to be issued a permit. (*NOTE: EPA is not developing a specific form for Part B of the permit application, but an instruction booklet explaining what Information must be supplied is available from the EPA Regional office.*)

APPROVED PROGRAM or APPROVED STATE means a State program which has been approved or authorized by EPA under 40 CFR Part 123.

AQUACULTURE PROJECT means a defined managed water area which uses discharges of pollutants into that designated area for the maintenance or production of harvestable freshwater, estuarine, or marine plants or animals. "Designated area" means the portions of the waters of the United States within which the applicant plans to confine the cultivated species, using a method of plan or operation (*including, but not limited to, physical confinement*) which, on the basis of reliable scientific evidence, is expected to ensure the specific individual organisms comprising an aquaculture crop will enjoy increased growth attributable to the discharge of pollutants and be harvested within a defined geographic area.

AQUIFER means a geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

AREA OF REVIEW means the area surrounding an injection which is described according to the criteria set forth in 40 CFR Section 146.06.

AREA PERMIT means a UIC permit applicable to all or certain wells within a geographic area, rather than to a specified well, under 40 CFR Section 122.37.

ATTAINMENT AREA means, for any air pollutant, an area which has been designated under Section 107 of the Clean Air Act as having ambient air quality levels better than any national primary or secondary ambient air quality standard for that pollutant. Standards have been set for sulfur oxides, particulate matter, nitrogen dioxide, carbon monoxide, ozone, lead, and hydrocarbons. For purposes of the Glossary, "attainment area" also refers to "unclassifiable area," which means, for any pollutants, an area designated under Section 107 as unclassifiable with respect to that pollutant due to insufficient Information.

BEST MANAGEMENT PRACTICES (*BMP*) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMP's include treatment requirements, operation procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

BIOLOGICAL MONITORING TEST means any test which includes the use of aquatic algal, invertebrate, or vertebrate species to measure acute or chronic toxicity, and any biological or chemical measure of bioaccumulation.

BYPASS means the intentional diversion of wastes from any portion of a treatment facility.

CONCENTRATED ANIMAL FEEDING OPERATION means an animal feeding operation which meets the criteria set forth in either (A) or (B) below or which the Director designates as such on a case-by-case basis:

A. More than the numbers of animals specified in any of the following categories are confined:

1. 1,000 slaughter or feeder cattle,

2. 700 mature dairy cattle (*whether milked or dry cows*),

3. 2,500 swine each weighing over 25 kilograms (*approximately 55 pounds*),

4. 500 horses,

5. 10,000 sheep or lambs,

6. 55,000 turkeys,

7. 100,000 laying hens or broilers (*if the facility has a continuous overflow watering*),

8. 30,000 laying hens or broilers (*if the facility has a liquid manure handling system*),

9. 5,000 ducks, or

10. 1,000 animal units; or

B. More than the following numbers and types of animals are confined:

1. 300 slaughter or feeder cattle,

2. 200 mature dairy cattle (*whether milked or dry cows)*,

3. 750 swine each weighing over 25 kilograms (*approximately 55 pounds*),

4. 150 horses,

5. 3,000 sheep or lambs,

6.16,500 turkeys,

7. 30,000 laying hens or broilers (*if the facility has continuous overflow watering*),

8. 9,000 laying hens or broilers (*if the facility has a liquid manure handling system*),

9. 1,500 ducks, or

10. 300 animal units; AND

Either one of the following conditions are met: Pollutants are discharged into waters of the United States through a manmade ditch, flushing system or other similar manmade device (*"manmade" means constructed by man and used for the purpose of transporting wastes*); or Pollutants are discharged directly into waters of the Unites States which originate outside of and pass over, across, or through the facility or otherwise come into direct contact with the animals confined in the operation.

Provided, however, that no animal feeding operation is a concentrated animal feeding operation as defined above if such animal feeding operation discharges only in the event of a 25 year, 24 hour storm event.

CONCENTRATED AQUATIC ANIMAL PRODUCTION FACILITY means a hatchery, fish farm, or other facility which contains, grows or holds aquatic animals in either of the following categories, or which the Director designates as such on a case-by-case basis:

A. Cold water fish species or other cold water aquatic animals including, but not limited to, the Salmonidae family of fish (*e.g., trout and salmon*) in ponds, raceways or other similar structures which discharge at least 30 days per year but does not include:

1. Facilities which produce less than 9,090 harvest weight kilograms (*approximately 20,000 pounds*) of aquatic animals per year; and

2. Facilities which feed less than 2,272 kilograms (*approximately 5,000 pounds*) of food during the calendar month of maximum feeding.

B. Warm water fish species or other warm water aquatic animals including, but not limited to, the Ameiuridae, Cetrarchiclae, and Cyprinidae families of fish (*e.g., respectively, catfish, sunfish, and minnows*) in ponds, raceways, or other similar structures which discharge at least 30 days per year, but does not include;

1. Closed ponds which discharge only during periods of excess runoff; or

2. Facilities which produce less than 45,454 harvest weight kilograms (*approximately 100,000 pounds*) of aquatic animals per year.

CONTACT COOLING WATER means water used to reduce temperature which comes into contact with a raw material, intermediate product, waste product other than heat, or finished product.

CONTAINER means any portable device in which a material is stored, transported, treated, disposed of, or otherwise handled.

CONTIGUOUS ZONE means the entire zone established by the United States under article 24 of the convention of the Territorial Sea and the Contiguous Zone.

CWA means the Clean Water Act (*formerly referred to the Federal Water Pollution Control Act*) Pub. L. 92-500, as amended by Pub. L. 95-217 and Pub. L. 95-576, 33 U.S.C. 1251 *et seq*.

DIKE means any embankment or ridge of either natural or manmade materials used to prevent the movement of liquids, sludges, solids, or other materials.

DIRECT DISCHARGE means the discharge of a pollutant as defined below.

DIRECTOR means the EPA Regional Administrator or the State Director as the context requires.

DISCHARGE (*OF A POLLUTANT*) means:

A. Any addition of any pollutant or combination of pollutants to waters of the United States from any point source; or

B. Any addition of any pollutant or combination of pollutants to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes discharges into waters of the United States from: Surface runoff which is collected or channelled by man; Discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to POTW's; and Discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any indirect discharger.

DISPOSAL (*in the RCRA program*) means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any hazardous waste into or on any land or water so that the hazardous waste or any constituent of it may enter the environment or be emitted into the air or discharged into any waters, including ground water.

DISPOSAL FACILITY means a facility or part of a facility at which hazardous waste is intentionally placed into or on land or water, and at which hazardous waste will remain after closure.

EFFLUENT LIMITATION means any restriction imposed by the Director on quantities, discharge rates, and concentrations of pollutants which are discharged from point sources into waters of the United States, the waters of the continguous zone, or the ocean.

EFFLUENT LIMITATION GUIDELINE means a regulation published by the Administrator under Section 304(b) of the Clean Water Act to adopt or revise effluent limitations.

ENVIRONMENTAL PROTECTION AGENCY (*EPA*) means the United States Environmental Protection Agency.

EPA IDENTIFICATION NUMBER means the number assigned by EPA to each generator, transporter, and facility.

EXEMPTED AQUIFER means an aquifer or its portion that meets the criteria in the definition of USDW, but which has been exempted according to the procedures in 40 CFR Section 122.35(b).

EXISTING HWM FACILITY means a Hazardous Waste Management facility which was in operation, or for which construction had commenced, on or before October 21, 1976. Construction had commenced if (A) the owner or operator had obtained all necessary Federal, State, and local preconstruction approvals or permits, and either (B1) a continuous on-site, physical construction program had begun, or (B2) the owner or operator had entered into contractual obligations, which could not be cancelled or modified without substantial loss, for construction of the facility to be completed within a reasonable time.

(*NOTE: This definition reflects the literal language of the statute. However, EPA believes that amendments to RCRA now in conference will shortly be enacted and will change the date for determining when a facility is an "existing facility" to one no earlier than May of 1980; indications are the conferees are considering October 30, 1980. Accordingly, EPA encourages every owner or operator of a facility which was built or under construction as of the promulgation date of the RCRA program regulations to file Part A of its permit application so that it can be quickly processed for interim status when the change in the law takes effect. When those amendments are enacted, EPA will amend this definition.)*

EXISTING SOURCE or EXISTING DISCHARGER (*in the NPDES program*) means any source which is not a new source or a new discharger.

EXISTING INJECTION WELL means an injection well other than a new injection well.

FACILITY means any HWM facility, UIC underground injection well, NPDES point source, PSD stationary source, or any other facility or activity (*including land or appurtenances thereto*) that is subject to regulation under the RCRA, UIC, NPDES, or PSD programs.

FLUID means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

GENERATOR means any person by site, whose act or process produces hazardous waste identified or listed in 40 CFR Part 261.

GROUNDWATER means water below the land surface in a zone of saturation.

HAZARDOUS SUBSTANCE means any of the substances designated under 40 CFR Part 116 pursuant to Section 311 of CWA. (*NOTE: These substances are listed in Table 2c-4 of the instructions to Form 2C.*)

HAZARDOUS WASTE means a hazardous waste as defined in 40 CFR Section 261.3 published May 19, 1980.

HAZARDOUS WASTE MANAGEMENT FACILITY (*HWM facility)* means all contiguous land, structures, appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous wastes. A facility may consist of several treatment, storage, or disposal operational units (*for example, one or more landfills, surface impoundments, or combinations of them*).

IN OPERATION means a facility which is treating, storing, or disposing of hazardous waste.

INCINERATOR (*in the RCRA program*) means an enclosed device using controlled flame combustion, the primary purpose of which is to thermally break down hazardous waste. Examples of incinerators are rotary kiln, fluidized bed, and liquid injection incinerators.

INDIRECT DISCHARGER means a nondomestic discharger introducing pollutants to a publicly owned treatment works.

INJECTION WELL means a well into which fluids are being injected.

INTERIM AUTHORIZATION means approval by EPA of a State hazardous waste program which has met the requirements of Section 3006(c) of RCRA and applicable requirements of 40 CFR Part 123, Subparts A, B, and F.

LANDFILL means a disposal facility or part of a facility where hazardous waste is placed in or on land and which is not a land treatment facility, a surface impoundment, or an injection well.

LAND TREATMENT FACILITY (*in the RCRA program*) means a facility or part of a facility at which hazardous waste is applied onto or incorporated into the soil surface; such facilities are disposal facilities if the waste will remain after closure.

LISTED STATE means a State listed by the Administrator under Section 1422 of SDWA as needing a State UIC program.

MGD means millions of gallons per day.

MUNICIPALITY means a city, village, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

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, 318, 402, and 405 of CWA. The term includes an approved program.

NEW DISCHARGER means any building, structure, facility, or installation: (A) From which there is or may be a new or additional discharge of pollutants at a site at which on October 18, 1972, it had never discharged pollutants; (B) Which has never received a finally effective NPDES permit for discharges at that site; and (C) Which is not a "new source." This definition includes an indirect discharger which commences discharging into waters of the United States. It also includes any existing mobile point source, such as an offshore oil drilling rig, seafood processing vessel, or aggregate plant that begins discharging at a location for which it does not have an existing permit.

NEW HWM FACILITY means a Hazardous Waste Management facility which began operation or for which construction commenced after October 21, 1976.

NEW INJECTION WELL means a well which begins injection after a UIC program for the State in which the well is located is approved.

NEW SOURCE (*in the NPDES program)* means any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

A. After promulgation of standards of performance under Section 306 of CWA which are applicable to such source; or

B. After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NON-CONTACT COOLING WATER means water used to reduce temperature which does not come into direct contact with any raw material, intermediate product, waste product (*other than heat*), or finished product.

OFF-SITE means any site which is not "on-site".

ON-SITE means on the same or geographically contiguous property which may be divided by public or private right(s)-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along, the right(s)-of-way. Non-contiguous properties owned by the same person, but connected by a right-of-way which the person controls and to which the public does not have access, is also considered on-site property.

OPEN BURNING means the combustion of any material without the following characteristics;

A. Control of combustion air to maintain adequate temperature for efficient combustion;

B. Containment of the combustion-reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; and

C. Control of emission of the gaseous combustion products.

(See also "incinerator" and "thermal treatment").

OPERATOR means the person responsible for the overall operation of a facility.

OUTFALL means a point source.

OWNER means the person who owns a facility or part of a facility.

PERMIT means an authorization, license, or equivalent control document issued by EPA or an approved State to implement the requirements of 40 CFR Parts 122, 123, and 124.

PHYSICAL CONSTRUCTION (*in the RCRA program*) means excavation, movement of earth, erection of forms or structures, or similar activity to prepare a HWM facility to accept hazardous waste.

PILE means any noncontainerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage.

POINT SOURCE means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture.

POLLUTANT means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical waste, biological materials, radioactive materials (*except those regulated under the Atomic Energy Act of 1954, as amended [42 U.S.C. Section 2011 et seq.]*), heat, wrecked or discarded equipment, rocks, sand, cellar dirt and Industrial, municipal, and agriculture waste discharged into water. It does not mean:

A. Sewage from vessels; or

B. Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

(NOTE: Radioactive materials covered by the Atomic Energy Act are those encompassed in its definition of source, byproduct, or special nuclear materials. Examples of materials not covered include radium and accelerator produced isotopes. See Train v. Colorado Public Interest Research Group, Inc., 426 U.S. 1 [1976].)

PREVENTION OF SIGNIFICANT DETERIORATION (*PSD*) means the national permitting program under 40 CFR 52.21 to prevent emissions of certain pollutants regulated under the Clean Air Act from significantly deteriorating air quality in attainment areas.

PRIMARY INDUSTRY CATEGORY means any industry category listed in the NRDC Settlement Agreement (*Natural Resources Defense Council v. Train, 8 ERC 2120 [D.D.C. 1976], modified 12 ERC 1833 [D.D.C. 1979])*.

PRIVATELY OWNED TREATMENT WORKS means any device or system which is: (A) Used to treat wastes from any facility whose operator is not the operator of the treatment works; and (B) Not a POTW.

PROCESS WASTEWATER means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

PUBLICLY OWNED TREATMENT WORKS or POTW means any device or system used in the treatment (*including recycling and reclamation*) of municipal sewage or industrial wastes of a liquid nature which is owned by a State or municipality. This definition includes any sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

RENT means use of another's property in return for regular payment.

RCRA means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (*Pub. L. 94-580, as amended by Pub. L. 95-609, 42 U.S.C. Section 6901 at seq.*).

ROCK CRUSHING AND GRAVEL WASHING FACILITIES are facilities which process crushed and broken stone, gravel, and riprap (*see 40 CFR Part 436, Subpart B, and the effluent limitations guidelines for these facilities*).

SDWA means the Safe Drinking Water Act (*Pub. L 95-523, as amended by Pub. L. 95-1900, 42 U.S.C. Section 300[f] et seq.*).

SECONDARY INDUSTRY CATEGORY means any industry category which is not a primary industry category.

SEWAGE FROM VESSELS means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes that are discharged from vessels and regulated under Section 312 of CWA, except that with respect to commercial vessels on the Great Lakes this term includes graywater. For the purposes of this definition, "graywater" means galley, bath, and shower water,

SEWAGE SLUDGE means the solids, residues, and precipitate separated from or created in sewage by the unit processes of a POTW. "Sewage" as used in this definition means any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff, that are discharged to or otherwise enter a publicly owned treatment works.

SILVICULTURAL POINT SOURCE means any discernable, confined, and discrete conveyance related to rock crushing, gravel washing, log sorting, or log storage facilities which are operated in connection with silvicultural activities and from which pollutants are discharged into waters of the United States. This term does not include nonpoint source silvicultural activities such as nursery operations, site preparation, reforestation and subsequent cultural treatment, thinning, prescribed burning, pest and fire control, harvesting operations, surface drainage, or road construction and maintenance from which there is natural runoff. However, some of these activities (*such as stream crossing for roads*) may involve point source discharges of dredged or fill material which may require a CWA Section 404 permit. "Log sorting and log storage facilities" are facilities whose discharges result from the holding of unprocessed wood, e.g., logs or roundwood with bark or after removal of bark in self-contained bodies of water (*mill ponds or log ponds*) or stored on land where water is applied intentionally on the logs (*wet decking*). (*See 40 CFR Part 429, Subpart J, and the effluent limitations guidelines for these facilities.*)

STATE means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands (*except in the case of RCRA*), and the Commonwealth of the Northern Mariana Islands (*except in the case of CWA*).

STATIONARY SOURCE (*in the PSD program*) means any building, structure, facility, or installation which emits or may emit any air pollutant regulated under the Clean Air Act. "Building, structure, facility, or installation" means any grouping of pollutant-emitting activities which are located on one or more contiguous or adjacent properties and which are owned or operated by the same person (*or by persons under common control*).

STORAGE (*in the RCRA program*) means the holding of hazardous waste for a temporary period at the end of which the hazardous waste is treated, disposed, or stored elsewhere.

STORM WATER RUNOFF means water discharged as a result of rain, snow, or other precipitation.

SURFACE IMPOUNDMENT or IMPOUNDMENT means a facility or part of a facility which is a natural topographic depression, manmade excavation, or diked area formed primarily of earthen materials (*although it may be lined with manmade materials*), which is designed to hold an accumulation of liquid wastes or wastes containing free liquids, and which is not an injection well. Examples of surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons.

TANK (*in the RCRA program*) means a stationary device, designed to contain an accumulation of hazardous waste which is constructed primarily of non-earthen materials (*e.g., wood, concrete, steel, plastic*) which provide structural support.

THERMAL TREATMENT (*in the RCRA program*) means the treatment of hazardous waste in a device which uses elevated temperature as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incineration, molten salt, pyrolysis, calcination, wet air oxidation, and microwave discharge. (*See also "incinerator" and "open burning"*).

TOTALLY ENCLOSED TREATMENT FACILITY (*in the RCRA program*) means a facility for the treatment of hazardous waste which is directly connected to an industrial production process and which is constructed and operated in a manner which prevents the release of any hazardous waste or any constituent thereof into the environment during treatment. An example is a pipe in which waste acid is neutralized.

TOXIC POLLUTANT means any pollutant listed as toxic under Section 307(a)(1) of CWA.

TRANSPORTER (*in the RCRA program*) means a person engaged in the off-site transportation of hazardous waste by air, rail, highway, or water.

TREATMENT (*in the RCRA program*) means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store, or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

UNDERGROUND INJECTION means well injection.

UNDERGROUND SOURCE OF DRINKING WATER or USDW means an aquifer or its portion which is not an exempted aquifer and:

A. Which supplies drinking water for human consumption; or

B. In which the ground water contains fewer than 10,000 mg/l total dissolved solids.

UPSET means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

WATERS OF THE UNITED STATES means:

A. All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

B. All interstate waters, including interstate wetlands;

C. All other waters such as intrastate lakes, rivers, streams (*including intermittent streams*), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, and natural ponds, the use, degradation, or destruction of which would or could affect interstate or foreign commerce including any such waters;

1. Which are or could be used by interstate or foreign travelers for recreational or other purposes,

2. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce,

3. Which are used or could be used for industrial purposes by industries in interstate commerce;

D. All impoundments of waters otherwise defined as waters of the United States under this definition;

E. Tributaries of waters identified in paragraphs (A) – (D) above;

F. The territorial sea; and

G. Wetlands adjacent to waters (*other than waters that are themselves wetlands*) identified in paragraphs (A) – (F) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet requirement of CWA (*other than cooling ponds as defined In 40 CFR Section 423.11(m) which also meet the criteria of this definition*) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (*such as a disposal area in wetlands*) nor resulted from the impoundments of waters of the United States.

WELL INJECTION or UNDERGROUND INJECTION means the subsurface emplacement of fluids through a bored, drilled, or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

WETLANDS means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

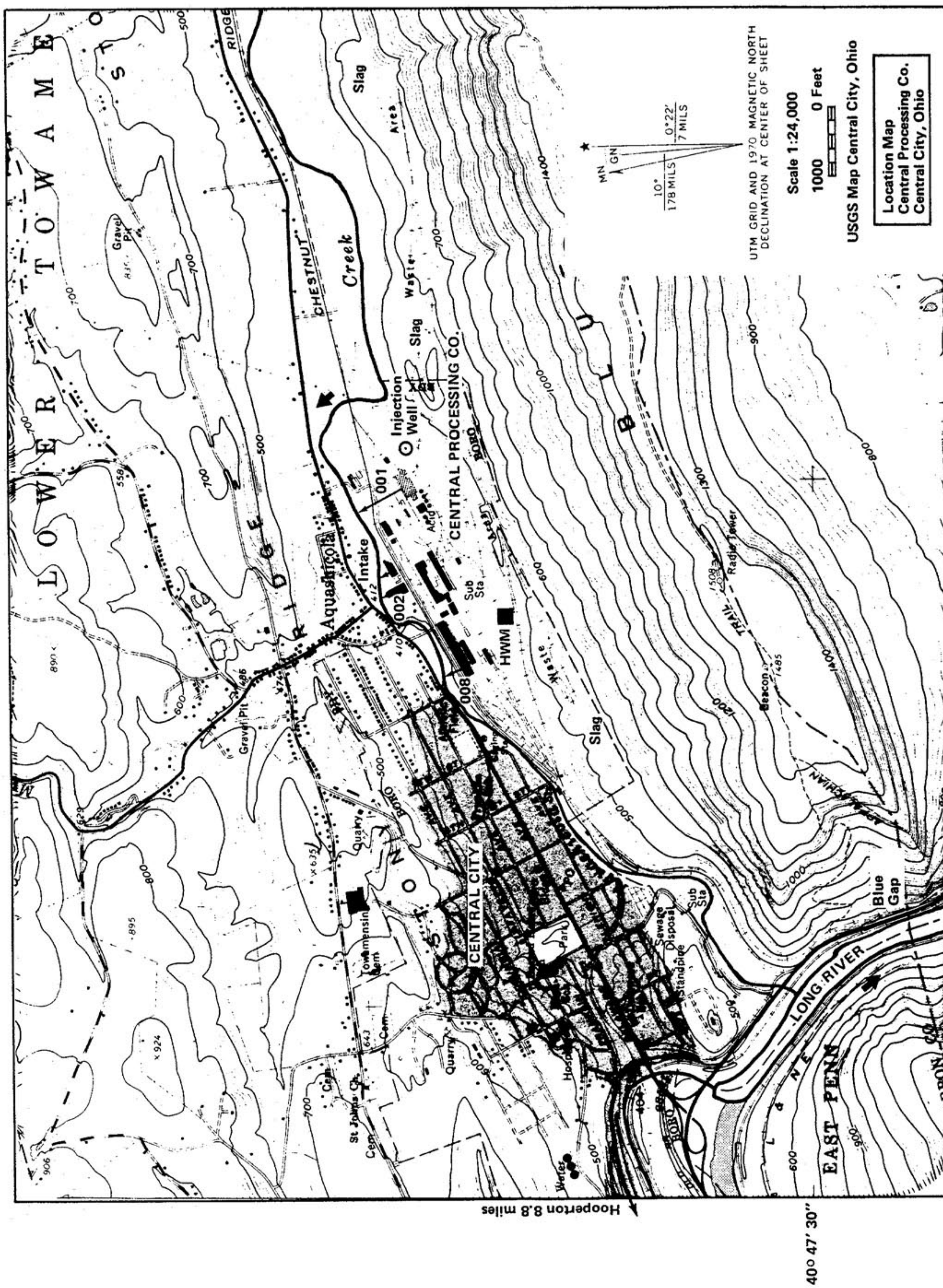

Location Map
Central Processing Co.
Central City, Ohio
USGS Map Central City, Ohio
Scale 1:24,000
1000 0 Feet
UTM GRID AND 1970 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET
CENTRAL PROCESSING CO.
CENTRAL CITY
Injection Well
Intake
001
002
008
HWM
Sub Sta
Slag
Waste Area
Creek
LONG RIVER
Blue Gap
Sewage Disposal
Hamilton 9.4 miles
Hooperton 8.8 miles
40° 47' 30"
75° 37' 30"

FIGURE 1-1

Please print or type in the unshaded areas only. Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F			D
1	2 — 13	14	15

LABEL ITEMS	
I. EPA I.D. NUMBER	PLEASE PLACE LABEL IN THIS SPACE
III. FACILITY NAME	
V. FACILITY MAILING ADDRESS	
VI. FACILITY LOCATION	

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms**.

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)	16	17	18	B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)	19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	22	23	24	D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)	25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)	28	29	30	F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)	31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)	34	35	36	H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)	37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)	40	41	42	J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)	43	44	45

III. NAME OF FACILITY

C 1 SKIP — 15 | 16 – 29 | 30 — 69

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2 — 15 | 16 — 45	46 — 48 | 49 — 51 | 52- — 55

V. FACILTY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3 — 15 | 16 — 45

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 — 15 | 16 — 40	41 — 42	47 — 51

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5 — 15 | 16 — 45

B. COUNTY NAME

46 — 70

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6 — 15 | 16 — 40	41 — 42	47 — 51	52 — -54

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
C 7 (15) (16 - 19) *(specify)*	C 7 (15) (16 - 19) *(specify)*
C. THIRD	**D. FOURTH**
C 7 (15) (16 - 19) *(specify)*	C 7 (15) (16 - 19) *(specify)*

VIII. OPERATOR INFORMATION

A. NAME — C 8 (15) (16 – 55)

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☐ NO (66)

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*

F = FEDERAL
S = STATE
P = PRIVATE
M = PUBLIC *(other than federal or state)*
O = OTHER *(specify)*

(56) *(specify)*

D. PHONE *(area code & no.)* — C A (15) (16 - 18) (19 - 21) (22 - 26)

E. STREET OR P.O. BOX — (26) (55)

F. CITY OR TOWN — C B (15) (16) (40)

G. STATE (41) (42)

H. ZIP CODE (47 - 51)

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☐ NO (52)

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
C T I 9 N (15) (16) (17) (18 – 30)	C T I 9 P (15) (16) (17) (18 – 30)
B. UIC *(Underground Injection of Fluids)*	**E. OTHER** *(specify)*
C T I 9 U (15) (16) (17) (18 – 30)	C T I 9 (15) (16) (17) (18 – 30) *(specify)*
C. RCRA *(Hazardous Wastes)*	**E. OTHER** *(specify)*
C T I 9 R (15) (16) (17) (18 – 30)	C T I 9 (15) (16) (17) (18 – 30) *(specify)*

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED

COMMENTS FOR OFFICIAL USE ONLY

C C (15) (16 – 55)

APPENDIX C

Policy 710 Permit Exemptions for Remedial Actions under MTCA

DEPARTMENT OF ECOLOGY
State of Washington

Toxics Cleanup Program Policy

Policy 710

Resource Contact: Policy and Technical Support Unit
References: RCW 70.105D.090
WAC 173-340-710
Replaces: Policy 130B

Effective: *July 20, 2009*

Policy 710 Permit Exemptions for Remedial Actions under MTCA

Purpose: This policy implements RCW 70.105D.090 and WAC 173-340-710 which exempts remedial actions from the procedural requirements of specific state environmental permits and local government permits that are conducted:

- Under an enforcement order
- Under an agreed order or consent decree (order or decree)
- By Ecology under the Model Toxics Control Act

The intent of the exemption is to expedite cleanup of contaminated sites.

Applicability: The exemption applies to persons conducting a remedial action at a facility under an order or decree, and the Department of Ecology (Ecology) when it conducts a remedial action. Such actions are exempt from the procedural requirements of the following chapters of the revised code of Washington:

- 70.94 [Air]
- 70.95 [Solid Waste]
- 70.105 [State Only-Designated Dangerous Waste]
- 77.55 [Hydraulic Permit]
- 90.58 [Shorelands]

These remedial actions are also exempt from the procedural requirements of any laws requiring or authorizing local government permits or approvals for the remedial action. This exemption does not apply to National Pollutant Discharge Elimination System (NPDES) permits issued under 90.48 or Resource Conservation and Recovery Act (RCRA) Corrective Action permits for federally designated hazardous waste treatment, storage or disposal (TSD) facilities. This exemption also does not apply to independent remedial actions, including actions reviewed by Ecology under the Voluntary Cleanup Program (VCP).

1. Ecology Shall Ensure Compliance with Substantive Permit Requirements

Ecology shall ensure compliance with the substantive provisions of chapters 70.94, 70.95, 70.105, 77.55, 90.48, and 90.58 RCW, and the substantive provisions of laws requiring or authorizing local government permits or approvals. The substantive requirements, to the extent known at issuance of

the order or decree, will be incorporated into the order or decree and, as Ecology views appropriate, other appropriate remedial action documents.

2. Ecology Will Determine What Substantive Permit Requirements Apply

Ecology will make a final determination on what substantive requirements will apply to the site. This includes situations where permit requirements conflict with remedial action requirements and schedule. Ecology will consult with the affected agencies before deciding.

3. Persons Conducting Remedial Actions have a Continuing Obligation to Identify Substantive Requirements

Any substantive requirements shall be identified, to the extent known, during preparation of the order or decree or other document. However, the persons conducting the remedial action have a continuing obligation to identify whether other permits or substantive requirements are required. Ecology's site manager should periodically review whether there are any further requirements that apply to the remedial action, and should ensure compliance with any newly identified requirements.

If either the person conducting the remedial action or Ecology becomes aware of additional permits or substantive requirements that apply to the remedial action, they shall promptly notify the other party of this knowledge. Ecology, or at Ecology's request, the person conducting the remedial action, shall consult with the state or local agency about these additional requirements. Ecology will make the final determination on the applicability of any additional substantive requirements at the site.

4. State Agencies and Local Governments Shall be Consulted on any Exempted Permit

The Ecology Site Manager shall consult with state agencies, local governments and Ecology programs that would normally issue the permits early in the remedial action process and at key points during the process. The purpose of this consultation is to help Ecology decide which permits are applicable to the remedial action and identify substantive permit requirements. Consultation with the permitting agency will occur throughout the remedial action process to ensure the remedial action is meeting the substantive permit requirements.

Site Managers will obtain documentation from the consulted agencies on the substantive requirements. Ecology may either request this documentation or ask the potentially liable person or Ecology contractor consulting with the permitting agencies to obtain the documentation.

5. Ecology Shall Provide an Opportunity for Public Comment

Ecology shall provide an opportunity for public comment by the public, tribes, and state and local governments that would otherwise implement the laws referenced in this policy.

Ecology will also provide an opportunity for comment on the exempted permit requirements during the standard public comment opportunities provided under the MTCA. To the extent Ecology knows the requirements, the public notice will specifically identify the permits exempted under RCW 70.105D.090 and seek comment on the substantive permit requirements. This notice will be sent to

those individuals or organizations who would normally have received such notice and to the agencies that normally issue the permit or approval. It shall also be sent to the state and local governments that would otherwise implement the exempted permits.

6. When a Permit is Exempt, Ecology Shall Not Assume Responsibility for Recovery of Costs for Other State Agencies or Local Governments

When a permit is exempt, Ecology will not normally cost-recover other governmental agencies' costs of identification of applicable requirements, technical assistance or inspections. However, the law allows other state and local agencies to charge potentially liable persons a fee to defray the costs of services rendered.

When an Ecology-administered permit is exempt, rather than charging a permit fee, Ecology's costs will be recovered using cost recovery procedures established under WAC 173-340-550. To enable this, staff in other programs will need to be provided the site SIC and complete a site log for time spent working on the site.

7. When a Permit is not Exempt, Either the Potentially Liable Person or the Ecology Contractor Shall Apply and Pay for the Permit

When a permit is required and the statutory exemption does not apply, the following persons shall apply and pay for the permit:

a. When a potentially liable person is conducting a remedial action, that person shall be responsible for applying for any necessary permits and paying any permit fees.

b. When Ecology is conducting the remedial action, the consultant or contractor hired by Ecology to do the work shall normally be responsible for applying for the permit and paying any permit fees. In these cases, the permit shall be issued to the Ecology consultant or contractor. Costs incurred in applying for a permit (including permit fees), shall be included in the consultant's or contractor's charges and included in remedial action costs subject to cost-recovery under MTCA.

8. For Remedial Actions Conducted Under an Order or Decree or by Ecology and Requiring an NPDES Permit, the Following Procedures Shall Apply

a. To expedite cleanup, TCP staff will normally process and issue the NPDES permit.

b. Before issuing the permit for public comment, TCP will request a peer review of the permit be conducted by the Water Quality Program.

c. Water Quality Program staff will be responsible for entry of monitoring data into the Water Quality Life Cycle System Database (WPLCS).

d. Rather than charging a permit fee, Ecology will recover its costs using the cost recovery procedures established under WAC 173-340-550. To enable recovery of all costs, Water Quality Program staff will need to be provided a site SIC and complete a site log for time spent working on the site.

9. Ecology Shall Ensure that Permit Exemptions for Remedial Actions under MTCA will Not Jeopardize Federal Delegation

This policy shall be periodically reviewed to ensure that exemptions from procedural requirements authorized under RCW 70.105D.090 do not jeopardize federal program delegation.

Approved: 

James J. Pendowski, Manager
Toxics Cleanup Program

Policy Disclaimer: This policy is solely to guide Ecology staff, and is not intended to impose any mandatory duties or obligations on Ecology. It does not create rights, substantive, or procedural, enforceable by any party in litigation. Ecology may act at variance with this policy or change or withdraw this policy at any time.

Attachments:

- Ecology Director's determination withdrawing exemption to TSD corrective action permits issued under Chapter 70.105 RCW.
- Ecology Director's determination withdrawing exemption to NPDES permits issued under Chapter 90.48 RCW.

DEPARTMENT OF ECOLOGY

Date: June 21, 2004

To: Darin Rice, HWTR Program Manager
Jim Pendowski, TCP Program Manager

From: Linda Hoffman, Director

Subject: MTCA Exemption to RCRA Permitting

Ecology has determined that we can no longer use the MTCA exemption to RCRA permitting for TSDF corrective action sites subject to RCRA permitting. Under the Model Toxics Control Act (MTCA), RCW 70.105D.090(1), a person conducting a remedial action at a facility under a consent decree, order, or agreed order is exempted from the procedural requirements of a number of state and local laws, including the Hazardous Waste Management Act (HWMA), chapter 70.105 RCW. Under RCW 70.105D.090(2), this exemption "shall not apply if the [Department of Ecology] determines that the exemption would result in loss of approval from a federal agency necessary for the state to administer any federal law, including the federal resource conservation and recovery act..."

Washington has a state hazardous waste program created pursuant to the HWMA. This program has been authorized by the United States Environmental Protection Agency pursuant to Subchapter III of the federal Solid Waste Disposal Act (commonly referred to as the Resource Conservation and Recovery Act, or RCRA). Once authorized, a state hazardous waste program is carried out in lieu of the federal program under RCRA in that state. 42 USC § 6926(b). To become authorized, a state program must, among other things, be equivalent to the federal hazardous waste program under RCRA and consistent with the federal and state programs in other states. *Id.*; *see generally*, 40 CFR Part 271.

A central feature of hazardous waste regulation under RCRA—and in turn, under an authorized state program—is the issuance of permits to regulate facilities that treat, store, or dispose of hazardous waste (known as "TSD facilities"). Such permits establish the operating, closure, and postclosure obligations of TSD facilities. To become authorized, a state program must have the legal authority to implement provisions at least as stringent as designated federal hazardous waste permit provisions. 40 CFR § 271.14.

Under RCRA, TSD facility permits must require "corrective action" for all releases of hazardous waste or hazardous waste constituents from solid waste management units at the facility. 42 USC § 6924(u), (v). This requirement is reflected in Washington's Dangerous Waste Regulations, which implement the HWMA. *See* WAC 173-303-645(1)(a), (2)(a)(ii); WAC 173-303-646(1)(b), (2)(c). Washington's hazardous waste program is authorized to implement corrective action through state-issued TSD facility permits. The terms of Washington's authorization allows the program to rely on the cleanup authority of MTCA in order to implement corrective action requirements and compel corrective action. 59 FR 55332 (November 4, 1994). In order to satisfy corrective action obligations under this approach, an

implementing MTCA legal instrument must be incorporated into the TSD facility permit. Washington's authorization provides:

> EPA emphasizes that corrective action requirements are not being deferred to a state superfund-like authority; rather, the state authority will be used to compel RCRA corrective action requirements. In order to fulfill the RCRA Section 3004(u) and (v) requirement that all RCRA permits must include corrective action permit conditions, state corrective action orders will be incorporated into RCRA permits issue pursuant to the authorized State program permitting regulations. [...] Under the Washington program, a State order *would be considered to be part of the authorized RCRA program only when the order is incorporated into an existing RCRA permit, or when the order is issued simultaneously with and incorporated by reference into a new RCRA permit.*

Id. (emphasis added).

To the extent that MTCA's permit exemption waives the procedural requirements of the HWMA, a conflict exists. If recognized, the MTCA permit exemption would, at least with respect to performing corrective action, relieve a TSD facility from the requirement to be permitted under the HWMA. This exemption would be in direct conflict with the terms of Washington's authorization. This conflict has been recognized by EPA Region 10, which has requested that Ecology remove references to chapter 70.105 RCW in the permit exemption portions of MTCA Orders that are incorporated by reference into TSD facility permits. (*See* attached correspondence from Jan Palumbo, EPA Region 10, to Kay Seiler, Ecology, dated May 18, 2004).

Based on this conflict and Ecology's communication with EPA Region 10, I am determining pursuant to RCW 70.105D.090(2) that application of the permit exemption of RCW 70.105D.090(1) to TSD facilities required by RCRA and the HWMA to obtain permits and perform corrective action would result in the loss of federal authorization to implement corrective action through state-issued TSD facility permits. This determination relates solely to TSD facilities subject to permitting requirements for performing corrective action under RCRA and the HWMA. It is not intended to apply to any other circumstance.

cc: Rick Albright, Region X EPA
Jack Boller, Region X EPA
Jan Palumbo, Region X EPA
TCP PMT
HWTR PMT

DEPARTMENT OF ECOLOGY

DATE: July 14, 2008

TO: Jim Pendowski, Manager
Toxics Cleanup Program

FROM: Jay J. Manning, Director

SUBJECT: **Determination of Application of MTCA Permit Exemption, RCW 70.105D.090, to National Pollutant Discharge Elimination System Permits**

The Department of Ecology (Ecology or we) has determined that we can no longer use the Model Toxics Control Act (MTCA) exemption to National Pollutant Discharge Elimination System (NPDES) permitting for discharges to navigable waters at or from sites being cleaned up pursuant to MTCA. Under RCW 70.105D.090(2), MTCA exempts parties conducting cleanups under order or decree from having to obtain certain permits. However, the permit exemption "shall not apply if [Ecology] determines that the exemption would result in loss of approval from a federal agency necessary for the state to administer any federal law, including . . . the federal clean water act[.]"

The federal Environmental Protection Agency (EPA) has delegated to Washington the authority to implement the federal clean water act (CWA) in this state. The delegation includes the NPDES permit program. To obtain and maintain this delegation, Washington's NPDES program must carry out the objectives of the CWA, including the primary objective of prohibiting the unpermitted discharge of pollutants into navigable waters. 33 U.S.C. § 1342(a)(5).

Only Congress can create exemptions to the CWA's mandate that discharges to navigable waters can only occur pursuant to a permit. *Northern Plains Resource Council v. Fidelity Exploration and Development Co.*, 325 F.3d 1155, 1164 (9th Cir. 2003), *cert. denied, 540 U.S. 967 (2003)*. Yet, nothing in the CWA indicates Congress exempted discharges associated with a MTCA cleanup from NPDES permitting requirements. Instead, the CWA provides that states may not adopt or enforce provisions less stringent than the CWA (such as a provision not requiring a permit). 33 U.S.C. § 1370. A recent Ninth Circuit case makes this clear, finding a state simply "has no authority to create a permit exemption from the CWA for discharges that would otherwise be subject to the NPDES permitting process." *Northern Plains*, 325 F.3d at 1164 (citing 33 U.S.C. § 1370). Accordingly, Washington has no authority to exempt discharges associated with a MTCA cleanup from NPDES permitting.[1]

[1] The federal cleanup law, the Comprehensive, Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq. specifically exempts those conducting cleanups under order or decree from obtaining permits, such as NPDES permits. However, this exemption cannot be applied to MTCA cleanups, for one primary reason: Congress did not say it could. Under cases interpreting the CWA, only Congress can create exemptions to its requirements. *See Northern Plains*, at 1164. If Congress does not specifically create an exemption to the CWA, there is no exemption to the CWA. *Id.*

A state NPDES program can lose EPA approval if the program fails to meet the requirements of the CWA. *See e.g.* 40 C.F.R. § 123.63 (regulations governing withdrawal of state program approval). One specific way a state program can lose its EPA approval is if the state "fails to comply with the requirements of this part, including . . . failure to issue permits [.]" 40 C.F.R. § 123.63(a)(2)(i). Accordingly, if Washington failed to issue permits for a discharge into navigable waters during a MTCA cleanup, which discharge would otherwise require an NPDES permit, it would provide a basis for EPA to withdraw approval for Washington's implementation of the NPDES program.

Based on this analysis, I am determining, pursuant to RCW 70.105D.090(2), that application of the permit exemption of RCW 70.105D.090(1) to discharges to navigable waters at or from MTCA cleanup sites that would otherwise require NPDES permits would result in the state's loss of federal authorization to implement the NPDES program in Washington. This determination applies solely to discharges into navigable waters from MTCA cleanup sites, and is not intended to apply to any other circumstance.

cc: Toxics Cleanup Program Management Team
Mary Sue Wilson, Senior Assistant Attorney General
Ron Lavigne, Senior Counsel
Kristie Carevich, Assistant Attorney General

APPENDIX D

Site Inspection Requirements

Site Inspection Requirements

Site inspections shall include all areas disturbed by construction activities, all BMPs, and all stormwater discharge points. Stormwater shall be examined for the presence of suspended sediment, turbidity, discoloration, and oil sheen. Inspectors shall evaluate the effectiveness of BMPs and determine if it is necessary to install, maintain, or repair BMPs to improve the quality of stormwater discharges.

1. Based on the results of the inspection, the Permittee shall correct the problems identified, as follows:

    a. Review the SWPPP for compliance with Special Condition S6 and make appropriate revisions within 7 days of the inspection.

    b. Fully implement and maintain appropriate *source control* and/or *treatment BMPs* as soon as possible, but no later than 10 days after the inspection.

    c. Document BMP implementation and maintenance in the site logbook.

2. The site inspections shall be conducted at least once every *calendar week* and within 24 hours of any discharge from the site. Site inspections are required daily during all storm events that cause a discharge from the site. The inspection frequency for temporarily stabilized, inactive sites may be reduced to once every calendar month.

3. Inspections are not required outside of normal working hours or during unsafe conditions. If a Permittee is unable to complete an inspection during a monitoring period, the site logbook shall include a brief explanation.

4. Site inspections shall be conducted by a *Certified Erosion and Sediment Control Lead* (CESCL). The CESCL shall be identified in the SWPPP and shall be present on-site or on-call at all times. Certification shall be obtained through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology.

5. The inspector shall summarize the results of each inspection in an inspection report or checklist and be entered into, or attached to, the site logbook. At a minimum, each inspection report or checklist shall include:

    a. Inspection date and time.

    b. Weather information – general conditions during inspection and approximate amount of precipitation since the last inspection and within the last 24 hours.

c. A summary or list of all BMPs that have been implemented, including observations of all erosion/sediment control structures or practices.

d. The following shall be noted:

   i. Locations of BMPs inspected.

   ii. Locations of BMPs that need maintenance.

   iii. The reason maintenance is needed.

   iv. Locations of BMPs that failed to operate as designed or intended.

   v. Locations where additional or different BMPs are needed, and the reason(s) why.

e. A description of stormwater discharged from the site. The inspector shall note the presence of suspended sediment, turbid water, discoloration, and/or oil sheen, as applicable.

f. Any water quality monitoring performed during inspection.

g. General comments and notes, including a brief description of any BMP repairs, maintenance, or installations made as a result of the inspection.

h. A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP and the permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation.

i. Name, title, and signature of the person conducting site inspection; and the following statement: *"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief.*

APPENDIX E

BNSF Skykomish Remediation Site Special Conditions

SPECIAL CONDITIONS

S1. DISCHARGE LIMITATIONS

A. Authorized Discharges

This permit authorizes the discharge of treated stormwater and dewatering water associated with cleanup activities, to the South Fork of the Skykomish River from the BNSF Railway Company soil remediation project.

B. Discharge Prohibitions

Discharges of industrial stormwater and dewatering water including stormwater runoff from sand and gravel stockpiles, leachate from stockpiles of contaminated soils, and any water resulting from soil remediation activities, to the former and existing Maloney Creek, are prohibited.

Discharge of process wastewater, and domestic wastewater to surface water and ground water is prohibited. Prohibited process wastewater discharges include, but are not limited to: truck wash water, tire bath waste water, wheel wash water, and equipment wash water, and chemical wastes.

Visible track-out on public roads is prohibited.

This permit does not authorize illicit discharges, including spills of oils or hazardous substances, nor does it relieve entities from obligations under state and federal laws and regulations pertaining to those discharges.

C. Industrial Stormwater and Construction Dewatering Discharges Associated With All Cleanup Zones (Figure 3 of the fact sheet)

All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit.

Beginning on the effective date of this permit and lasting through the expiration date, the Permittee is authorized to discharge excavation dewatering water and industrial stormwater resulting from contaminated soil and sediment remediation to the South Fork of the Skykomish River, subject to complying with the following limitations.

In addition, beginning on the issuance date of the second permit modification of this permit and lasting through the expiration date, the Permittee is authorized to discharge treated water to groundwater through injection wells IW1 and IW2 (see Figure B-2), subject to complying with the following limitations:

EFFLUENT LIMITATIONS

EFFLUENT LIMITATIONS for Outfalls 002a* and 002b* during the period of JULY 1, 2010 through SEPTEMBER 30, 2010

Parameter	Maximum Daily[a]
Flow (outfall 002a*), river level <922.5 feet, and catch basin #7 not overflowing the rim.	900 gpm (with 2 treatment trains at 450 gpm each)
Flow (outfall 002b*), river level <922.5 feet, and catch basin #7 not overflowing the rim.	1,350** gpm (with 3 treatment trains at 450 gpm each)

* **002a** and **002b** are the same location as outfall 002, but these outfall designations are applicable between the period of July 1, 2010 through September 30, 2010.

** The Permittee must notify Ecology of the number of treatment trains to be installed prior to discharge during this period. Testing must be completed to ensure that it is leak free prior to operating the system.

EFFLUENT LIMITATIONS For Outfalls 002[e], 002a*, and 003[e]

Parameter	Maximum Daily[a]
Flow (002) summer[g] other than the period of July 1, 2010 through September 30, 2010, river level <922.5 feet	673 gpm
Flow (002) winter[g], river level <922.5 feet	269 gpm
Flow (003) summer[g] and winter[g], river level <928.56 feet	100 gpm
Temperature (September 15 to July 1)	13°C or 55.4°F
Temperature (July 2 to September 14)	12°C or 53.6°F
Chitosan Acetate[c]	0.1 mg/L
pH (s.u.)	Between 6.5 and 8.5 standard units
Dissolved Oxygen	Minimum 8 mg/L
Turbidity	5 NTU above background[d]
Oily Sheen	No visible sheen
Benzene	1.2 µg/L
BTEX	100 µg/L
Total Petroleum Hydrocarbon (TPH)	208 µg/L
Lead[h]	17.5 µg/L (TR)/ 15 µg/L (T)
Arsenic[i]	360 µg/L (TR)/ 7.42 µg/L (T)
Anthracene	2,400 µg/L
Fluorene	640 µg/L
Naphthalene	160 µg/L
Pyrene	480 µg/L
Benzo(a)anthracene[b]	0.0028 µg/L (0.01 µg/L)
Benzo(b)fluoranthene[b]	0.0028 µg/L (0.01 µg/L)
Benzo(k)fluoranthene[b]	0.0028 µg/L (0.01 µg/L)
Benzo(a)pyrene[b]	0.0002 µg/L (0.01 µg/L)
Chrysene[b]	0.0028 µg/L (0.01 µg/L)
Dibenzo(a,h)anthracene[b]	0.0028 µg/L (0.01 µg/L)
Indeno(1,2,3-cd)pyrene[b]	0.0028 µg/L (0.01 µg/L)
Acenaphthene	643 µg/L
Fluoranthene	90.2 µg/L

Outfall 002: The Permittee must cease discharge to the Skykomish River when the river level exceeds 922.5 feet.

Outfall 003: The Permittee must cease discharge to the Skykomish River when the river level exceeds 928.56 feet.

[a] The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day.
[b] The method detection level (MDL) for these PAH compounds is above the effluent limits using the approved analytical test method EPA 8270C-HVI. The reporting level (RL) for these compounds has been reported as 0.01µg/L. Therefore, these RLs will be used for assessment of compliance with these effluent limits. These RLs will be referred to as enforcement limits in this permit.
[c] The turbidity of the influent to the second tank (T-2A) shall not be greater than 600 NTU. The Permittee shall adhere to the Chitosan dosage rates and requirements set forth in Special Condition S5 of the permit.
[d] Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
[e] Outfall 002 is located on West River Road, and is connected to the city storm sewer along 6th Street. Outfall 003 is connected to the city storm sewer located along 3rd Street.
[f] Since the treatment system for the hydraulic control and containment system is designed for 100 gpm, the summer flow limit is set at 100 gpm. The maximum capacity available in the 3rd Street storm sewer during a 2-year, 24-hour storm event is 377 gpm. Should the Permittee upgrade the treatment system to handle a higher flow, the Permittee may discharge up to that flow rate upon written approval from the Department.
[g] The summer period is from June 1 through September 30. The winter period is from October 1 through May 30.
[h] The effluent limit for lead for surface water discharge is 17.5 µg/L based on total recoverable (TR) metals. The effluent limit for groundwater discharge by means of injection wells is 15 µg/L based on total (T) metals.
[i] The effluent limit for arsenic for surface water discharge is 360 µg/L based on total recoverable (TR) metals. The effluent limit for groundwater discharge by means of injection wells is 7.42 µg/L based on total (T) metals.

D. Contaminated Water Within the Temporary River Exclusion Wall (Cofferdam)

The Permittee shall maintain a negative hydraulic gradient between the interior of the cofferdam and the river. If an oily sheen is observed beyond the inner cofferdam, corrective measures must be implemented immediately to remedy the problem before excavation is to be continued. There shall be no oily sheen beyond the boom containment area.

E. Untreated Overflow

There shall be no untreated overflow or runoff from any excavation pits or any containment tanks on-site to surface waters of the state. When the water in an excavation pit or a containment tank reaches 90 percent storage capacity, the Permittee is required to implement a contingency plan to prevent overflow from occurring.

F. Untreated Stormwater Discharge

There **shall be no** untreated stormwater discharge from the excavation area or the contaminated soil stockpiling area to surface waters of the state. *Each low spot area outside the soil stockpiling containment area shall be identified, and equipped with necessary equipment to pump the contaminated water to the water treatment system.*

G. Outfall Location

The Permittee shall not discharge to a dry river bed area. The discharge outfall consisting of the discharge pipe and the energy dissipation structure shall be positioned in the river such that the river flow rate is greater than the discharge flow rate.

H. Industrial Stormwater Discharges Associated With Rail Yard Operations

Industrial stormwater discharges associated with railyard operations (not related to cleanup activities) are regulated under the General Stormwater NPDES Permit No. S03003658 except for those cases in which contaminated water from railyard operations passes through the cleanup site.

I. Compliance With Standards

The Permittee shall comply with State of Washington Surface Water Quality Standards (Chapter 173-201A WAC), Sediment Management Standards (Chapter 173-204 WAC), Ground Water Quality Standards (Chapter 173-200 WAC), and human health-based criteria in the National Toxics Rule (Federal Register, Vol. 57, No. 246, December 22, 1992, pages 60848-60923).

When not in compliance with these standards, the Permittee shall take immediate action(s) to achieve compliance by implementing additional best management practices (BMPs), and/or improved compliance with existing BMPs, and file a noncompliance notification, as required under Condition S3.E.

Facilities that discharge either directly or indirectly by means of a stormwater conveyance system to waters listed as impaired by the State under Section 303(d) of the Clean Water Act must comply with the State's Surface Water Quality Standards.

S2. MONITORING REQUIREMENTS

The Permittee shall monitor in accordance with the following schedule:

A. Monitoring Schedule for All Cleanup Zones (shown on Figure 3)

Samples shall be collected after Granular Activated Carbon treatment from each treatment train (pertaining to outfalls 002 and 003) and prior to discharge to surface water and to groundwater.

Parameter	Units	Minimum Sampling Frequency	Sample Type	Test Method
Flow (002) summer	gpm	Daily	Metered	N/A
Flow (002) winter	gpm	Daily	Metered	N/A
Flow (003) summer	gpm	Daily	Metered	N/A
Flow (003) winter	gpm	Daily	Metered	N/A
Injection Rate[c], Wells IW1 and IW2	gpm	Continuous	Metered	N/A
Chitosan Acetate	mg/L	Daily	Grab	Chitosan Field Screening Test
Temperature[e]	°F	Daily	Grab	Thermometer or equivalent
Oily Sheen	N/A	Daily	Observed	Visual
pH (s.u.)	Standard Units	Weekly	Grab	EPA 150.1
Dissolved Oxygen	mg/L	Weekly (for a period of five weeks)	Grab	Field Metering

Parameter	Units	Minimum Sampling Frequency	Sample Type	Test Method
Turbidity	NTU	Weekly	Grab	EPA 180.1 or equivalent
Benzene	µg/L	Monthly	Grab	SW8260B
BTEX	µg/L	Monthly	Grab	SW8260B
Total Petroleum Hydrocarbon (TPH)[a]	µg/L	Weekly (Two samples: One before and one after GAC treatment)	Grab	NWTPH-D_x (no silica gel filtration)
Lead (TR, and T)[d]	µg/L	Weekly	Grab	EPA 200.8
Arsenic (TR, and T)[d]	µg/L	Weekly	Grab	EPA 200.8
Anthracene[b]	µg/L	Monthly	Grab	SW8270-SIM
Fluorene[b]	µg/L	Monthly	Grab	SW8270-SIM
Naphthalene[b]	µg/L	Monthly	Grab	SW8270-SIM
Pyrene[b]	µg/L	Monthly	Grab	SW8270-SIM
Benzo(a)anthracene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Benzo(b)fluoranthene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Benzo(k)fluoranthene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Benzo(a)pyrene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Chrysene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Dibenzo(a,h)anthracene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Indeno(1,2,3-cd)pyrene[b]	µg/L	Monthly	Grab	EPA 8270C-HVI
Acenaphthene[b]	µg/L	Monthly	Grab	SW8270-SIM
Fluoranthene[b]	µg/L	Monthly	Grab	SW8270-SIM

[a] For each sampling event, the Permittee shall collect one sample before and after the first Granular Activated Carbon (GAC) column for TPH analysis. Results from samples collected before the GAC treatment will be used to evaluate the performance and removal efficiency of the GAC columns (See S4, O&M of the permit for details). The Permittee shall change out the GAC column as often as necessary to ensure compliance with the effluent limits.

[b] The sampling frequency for the PAH compounds will be reduced from weekly to monthly, if the monitoring data collected during the first phase of remediation (i.e. levee remediation) clearly support TPH as a surrogate for PAH.

[c] The Permittee shall monitor the injection rate for wells IW1 and IW2. Should the Permittee choose to inject at a flow rate exceeding 5 gpm, the Permittee must seek written approval from the Department prior to discharging at that rate.

[d] For surface water discharge, the Permittee shall perform total recoverable metals analyses for arsenic and lead. For groundwater discharge, the Permittee shall perform total metals analyses for arsenic and lead.

[e] The Permittee is required to monitor effluent temperature only when the Permittee is discharging wastewater resulting from the thermal groundwater remediation pilot testing.

B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit shall be representative of the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

The detection limits achieved for those analytical test methods specified in S2.A shall be lower than the effluent limits (or enforcement limits for PAH compounds) listed in S1.C of the permit.

C. Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows. The devices shall be installed, calibrated, and maintained to

ensure the accuracy of the measurements is consistent with the accepted industry standard for that type of device. Frequency of calibration shall be in conformance with manufacturer's recommendations and at a minimum frequency of at least one calibration per year. Calibration records shall be maintained for at least three years.

D. Laboratory Accreditation

All monitoring data required by the Department shall be prepared by a laboratory registered or accredited under the provisions of *Accreditation of Environmental Laboratories*, Chapter 173-50 WAC. Flow, pH, turbidity, and internal process control parameters are exempt from this requirement.

S3. REPORTING AND RECORD KEEPING REQUIREMENTS

The Permittee shall monitor and report in accordance with the following conditions. The falsification of information submitted to the Department shall constitute a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on the effective date of the permit. Monitoring results shall be submitted monthly. Monitoring data obtained during each monitoring period shall be summarized, reported, and submitted on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by the Department. DMR forms shall be postmarked or received no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit. The report(s) shall be sent to the Department of Ecology Water Quality Program, 3190 - 160th Avenue SE, Bellevue, WA 98008-5452.

All laboratory reports providing data for organic and metal parameters shall include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/number, method detection limit (MDL), laboratory practical quantitation limit (PQL), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

Discharge Monitoring Report forms must be submitted monthly whether or not the facility was discharging. If there was no discharge during a given monitoring period, the Permittee is required to submit the form as required with the words "no discharge" entered in place of the monitoring results.

If there was no discharge during a given monitoring period, the Permittee is required to submit the form applicable to that period as required with the words "no discharge" entered in the place of the monitoring results.

B. Records Retention

The Permittee shall retain records of all monitoring information for a minimum of three years. Such information shall include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by the Director.

C. Recording of Results

For each measurement or sample taken, the Permittee shall record the following information: (1) the date, exact place, method, and time of sampling or measurement; (2) the individual who performed the sampling or measurement; (3) the dates the analyses were performed; (4) the individual who performed the analyses; (5) the analytical techniques or methods used; and (6) the results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this permit using test procedures specified by Condition S2 of this permit, then the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Noncompliance Notification

In the event the Permittee is unable to comply with any of the terms and conditions of this permit due to any cause, the Permittee shall:

1. Immediately take action to stop, contain, and clean up unauthorized discharges or otherwise stop the noncompliance, correct the problem and, if applicable, repeat sampling and analysis of any non-complying discharges immediately and submit the results to the Department within five (5) days after becoming aware of the violation.
2. Immediately notify the Department of the failure to comply.
3. Submit a detailed, written report to the Department within five (5) days. The report shall contain a description of the noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or any resulting liability for failure to comply.

F. Other Noncompliance Reporting

The Permittee must report all instances of noncompliance, not required to be reported within 24 hours, at the time that monitoring reports for S3.A ("Reporting") are submitted. The reports must contain the information listed in paragraph E, above, ("Twenty-four Hour Notice of Noncompliance Reporting"). Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

G. Maintaining a Copy of This Permit

A copy of this permit must be kept at the facility and be made available upon request to Department of Ecology inspectors.

S4. OPERATIONS AND MAINTENANCE

The Permittee shall, at all times, properly operate and maintain all systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

A. Operations and Maintenance Manual

An Operations and Maintenance (O&M) Manual shall be prepared by the Permittee in accordance with WAC 173-240-150 and be submitted to the Department for approval within thirty (30) days after permit issuance date. The Permittee shall periodically review and update the O&M Manual as necessary, in order to maintain compliance with the conditions in this permit. At a minimum, the O&M Manual shall be reviewed annually, and the Permittee shall confirm this review by letter to the Department. Updates to the O&M Manual shall be submitted to the Department for approval prior to implementation.

The approved Operations and Maintenance Manual shall be kept available at the permitted facility, and all operators shall follow the instructions and procedures of this manual.

In addition to the requirements of WAC 173-240-150(1) and (2), the O&M Manual shall include:

1. Emergency procedures for plant shutdown and cleanup in event of wastewater system upset or failure.
2. Wastewater system maintenance procedures that contribute to the generation of process wastewater.
3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).
4. The treatment plant process control monitoring schedule.
5. The change-out frequency of the Granular Activated Carbon columns shall be based on internal process control results.
6. The automatic shutoff of the discharge pump(s) when back wash or the sand filtration units are not working.
7. The contingency plan for unanticipated failure of the sand filtration units (for example, backwash, etc.).
8. The contingency treatment plan to treat the wastewater to meet the turbidity limit if Chitosan treatment failed.

The following information shall be summarized in the initial chapter of the O&M Manual. This chapter shall be entitled the "Treatment System Operating Plan." For the purposes of this NPDES permit, a Treatment System Operating Plan (TSOP) is a concise summary of specifically defined elements of the O&M Manual. The TSOP shall not conflict with the O&M Manual and shall include the following information:

1. A baseline operating condition, which describes the operating parameters and procedures, used to meet the effluent limitations of S1 at the production levels used in developing these limitations.

2. In the event of production rates, which are below the baseline levels used to establish these limitations, the plan shall describe the operating procedures and conditions needed to maintain design treatment efficiency. The monitoring and reporting shall be described in the plan.

3. In the event of an upset, due to plant maintenance activities, severe stormwater events, start ups or shut downs, or other causes, the plan shall describe the operating procedures and conditions employed to mitigate the upset. The monitoring and reporting shall be described in the plan.

4. A description of any regularly scheduled maintenance or repair activities at the facility which would affect the volume or character of the wastes discharged to the wastewater treatment system and a plan for monitoring and treating/controlling the discharge of maintenance-related materials (such as cleaners, degreasers, solvents, etc.).

5. A description of operating procedures to be employed for treatment of turbidity if Chitosan treatment failed.

B. Bypass Procedures

Bypass, which is the intentional diversion of waste streams from any portion of a treatment facility, is prohibited, and the Department may take enforcement action against a Permittee for bypass unless one of the following circumstances (1, 2, or 3) is applicable.

1. Bypass for Essential Maintenance Without the Potential to Cause Violation of Permit Limits or Conditions.

   Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limitations or other conditions of this permit, or adversely impact public health as determined by the Department prior to the bypass. The Permittee shall submit prior notice, if possible, at least ten days before the date of the bypass.

2. Bypass Which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit.

   This bypass is permitted only if:

   a. Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

   b. There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment downtime (but not if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment

downtime or preventative maintenance), or transport of untreated wastes to another treatment facility.

c. The Department is properly notified of the bypass as required in Condition S3.E of this permit.

3. Bypass which is Anticipated and has the Potential to Result in Noncompliance of this Permit.

The Permittee shall notify the Department at least thirty (30) days before the planned date of bypass. The notice shall contain: (1) a description of the bypass and its cause; (2) an analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing; (3) a cost-effectiveness analysis of alternatives including comparative resource damage assessment; (4) the minimum and maximum duration of bypass under each alternative; (5) a recommendation as to the preferred alternative for conducting the bypass; (6) the projected date of bypass initiation; (7) a statement of compliance with SEPA; (8) a request for modification of water quality standards as provided for in WAC 173-201A-110, if an exceedance of any water quality standard is anticipated; and (9) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

For probable construction bypasses, the need to bypass is to be identified as early in the planning process as possible. The analysis required above shall be considered during preparation of the engineering report or facilities plan and plans and specifications and shall be included to the extent practical. In cases where the probable need to bypass is determined early, continued analysis is necessary up to and including the construction period in an effort to minimize or eliminate the bypass.

The Department will consider the following prior to issuing an administrative order for this type of bypass:

a. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.

b. If there are feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.

c. If the bypass is planned and scheduled to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, the Department will approve or deny the request. The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Approval of a request to bypass will be by administrative order issued by the Department under RCW 90.48.120.

C. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

S5. CHITOSAN DOSAGE RATE AND OPERATION

The Department has approved two chemical flocculant products: Liqui-Floc chitosan enhanced sand filtration produced by Natural Site Solutions, and Floc-Clear chitosan enhanced sand filtration produced by Clear Creek Systems, Inc. The Permittee is required to follow the Maintenance of Safety Margin (dosage rate) and Safety Margin Checklist as listed in Appendix I and II of the permit, for whichever approved product the Permittee chooses to use.

Both products contain different weight percentages of chitosan acetate. The dosage rate and the safety margin checklists for each product as referenced-above are not the same. Chitosan acetate can be employed to effectively treat stormwater turbidity up to 600 NTU without using chitosan acetate concentrations above 1.06 mg/L. Application at concentrations in excess of this level may result in toxicity in the effluent.

S6. SOLID WASTE DISPOSAL

A. Solid Waste Handling

The Permittee shall handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

B. Leachate

The Permittee shall not allow leachate from its solid waste material to enter state waters without providing all known available and reasonable methods of treatment, nor allow such leachate to cause violations of the state surface water quality standards, Chapter 173-201A WAC, or the state ground water quality standards, Chapter 173-200 WAC. The Permittee shall apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

C. Solid Waste Control Plan

The Permittee shall submit a solid waste control plan to the Department no later than July 15, 2006. This plan shall include all solid wastes with the exception of those solid wastes regulated by Chapter 173-303 WAC (Dangerous Waste Regulations). The plan shall include, at a minimum, a description, source, generation rate, and disposal methods of these solid wastes. This plan shall not be at variance with any approved local solid waste management plan. Any proposed revision or modification of the solid waste handling plan must be submitted to the Department within fourteen (14) days of adoption. The Permittee shall comply with the plan and any modifications thereof. The Permittee shall submit an update of the solid waste control plan with the application for permit renewal one hundred eighty (180) days prior to the expiration date of the permit.

S7. SPILL PLAN

At least thirty (30) days prior to the start of construction or discharge, the Permittee shall submit to the Department a spill control plan for the prevention, containment, and control of spills or unplanned discharges of: 1) oil and petroleum products, 2) materials, which when spilled, or otherwise released into the environment, are designated dangerous waste (DW) or extremely hazardous waste (EHW) by the procedures set forth in WAC 173-303-070, or 3) other materials which may become pollutants or cause pollution upon reaching state's waters. The Permittee shall review and update the spill plan, as needed, at least annually. Changes to the plan shall be sent to the Department within fourteen (14) days of adoption. The plan and any supplements shall be followed throughout the term of the permit.

The updated spill control plan shall include the following:

- A description of the reporting system, which will be used to alert responsible managers and legal authorities (including Snohomish County Public Works) in the event of a spill.

  Candice Soine, Environmental Review Coordinator
  Snohomish County Public Works
  2930 Wetmore, 4th Floor
  Everett, WA 98201
  (425) 388-3488 Ext. 4259
  Candice.soine@co.snohomish.wa.us

- A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials.

- A list of all oil and chemicals used, processed, or stored at the facility which may be spilled into state waters.

For the purpose of meeting this requirement, plans and manuals, or portions thereof, required by 33 CFR 154, 40 CFR 109, 40 CFR 110, 40 CFR Part 112, the Federal Oil Pollution Act of 1990, Chapter 173-181, and contingency plans required by Chapter 173-303 WAC may be submitted.

S8. BEST MANAGEMENT PRACTICES

1. The oil/water separators shall be inspected on a weekly basis at minimum and maintained as needed to ensure satisfactory performance. Oil sludges shall be disposed of in a manner that will not cause water quality degradation to state waters. A record of inspection, maintenance, and disposal shall be kept on file and available for review by the Department's inspector(s).

2. In the event of an accidental discharge of oil, chemicals, toxic, or hazardous materials into waters of the state or onto land with a potential for entry into state waters, including ground water, representatives of the Northwest Regional Office Spill Response Team shall be notified immediately (within 24 hours) at (425) 649-7000. A written spill report shall

be submitted to the Department of Ecology, Water Quality Program, within five (5) days of the time the Permittee becomes aware of the circumstances, unless the Department waives or extends this requirement on a case-by-case basis.

3. Sludges, scales, and sediments from tanks shall be disposed of in an approved manner other than to waters of the state, and other than to the sanitary sewer system.

4. All barrels, drums, or similar containers containing toxic or deleterious materials, including, but not limited to petroleum products, organic solvents, strong acids and bases, shall be stored in an upright position, in a bermed, covered area sufficient to prevent discharge into state ground or surface waters in the event of leakage or rupture.

5. Empty barrels shall be stored with all openings plugged, in an upright position, and at least 20 feet from storm drains.

6. The Permittee shall inspect the outfall line including the energy dissipation structure to document its integrity and continued function, daily during the operational period. If conditions allow for a photographic verification, it shall be included in the report. The report shall be made available to the Department's inspector(s) on-site.

S9. STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR INDIVIDUAL CLEANUP ZONE CONSTRUCTION ACTIVITIES (Each Zone is Listed Under Background Information in the Fact Sheet)

A SWPPP for construction activity, including construction dewatering, shall be prepared, implemented, and updated to reflect current stage of construction activity. The Permittee shall submit the SWPPP to the Department at least thirty (30) days prior to the start of construction. The SWPPP for each new phase of construction shall be kept current, updated as necessary, and submitted to the Department. At a minimum, the SWPPP shall be submitted to the Department annually. The SWPPP will cover the current and next year's anticipated activities. The phased construction activities include clearing, grading, filling, earth work, excavation, and hauling activities.

A. General Requirements

1. The SWPPP and all of its modifications shall be signed in accordance with General Condition G.1.B. In addition, the SWPPP shall be stamped by a Professional Engineer certified by the State of Washington.

2. The SWPPP shall be retained on-site or within reasonable access to the site and be made available upon request.

3. The Permittee shall be responsible for the implementation of the SWPPP. The Erosion and Sediment Control Plan shall be attached to bid packages when seeking contractors to allow the contractor sufficient time and resources to plan implementation. At construction sites for which a lease, easement, or other use agreement has been obtained by the Permittee, the Permittee shall be responsible for the implementation of the SWPPP.

4. The Permittee shall implement procedures for reviewing the SWPPP with contractors and subcontractors prior to initiating construction activities. The Permittee shall implement procedures for addressing changes in plans and construction activities and resolving disagreements on the interpretation of the SWPPP.

5. The Permittee shall designate a contact person who will be available 24 hours a day to respond to emergencies, and to inquiries or directives from the Department. The contact person shall have authority over the SWPPP implementation. A qualified construction pollution control officer, as approved by Ecology, shall be established to advise on and determine compliance with the SWPPP and the applicable water quality standards. The name of the pollution control officer shall be listed in the SWPPP. While the Permittee is ultimately responsible for the implementation of the SWPPP, both the Permittee and the contractor/subcontractor may be held liable for violations of the permit conditions and/or the water quality standards.

6. The Permittee shall retain the SWPPP and copies of inspection reports and all other reports required by this permit for at least three (3) years after the date of final stabilization of the construction site. The Permittee shall make these documents available upon request.

7. Reports on incidents, such as discharge of spills and other noncompliance notification, shall be included in the records.

8. A rain gauge shall be installed and maintained at the project with rainfall data logged daily.

9. Modifications:

   a. The Department may notify the Permittee when the SWPPP does not meet one or more of the requirements of this special condition. Upon notification by the Department, the Permittee shall take appropriate action(s) to come into compliance with this special condition. These SWPPP modifications shall be submitted to the Department for review, within thirty (30) days.

   b. The Permittee shall implement SWPPP and BMP modifications as directed by the Department if compliance with State of Washington Surface Water Quality Standards (Chapter 173-201A WAC), Sediment Management Standards (Chapter 173-204 WAC), Ground Water Quality Standards (Chapter 173-200 WAC), and human health-based criteria in the National Toxics Rule (Federal Register, Vol. 57, No. 246, Dec. 22, 1992, pages 60848-60923) is not being achieved.

   c. The Permittee shall modify the SWPPP whenever there is a change in design, construction, operation, or maintenance of any BMP which cause(s) the SWPPP to be less effective in controlling pollutants.

d. Whenever a self-inspection reveals that the description of pollutant sources or the BMPs identified in the SWPPP are inadequate due to the actual discharge of, or potential to discharge, a significant amount of any pollutant, the SWPPP shall be modified as appropriate. The Permittee shall provide for implementation of any modifications to the SWPPP within fourteen (14) days.

10. BMPs shall be selected from Ecology's August 2001 *Stormwater Management Manual for Western Washington* (*SWMM*) or equivalent.

11. The Permittee may request in writing that the Department approve the use of an experimental BMP. The request shall be submitted to the Department at least thirty (30) days prior to the proposed use of the experimental BMP. The request shall include, but need not be limited to, a description of:

    a. The experimental BMP.

    b. Why the experimental BMP is being requested.

    c. Why the BMPs in the *SWMM* are not adequate.

    d. Applicable construction techniques.

    e. The characteristics of the site or sites at which use of the experimental BMP is proposed.

    f. Design criteria for the experimental BMP and the expected results.

    g. Maintenance procedures.

    h. Cost estimates.

    i. Monitoring procedures and duration.

    j. If appropriate, an approved BMP that could be used if the experimental BMP fails.

12. Chemical Treatment

    a. Chemical treatment of stormwater, other than by means of treatment with chitosan solution as authorized in this permit, must be approved in writing by Ecology.

    b. Chemicals may only be used to stabilize soils if the storm water from the chemical application area is routed to and treated by a stormwater detention pond. In addition, chemical treatment/soil stabilization shall be consistent with Ecology's Stormwater Management Manuals.

    c. Spill prevention, control, and contingencies in the SWPPP should include specifics for all chemicals used.

B. SWPPP Contents and Requirements

The SWPPP shall consist of and include provisions for the following:

1. An Erosion and Sediment Control Plan:

The Erosion and Sediment Control Plan shall describe stabilization and structural practices, both of which shall be implemented to minimize erosion and the transport of sediments.

a. Stabilization Practices

The Erosion and Sediment Control Plan shall include a description of stabilization BMPs, including site-specific scheduling of the implementation of the practices. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, commercially available soil stabilization products, and other appropriate measures. A record of the dates when major grading activities occur, when construction activities temporarily or permanently cease on a portion of the site, and when stabilization measures are initiated shall be included in the plan. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.

The plan shall ensure that the following requirements are satisfied:

i) All exposed and unworked soils shall be stabilized by suitable and timely application of BMPs.

From October 1 to April 30:	No soils shall remain unstabilized for more than two (2) days.
From May 1 to September 30:	No soils shall remain unstabilized for more than seven (7) days.

ii) Existing vegetation should be preserved whenever possible. Areas which are not to be disturbed, including setbacks, sensitive/critical areas and their buffers, trees and drainage courses, shall be fenced or flagged on-site before construction activities are initiated. These areas should not be harmed when measures under the SWPPP and/or construction activities are undertaken.

iii) Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. Slopes shall be stabilized in accordance with the requirements of this subsection.

iv) Stabilization adequate to prevent erosion of outlets and adjacent stream banks shall be provided at the outlets of all conveyance systems.

v) All storm drain inlets made operable during construction shall be provided with adequate inlet protection and be properly maintained.

vi) Any and all use of polyacrylamides (PAM) for soil erosion protection shall be consistent with BMP C126 in Chapter 4, Volume II, of Ecology's *SWMM.*

vii) Wherever construction vehicle access routes intersect paved roads, provisions must be made to minimize the transport of sediment (mud) onto the paved road. If sediment is transported onto a road surface, the roads adjacent to the construction site shall be cleaned on a regular basis. Street washing shall be allowed only after other methods to prevent the transport or removal of the sediments are unsuccessful. Street wash water may not be discharged to surface waters.

b. Structural Practices

In addition to stabilization practices, the Erosion and Sediment Control Plan shall include a description of structural BMPs to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and sediment basins. Structural practices should be placed on upland soils to the degree attainable. The installation of these devices may be subject to Section 404 of the Federal Clean Water Act.

The plan shall ensure that the following requirements are satisfied:

i) Prior to leaving the site, stormwater runoff shall pass through a sediment pond or sediment trap, or other appropriate BMPs.

ii) Properties adjacent to the project site shall be protected from sediment deposition.

iii) Sediment ponds and traps, perimeter dikes, sediment barriers, and other BMPs intended to trap sediment on-site shall be constructed as a first step in grading. These BMPs shall be functional before other land disturbing activities take place. Earthen structures used for sediment control such as dams, dikes, and diversions shall be stabilized as soon as possible.

iv) Properties and waterways downstream from the construction site shall be protected from erosion due to increases in volume, velocity, and peak flow of stormwater runoff from the project site. The stormwater discharge rate for the area affected by construction shall not exceed 50 percent of the predevelopment peak flow rate for the two-year, 24-hour storm.

v) All temporary erosion and sediment control BMPs shall be removed within thirty (30) days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on-site. Disturbed soil areas resulting from removal shall be permanently stabilized.

c. Inspection and Maintenance

All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. All on-site erosion and sediment control measures shall be inspected daily when construction is occurring and within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period.

d. Record Keeping

Reports summarizing the scope of inspections, the personnel conducting the inspection, the date(s) of the inspection, major observations relating to the implementation of the SWPPP, and actions taken as a result of these inspections shall be prepared and retained as part of the SWPPP.

e. Format

The Erosion and Sediment Control Plan shall consist of two parts: a narrative and a set of site plans. The Permittee may refer to Chapter 3, Volume II, of Ecology's *SWMM* for guidance on the content and format.

2. Control of Pollutants Other Than Sediment on Construction Sites

All pollutants that occur on-site during construction shall be handled and disposed of in a manner that does not cause contamination of storm water or ground water. A Spill Prevention and Emergency Cleanup Plan shall be included as a section in the SWPPP. BMPs for Spills of Oil and Hazardous Substances in Chapter 2 of Volume IV of Ecology's *SWMM* shall be used for guidance in developing this plan.

Solid chemicals, chemical solutions, paints, petroleum products, solvents, acids, caustic solutions and waste materials, including used batteries, shall be stored in a manner which will prevent the inadvertent entry of these materials into waters of the state, including ground water. Storage shall be in a manner that will prevent spills due to overfilling, tipping, or rupture. In addition, the following practices shall be used:

a. All liquid products and wastes shall be stored on durable impervious surfaces and within bermed containment capable of containing 110 percent of the largest single container in the storage area. Reasonable steps shall be taken to prevent releases of liquid products from malicious tampering or vandalism.

b. All waste shall be stored under cover, such as tarpaulins or roofed structures. All waste storage areas, whether for waste oil or hazardous waste, shall be clearly designated as such and kept segregated from new product storage.

4. Coordination with Local Requirements

This permit does not relieve the Permittee of compliance with any more stringent requirements of local government.

S10. APPLICATION FOR PERMIT RENEWAL

The Permittee shall submit an application for renewal of this permit by November 4, 2010, to the Department of Ecology for permit renewal.

APPENDIX I

LIQUID-FLOC CHITOSAN ENHANCED SAND FILTRATION
(Natural Site Solutions)

Maintenance of Safety Margin

Chitosan acetate can effectively treat stormwater turbidity up to 600 NTU without using a concentration above 1.06 mg/L. 1.06 mg/L chitosan is below its toxic threshold of 1.21 mg/L in clear water. In addition, chitosan will be removed from solution by binding to solids and by being withheld in the sand filter. The safety margin will certainly be maintained if the treatment concentration is kept to 1.06 mg/L or below. Any mechanical failure of the positive displacement metering pump will immediately cause a reduction in Liqui-Floc dosing, so pump failure is only a problem for treatment effectiveness and not safety margin maintenance.

The following dose rate table shall be used to ensure both treatment plant effectiveness and a chitosan concentration below 1.06 mg/L prior to sand filtration.

Dose Rate Table for Liqui-Floc (1% Chitosan Acetate) Based on Flow and Turbidity

Turbidity	Stormwater Flow Rate	Liqui-Floc Dose Rate	Chitosan Concentration
50 - 200 NTU	200 gpm	20 ml/min or 0.32 gph	0.26 mg/L
	300 gpm	30 ml/min or 0.48 gph	
	400 gpm	40 ml/min or 0.64 gph	
	500 gpm	50 ml/min or 0.8 gph	
	600 gpm	60 ml/min or 0.96 gph	
	700 gpm	70 ml/min or 1.11 gph	
200 - 400 NTU	200 gpm	40 ml/min or 0.64 gph	0.53 mg/L
	300 gpm	60 ml/min or 0.96 gph	
	400 gpm	80 ml/min or 1.27 gph	
	500 gpm	100 ml/min or 1.6 gph	
	600 gpm	120 ml/min or 1.91 gph	
	700 gpm	140 ml/min or 2.23 gph	
400 - 600 NTU	200 gpm	80 ml/min or 1.27 gph	1.06 mg/L
	300 gpm	120 ml/min or 1.91 gph	
	400 gpm	160 ml/min or 2.54 gph	
	500 gpm	200 ml/min or 3.17 gph	
	600 gpm	240 ml/min or 3.81 gph	
	700 gpm	280 ml/min or 4.45 gph	

Checking formula:
chitosan concentration in mg/L = (ml/min Liqui-Floc x 0.01 x 1 g/ml x 1000 mg/g)/system flow rate in liters/min
liters/min = gpm x 3.78 liters/gal

Safety Margin Checklist

- Only Storm Klear Liqui-Floc™ containing 1 percent chitosan acetate shall be used.
- The metering pump shall be calibrated using a calibration cylinder at startup and every time that the Liqui-Floc dose rate needs changed. The calibration shall be recorded in the log. The stroke frequency shall be set as high as possible, and the stroke length adjusted to provide the correct dosing.

- The system flow rate and the turbidity of both influent and effluent shall be measured hourly and recorded in the log.
- No chitosan-treated water shall be discharged to surface water without first being sand-filtered.
- Secondary containment for the Liqui-Floc storage container and the metering pump shall be at least equal to the volume of the storage container.
- Spill adsorbent material shall be readily available to immobilize any spill of Liqui-Floc during handling.
- If the treatment system is located less than 50 feet from surface water, a 1-foot high earthen berm shall be constructed and maintained down-gradient as additional spill containment.
- Only discharges to streams are allowed at this time.
- The occasional use of the Residual Chitosan Field Screening Test to confirm a discharge concentration below 0.1 is encouraged in order to further build confidence in CESF system safety.

APPENDIX II

FLOC-CLEAR CHITOSAN ENHANCED SAND FILTRATION
(Clear Creek Systems, Inc.)

Maintenance of Safety Margin

Chitosan acetate can effectively treat storm water up to 600 NTU without using a concentration above 1.06 mg/L. 1.06 mg/L chitosan from FlocClear™ is below its toxic threshold of 2.5 mg/L in clear water. The chitosan concentration will decrease after dosing due to binding to solids and the sand filter. If the metering pump fails, the anti-siphon valve will prevent FlocClear™ from being siphoned into the system. If the metering pump is incorrectly calibrated and the storm water is overdosed, treated water will not coagulate well enough to be clarified and the turbidimeter will trigger the return of effluent to the detention structure instead of discharge.

The following dose rate table shall be used to ensure both treatment plant effectiveness and a chitosan concentration below 1.06 mg/L prior to sand filtration.

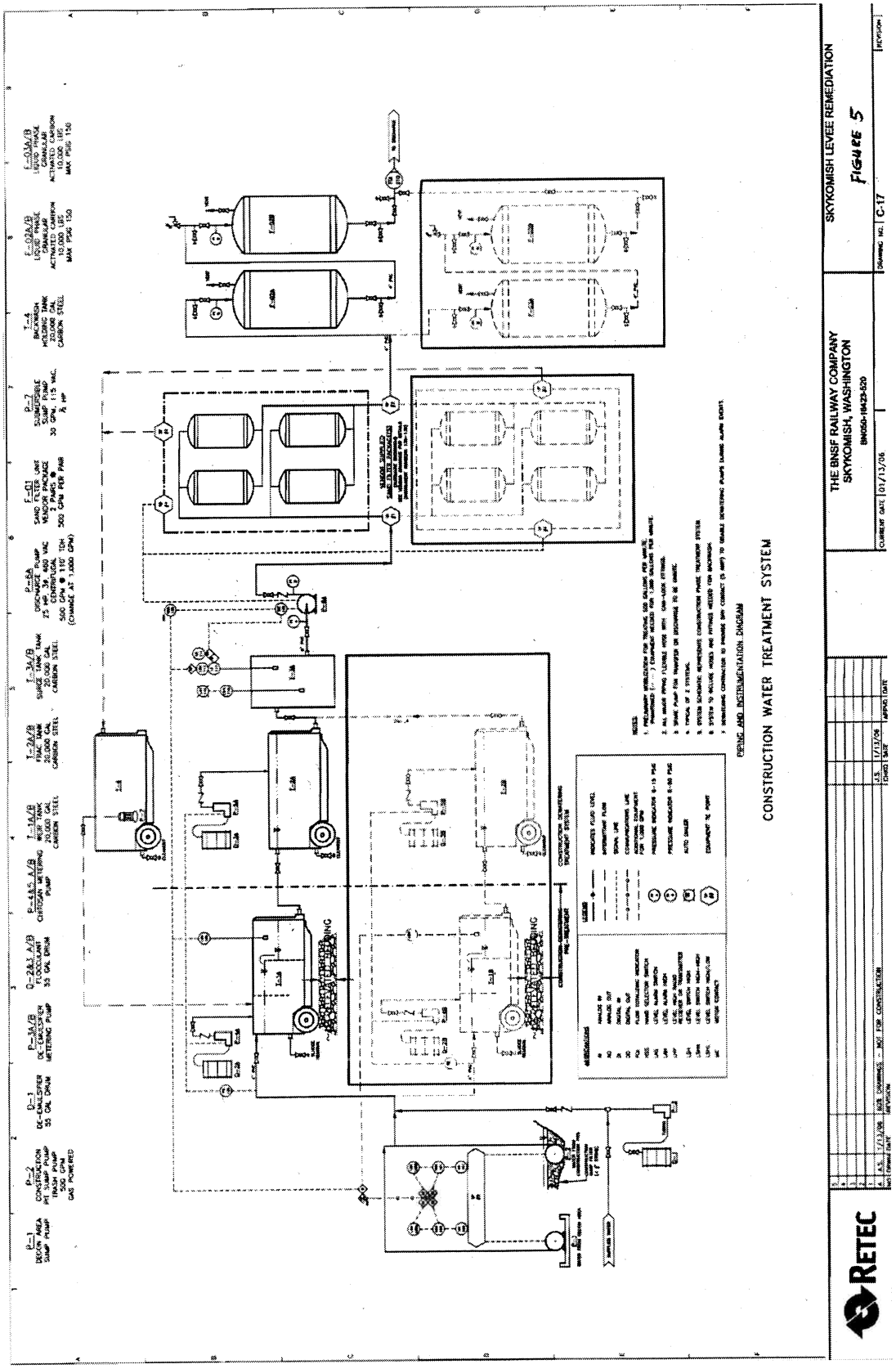
Influent Turbidity (NTU)	Influent Flow Rate (gpm)	FlocClear™ 2% Solution Dose Rate		chitosan (mg/L)	Influent Turbidity (NTU)	Influent Flow Rate (gpm)	FlocClear™ 2% Solution Dose Rate		chitosan (mg/L)
		ml/min	gph				ml/min	gph	
	100	5	0.08			100	10	0.16	
	200	10	0.16			200	20	0.32	
	300	15	0.24			300	30	0.48	
	400	20	0.32			400	40	0.63	
	500	25	0.40			500	50	0.79	
50 - 150	600	30	0.48	***0.265***	**150 - 300**	600	60	0.95	***0.529***
	700	35	0.56			700	70	1.11	
	800	40	0.64			800	80	1.27	
	900	45	0.72			900	90	1.43	
	1000	50	0.79			1000	100	1.59	
	100	15	0.24			100	20	0.32	
	200	30	0.48			200	40	0.63	
	300	45	0.71			300	60	0.95	
	400	60	0.95			400	80	1.27	
	500	75	1.19			500	100	1.59	
300 - 450	600	90	1.43	***0.794***	**450 - 600**	600	120	1.90	***1.058***
	700	105	1.67			700	140	2.22	
	800	120	1.91			800	160	2.54	
	900	135	2.14			900	180	2.86	
	1000	150	2.38			1000	200	3.17	

Checking formula:
chitosan concentration in mg/L = (ml/min FlocClear™ x 0.02 x 1 g/ml x 1000 mg/g)/system flow rate in liters/min
liters/min = gpm x 3.78 liters/gal

Safety Margin Checklist

- Only FlocClear™ containing 2 percent chitosan acetate shall be used and discharges shall only be to streams.
- No chitosan-treated water shall be discharged without first receiving sand-filtration.

- Secondary containment for the FlocClear™ tote and metering pump shall be at least equal to the tote volume.
- FlocClear™ shall be stored at least 50 feet away from all natural drainages, conveyances, and storm drain inlets or a 1-foot high earthen berm shall be constructed and maintained down-gradient as additional containment.
- Spill absorbent material shall be readily available to immobilize any spill during handling.
- The FlocClear™ metering pump shall be positive displacement and provided with an anti-siphon valve which shall be inspected and the inspection recorded at the beginning of each treatment shift.
- The metering pump shall be calibrated using a calibration cylinder at the beginning of each treatment shift and every time that the FlocClear™ dose rate changes. The calibration shall be recorded in the log. The stroke frequency shall be set as high as possible, and the stroke length/speed adjusted to provide correct dosing.
- Flow rate, turbidity, and pH of influent and effluent shall be recorded at startup and every 2 hours thereafter.
- Bench/jar testing shall be done at startup and when influent turbidity changes more than 50 NTU. If the results of the jar tests indicate that the dose needs to be adjusted, the jar testing results and the indicated dose rate change shall be documented in the daily operating log.
- The volume of chitosan in the tote shall be recorded at the beginning and end of the treatment period. The volume used shall be determined and compared to the volume of water treated to further validate dose rate.
- The Residual Chitosan Field Screening Test shall be used twice per day during CESF operation at 1 hour and 2 hours after startup to confirm a discharge concentration below 0.1. If any chitosan is detected in the discharge, the operator shall shut down the CESF until the malfunction has been found and fixed.
- All inspections, calibrations, tests, measurements, dose rate changes, and equipment adjustments shall be recorded in a daily operating log which must be kept available for at least the duration of the treatment project.


CONSTRUCTION WATER TREATMENT SYSTEM
PIPING AND INSTRUMENTATION DIAGRAM
RETEC
THE BNSF RAILWAY COMPANY
SKYKOMISH, WASHINGTON
SKYKOMISH LEVEE REMEDIATION
FIGURE 5
C-17

APPENDIX F

Budd Inlet – Port of Olympia Remediation Site Special Conditions

SPECIAL CONDITIONS

S1. DISCHARGE LIMITS

A. Remediated Groundwater and Stormwater Discharges

All discharges and activities authorized by this permit must be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of that identified and authorized by this permit violates the terms and conditions of this permit.

Beginning on the effective date of this permit and lasting through the expiration date, the Permittee is authorized to discharge treated groundwater and stormwater from the secondary containment area (treatment compound) at the permitted location subject to complying with the following limits:

EFFLUENT LIMITS: OUTFALL # 001		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Benzo(a)pyrene	-	Report
Total Suspended Solids	6 mg/L	15 mg/L
Pentachlorophenol	-	6.5 µg/L
Pentachlorophenol	99.5 percent Removal Efficiency at All Times [c]	-
pH [d]	Daily minimum is equal to or greater than 6.0 and the daily maximum is less than or equal to 9.0	
Acute and Chronic WET Toxicity Characterization	Meet the Acute and Chronic WET Toxicity requirements in Sections 10 and 11.	

a. Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured.

b. Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

c. Treatment removal efficiency shall be determined from the results of Pentachlorophenol analyses of treatment system influent and effluent.

d. Indicates the range of permitted values. The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values. Any excursions below 5.0 and above 10.0 at any time are violations. The instantaneous maximum and minimum pH must be reported monthly. When pH is continuously monitored, excursions between 5.0 and 6.0, or 9.0 and 10.0 are not be considered violations if no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 30 minutes per month.

B. Stormwater Discharges from the North Point/Phase III Construction Area

All discharges and activities authorized by this permit must be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of that identified and authorized by this permit violates the terms and conditions of this permit.

For the first week of operation (the shakedown period), the Permittee will batch discharge from Outfall # 002. Each batch must meet the effluent limits before discharge from Outfall # 002. Influent/effluent samples should also be tested for Total Suspended Solids, Pentachlorophenol, Benzo(a)pyrene, pH and Turbidity for the first week of operation. The Permittee must submit the influent/effluent data for the first week of operation to Ecology within two weeks of receipt of data from the laboratory.

Beginning on after one week of operation and lasting through the expiration date, the Permittee is authorized to discharge treated stormwater at the permitted location subject to complying with the following limits:

EFFLUENT LIMITS: OUTFALL # 002		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Benzo(a)pyrene	-	Report
Total Suspended Solids	6 mg/L	15 mg/L
Pentachlorophenol	-	6.5 µg/L
Pentachlorophenol	99.5 percent Removal Efficiency at All Times [c]	-
pH [d]	Daily minimum is equal to or greater than 6.0 and the daily maximum is less than or equal to 9.0	

a. Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured.

b. Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

c. Treatment removal efficiency shall be determined from the results of Pentachlorophenol analyses of treatment system influent and effluent.

d. Indicates the range of permitted values. The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values. Any excursions below 5.0 and above 10.0 at any time are violations. The instantaneous maximum and minimum pH must be reported monthly. When pH is continuously monitored, excursions between 5.0 and 6.0, or 9.0 and 10.0 are not be considered violations if no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 30 minutes per month.

S2. MONITORING REQUIREMENTS

A. Monitoring Schedule for Outfall # 001

The Permittee must monitor in accordance with the following schedule and must use the laboratory method, detection level (DL), and quantitation level (QL) specified in Appendix A.

Parameter	Units	Minimum Sampling Frequency	Sample Type
(1) Final Effluent [f]			
Flow	Gallons per Month	Continuous [a]	Recording
Benzo(a)pyrene [c]	µg/L	Once per two weeks	24-hour composite [b]
Total Suspended Solids	mg/L	Once per two weeks	24-hour composite
Pentachlorophenol	µg/L	Once per two weeks	24-hour composite
Pentachlorophenol	Percent Removal Efficiency [d]	Once per two weeks	24-hour composite
pH	Standard Units	Once per two weeks	Grab[e]
Acute and Chronic WET Toxicity Characterization	-	See Sections S10 and S11	24-hour composite

The Permittee must record and report the:

- Number of minutes the pH value measured below or above the permitted range for each day. Total minutes for the month. Periods when values were above and below the permitted range separately. Monthly instantaneous maximum and minimum pH.

a. Continuous means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance.

b. 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.

c. The Benzo (a) pyrene testing will be conducted with Method 8270 Selected Ion Monitoring (SIM). The detection level will be 0.031 µg/L.

d. Calculate the Percent (%) removal of Pentachlorophenol using the following algorithm (concentrations in mg/L): (Average Monthly Influent Concentration (prior to entering the biological unit) - Average Monthly Effluent Concentration (after the final treatment unit)/Average Monthly Influent Concentration.

e. Grab means an individual sample collected over a fifteen (15) minute, or less, period.

f. Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.

See Appendix A for the required detection (DL) or quantitation (QL) levels.

Report single analytical values below detection as "less than (detection level)" where (detection level) is the numeric value specified in attachment A.

Report single analytical values between the agency-required detection and quantitation levels with qualifier code of j following the value.

Parameter	Units	Minimum Sampling Frequency	Sample Type
To calculate the average value (monthly average): Use the reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value. For values reported below detection, use one-half the detection value if the lab detected the parameter in another sample for the reporting period. For values reported below detection, use zero if the lab did not detect the parameter in another sample for the reporting period.If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix specific MDL and a QL to Ecology with appropriate laboratory documentation.			

B. Monitoring Schedule for Outfall # 002

The Permittee must monitor in accordance with the following schedule and must use the laboratory method, detection level (DL), and quantitation level (QL) specified in Appendix A.

Parameter	Units	Minimum Sampling Frequency	Sample Type
(1) Final Effluent [e]			
Flow	Gallons per Month	When Discharging [a]	Recording
Benzo(a)pyrene [b]	µg/L	Once per Month	Grab [d]
Total Suspended Solids	mg/L	Once per Month	Grab [d]
Pentachlorophenol	µg/L	Once per Month	Grab [d]
Pentachlorophenol	% Removal Efficiency [c]	Once per Month	Grab [d]
pH	Standard Units	Once per Month	Grab [d]
The Permittee must record and report the: • Number of minutes the pH value measured below or above the permitted range for each day.Total minutes for the month. Periods when values were above and below the permitted range separately. Monthly instantaneous maximum and minimum pH.			
[a.] When discharging mean during the treated stormwater discharge.			
[b.] The Benzo (a) pyrene testing will be conducted with Method 8270 Selected Ion Monitoring (SIM). The detection level will be 0.031 µg/L.			
[c.] Calculate the Percent (%) removal of Pentachlorophenol using the following algorithm (concentrations in mg/L): (Average Monthly Influent Concentration (prior to entering the biological unit) - Average Monthly Effluent Concentration (after the final treatment unit)/Average Monthly Influent Concentration.			
[d.] Grab means an individual sample collected over a fifteen (15) minute, or less, period.			
[e.] Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.			
See Appendix A for the required detection (DL) or quantitation (QL) levels. Report single analytical values below detection as "less than (detection level)" where (detection level) is			

Parameter	Units	Minimum Sampling Frequency	Sample Type
the numeric value specified in attachment A.Report single analytical values between the agency-required detection and quantitation levels with qualifier code of j following the value. To calculate the average value (monthly average): Use the reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value. For values reported below detection, use one-half the detection value if the lab detected the parameter in another sample for the reporting period. For values reported below detection, use zero if the lab did not detect the parameter in another sample for the reporting period.If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix specific MDL and a QL to Ecology with appropriate laboratory documentation.			

C. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 Code of Federal Regulations (CFR) Part 136.

D. Flow Measurement

The Permittee must:

1. Select and use appropriate flow measurement continuous monitoring devices and methods consistent with accepted scientific practices.

2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.

3. Maintain calibration records for at least three years.

E. Laboratory Accreditation

The Permittee must ensure that all monitoring data required by the Department of Ecology (Ecology) is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 Washington Administrative Code (WAC), *Accreditation of Environmental Laboratories*. Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement. The Permittee must obtain accreditation for conductivity and pH if it must receive accreditation or registration for other parameters.

S3. REPORTING AND RECORDKEEPING REQUIREMENTS

The Permittee must monitor and report in accordance with the following conditions. The falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Submit monitoring results each month.

2. Summarize, report, and submit monitoring data obtained during each monitoring period on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by Ecology.

3. Submit DMR forms monthly whether or not the facility was discharging. If the facility did not discharge during a given monitoring period, submit the form as required with the words "NO DISCHARGE" entered in place of the monitoring results.

4. Ensure that DMR forms are postmarked or received by Ecology no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit.

5. Send report(s) to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

All laboratory reports providing data for organic and metal parameters must include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/ number, method detection limit (MDL) or laboratory quantitation limit (QL or ML), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.

2. The individual who performed the sampling or measurement.

3. The dates the analyses were performed.

4. The individual who performed the analyses.

5. The analytical techniques or methods used.

6. The results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition S2. of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Reporting Permit Violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

a. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.

b. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within 30 days of sampling.

1. Immediate Reporting

The Permittee must report any failure of the disinfection system, any collection system overflows which may reach surface waters or any plant bypass discharging to a shellfish area immediately to the Department of Ecology and the Department of Health, Shellfish Program at the numbers listed below:

Southwest Regional Office	360-407-6300
Department of Health, Shellfish Program	360-236-3330 (business hours) 360-786-4183 (24-hours)

2. Twenty-four-hour Reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at 360-407-6300, within 24-hours from the time the Permittee becomes aware of any of the following circumstances:

a. Any noncompliance that may endanger health or the environment, unless previously reported under subpart 1, above.

b. Any unanticipated **bypass** that exceeds any effluent limitation in the permit (See Part S4.B., "Bypass Procedures").

c. Any **upset** that exceeds any effluent limitation in the permit (See G.15, "Upset").

d. Any violation of a maximum daily or instantaneous maximum discharge limitation for any of the pollutants in Section S1.A of this permit.

e. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limitation in the permit.

3. Report within Five Days

The Permittee must also provide a written submission within five days of the time that the Permittee becomes aware of any event required to be reported under subparts 1 or 2, above. The written submission must contain:

a. A description of the noncompliance and its cause.

b. The period of noncompliance, including exact dates and times.

c. The estimated time noncompliance is expected to continue if it has not been corrected.

d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

e. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

4. Waiver of Written Reports

Ecology may waive the written report required in subpart 3, above, on a case-by-case basis upon request if a timely oral report has been received.

5. All Other Permit Violation Reporting

The Permittee must report all permit violations, which do not require immediate or within 24-hours reporting, when it submits monitoring

reports for S3.A ("Reporting"). The reports must contain the information listed in paragraph E.3, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

6. Report Submittal

The Permittee must submit reports to the address listed in S3.

F. Other Reporting

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of Revised Code of Washington (RCW) 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

The Permittee must submit a new application or supplement at least 180 days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include: any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. OPERATION AND MAINTENANCE FOR GROUNDWATER TREATMENT SYSTEM

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

The Permittee must schedule any facility maintenance, which might require interruption of wastewater treatment and degrade effluent quality, during non-critical water quality periods and carry this maintenance out in a manner approved by Ecology.

A. Operations and Maintenance Manual

The Permittee must:

1. Update the Operations and Maintenance (O&M) Manual in accordance with 173-240-150 WAC and submit it to Ecology for approval by **October 30, 2010**.

2. Review the O&M Manual at least annually and confirm this review by letter to Ecology.

3. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual.

4. Keep the approved O&M Manual at the permitted facility.

5. Follow the instructions and procedures of this manual.

In addition to the requirements of WAC 173-240-150(1) and (2), the O&M manual must include:

1. Emergency procedures for plant shutdown and cleanup in event of wastewater system upset or failure.

2. Wastewater system maintenance procedures that contribute to the generation of process wastewater.

3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)

4. Wastewater sampling protocols and procedures for compliance with the sampling and reporting requirements in the wastewater discharge permit.

5. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit

6. Treatment plant process control monitoring schedule.

7. Specify other items on case-by-case basis such as O&M for any pump stations, lagoon liners, etc.

B. Bypass Procedures

This permit prohibits a bypass which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for Essential Maintenance without the Potential to Cause Violation of Permit Limits or Conditions.

   Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten days before the date of the bypass.

2. Bypass which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit.

This bypass is permitted only if:

Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

No feasible alternatives to the bypass exist, such as:

- The use of auxiliary treatment facilities.
- Retention of untreated wastes.
- Stopping production.
- Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
- Transport of untreated wastes to another treatment facility or preventative maintenance), or transport of untreated wastes to another treatment facility.

Ecology is properly notified of the bypass as required in condition S3.E of this permit.

3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

a. The Permittee must notify Ecology at least 30 days before the planned date of bypass. The notice must contain:

- A description of the bypass and its cause.
- An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
- A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
- The minimum and maximum duration of bypass under each alternative.
- A recommendation as to the preferred alternative for conducting the bypass.
- The projected date of bypass initiation.

- A statement of compliance with SEPA.
- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

C. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

S5. APPLICATION FOR PERMIT RENEWAL

The Permittee must submit an application for renewal of this permit by **October 1, 2014.**

S6. SOLID WASTES

A. Solid Waste Handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

C. Solid Waste Control Plan

The Permittee must submit all proposed revisions or modifications to the solid waste control plan to Ecology for review and approval at least 30 days prior to implementation. Once approved, the Permittee must comply with any plan modifications. The Permittee must submit an update of the solid waste control plan by **November 30, 2010.**

The solid waste control plan must:

1. Follow Ecology's guidance for preparing a solid waste control plan (www.ecy.wa.gov/biblio/0710024.html) and address all solid wastes generated by the Permittee.

2. Include at a minimum a description, source, generation rate, and disposal methods of these solid wastes.

3. Not conflict with local or state solid waste regulations.

S7. NON-ROUTINE AND UNANTICIPATED DISCHARGES

A. Beginning on the effective date of this permit, the Permittee is authorized to discharge non-routine wastewater on a case-by-case basis if approved by Ecology. Prior to any such discharge, the Permittee must contact Ecology and **at a minimum** provide the following information:

1. The proposed discharge location.

2. The nature of the activity that will generate the discharge.

3. Any alternatives to the discharge, such as reuse, storage, or recycling of the water.

4. The total volume of water it expects to discharge.

5. The results of the chemical analysis of the water. The Permittee must analyze the water for all constituents limited for the discharge. The analysis must also

include hardness, any metals that are limited by water quality standards, and any other parameter deemed necessary by Ecology. All discharges must comply with the effluent limits as established in Condition S1. of this permit, water quality standards, and any other limits imposed by Ecology.

6. The date of proposed discharge.

7. The expected rate of discharge discharged, in gallons per minute. The Permittee must limit the discharge rate so it will not cause erosion of ditches or structural damage to culverts and their entrances or exits.

B. The discharge cannot proceed until Ecology has reviewed the information provided and has authorized the discharge by letter to the Permittee or by an Administrative Order. Once approved and if the proposed discharge is to a municipal storm drain, the Permittee must obtain prior approval from the municipality and notify it when it plans to discharge.

S8. SPILL PLAN AND STORMWATER POLLUTION PREVENTION PLAN (SWPPP)/BEST MANAGEMENT PLAN (BMPS)

The Permittee must:

1. Submit to Ecology an update to the existing Spill Control Plan, SWPPP and BMPs by **December 30, 2010.**

2. Review the plan at least annually and update the Spill Plan and SWPPP and BMP plan as needed.

3. Send changes to the plan to Ecology.

4. Follow the plan and any supplements throughout the term of the permit.

The spill control plan must include the following:

1. A list of all oil and petroleum products and other materials used and/or stored on site, which when spilled, or otherwise released into the environment, designate as Dangerous (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on site which may become pollutants or cause pollution upon reaching state's waters.

2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials.

3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill.

4. A description of operator training to implement the plan.

The Permittee may submit plans and manuals required by 40 CFR Part 112, contingency plans required by Chapter 173-303 WAC, or other plans required by other agencies which meet the intent of this section.

The SWPPP/BMPs should be prepared in accordance with Guidance Manual for Preparing/Updating a Stormwater Pollution Prevention Plan for Industrial Facilities, dated April 2004.

S9. ENGINEERING DESIGN REPORT FOR NORTH POINT/PHASE III CONSTRUCTION/REMEDIATION

The Permittee submitted an Engineering Design report. Ecology has reviewed and approved this report.

S10. ACUTE TOXICITY

A. Testing When There Is No Permit Limit for Acute Toxicity

The Permittee must:

Conduct acute toxicity testing on final effluent during month, year and month, year (once in the last summer and once in the last winter prior to submission of the application for permit renewal). **October 1, 2014**

1. Submit the results to Ecology with the permit renewal application.

2. Conduct acute toxicity testing on a series of at least five concentrations of effluent, including 100 percent effluent, and a control.

3. Use each of the following species and protocols for each acute toxicity test:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*	EPA-821-R-02-012

B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.

3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and Ecology of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.

5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection A. or pristine natural water of sufficient quality for good control performance.

6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the acute critical effluent concentration (ACEC). The ACEC equals 5.46 percent effluent.

8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing must comply with the acute statistical power standard of 29 percent as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

S11. CHRONIC TOXICITY

A. Testing When There Is No Permit Limit for Chronic Toxicity

The Permittee must:

Conduct chronic toxicity testing on final effluent during month, year and month, year (once in the last summer and once in the last winter prior to submission of the application for permit renewal). **October 1, 2014.**

1. Submit the results to Ecology with the permit renewal application.

2. Conduct chronic toxicity testing on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 5.46 percent effluent.

3. Compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.

4. Perform chronic toxicity tests with all of the following species and the most recent version of the following protocols:

Saltwater Chronic Test	Species	Method
Topsmelt survival and growth	*Atherinops affinis*	EPA/600/R-95/136
Mysid shrimp survival and growth	*Mysidopsis bahia/ Americamysis bahia*	EPA-821-R-02-014

B. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.

3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.

5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection C. or pristine natural water of sufficient quality for good control performance.

6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the CCEC and the ACEC. The CCEC and the ACEC may either substitute for the effluent concentrations that are closest to them in the dilution series or be extra effluent concentrations. The CCEC and ACEC are equal to 5.46 percent effluent.

8. All whole effluent toxicity tests that involve hypothesis testing must comply with the chronic statistical power standard of 39 percent as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

S12. BENZO(A)PYRENE MONITORING REPORT FOR THE TREATED GROUNDWATER

Submit a report summarizing Benzo(a)pyrene results by **December 1, 2011.** All laboratory reports providing data for Benzo (a)pyrene must include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/ number, method detection limit (MDL) or laboratory quantitation limit (QL or ML), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

S13. ENGINEERING DESIGN REPORT AND OPERATING AND MAINTENANCE MANUAL FOR THE NORTH POINT/PHASE III AREA STORMWATER TREATMENT SYSTEM

Submit an engineering design report (EDR) and an operating and maintenance (O&M) manual for the stormwater treatment system for the North Point/Phase III area by **September 30, 2010 (if necessary).** The EDR will be completed in accordance with WAC 173-240-130. The O&M manual will be completed in accordance with WAC 173-240-150.

APPENDIX A

EFFLUENT CHARACTERIZATION FOR POLLUTANTS

THIS LIST INCLUDES EPA REQUIRED POLLUTANTS (PRIORITY POLLUTANTS) AND SOME ECOLOGY PRIORITY TOXIC CHEMICALS (PBTs)

The following table specifies analytical methods and levels to be used for effluent characterization in NPDES and State waste discharge permits. This appendix specifies effluent characterization requirements of the Department of Ecology unless other methods are specified in the body of this permit.

This permit specifies the compounds and groups of compounds to be analyzed. Ecology may require additional pollutants to be analyzed within a group. The objective of this appendix is to reduce the number of analytical "non-detects" in permit-required monitoring and to measure effluent concentrations near or below criteria values where possible at a reasonable cost. If a Permittee knows that an alternate, less sensitive method (higher DL and QL) from 40 CFR Part 136 is sufficient to produce measurable results in their effluent, that method may be used for analysis.

Pollutant & CAS No. ***(if available)***	**Recommended Analytical Protocol**	**Detection (DL)[1]** ***µg/L unless specified***	**Quantitation Level (QL)[2]** ***µg/L unless specified***
CONVENTIONALS			
Biochemical Oxygen Demand	SM5210-B		2 mg/L
Chemical Oxygen Demand	SM5220-D		10 mg/L
Total Organic Carbon	SM5310-B/C/D		1 mg/L
Total Suspended Solids	SM2540-D		5 mg/L
Total Ammonia (as N)	SM4500-NH3-GH		0.3 mg/L
Flow	Calibrated device		
Dissolved oxygen	4500-OC/OG		0.2 mg/L
Temperature (max. 7-day avg.)	Analog recorder or Use micro-recording devices known as thermistors		0.2° C
pH	SM4500-H^+ B	N/A	N/A
NONCONVENTIONALS			
Total Alkalinity	SM2320-B		5 mg/L as CaCo3
Chlorine, Total Residual	4500 Cl G		50.0
Color	SM2120 B/C/E		10 color unit
Fecal Coliform	SM 9221D/E,9222	N/A	N/A
Fluoride (16984-48-8)	SM4500-F E	25	100
Nitrate-Nitrite (as N)	4500-NO3-E/F/H		100
Nitrogen, Total Kjeldahl (as N)	4500-NH3-C/E/FG		300

Pollutant & CAS No. ***(if available)***	**Recommended Analytical Protocol**	**Detection (DL)[1]** ***µg/L unless specified***	**Quantitation Level (QL)[2]** ***µg/L unless specified***
Ortho-Phosphate (PO_4 as P)	4500- PE/PF	3	10
Phosphorus, Total (as P)	4500-PE/PF	3	10
Oil and Grease (HEM)	1664A	1,400	5,000
Salinity	SM2520-B		3 PSS
Settleable Solids	SM2540 -F		100
Sulfate (as mg/L SO_4)	SM4110-B		200
Sulfide (as mg/L S)	4500-S^2F/D/E/G		200
Sulfite (as mg/L SO_3)	SM4500-SO3B		2000
Total dissolved solids	SM2540 C		20 mg/L
Total Hardness	2340B		200 as CaCO3
Aluminum, Total (7429-90-5)	200.8	2.0	10
Barium Total (7440-39-3)	200.8	0.5	2.0
Boron Total (7440-42-8)	200.8	2.0	10.0
Cobalt, Total (7440-48-4)	200.8	0.05	0.25
Iron, Total (7439-89-6)	200.7	12.5	50
Magnesium, Total (7439-95-4)	200.7	10	50
Molybdenum, Total (7439-98-7)	200.8	0.1	0.5
Manganese, Total (7439-96-5)	200.8	0.1	0.5
Tin, Total (7440-31-5)	200.8	0.3	1.5
METALS, CYANIDE & TOTAL PHENOLS			
Antimony, Total (7440-36-0)	200.8	0.3	1.0
Arsenic, Total (7440-38-2)	200.8	0.1	0.5
Beryllium, Total (7440-41-7)	200.8	0.1	0.5
Cadmium, Total (7440-43-9)	200.8	0.05	0.25
Chromium (hex) dissolved (18540-29-9)	SM3500-Cr EC	0.3	1.2
Chromium, Total (7440-47-3)	200.8	0.2	1.0
Copper, Total (7440-50-8)	200.8	0.4	2.0
Lead, Total (7439-92-1)	200.8	0.1	0.5
Mercury, Total (7439-97-6)	1631E	0.0002	0.0005
Nickel, Total (7440-02-0)	200.8	0.1	0.5
Selenium, Total (7782-49-2)	200.8	1.0	1.0
Silver, Total (7440-22-4)	200.8	0.04	0.2
Thallium, Total (7440-28-0)	200.8	0.09	0.36
Zinc, Total (7440-66-6)	200.8	0.5	2.5
Cyanide, Total (57-12-5)	335.4	2	10
Cyanide, Weak Acid Dissociable	SM4500-CN I	2	10
Phenols, Total	EPA 420.1		50
DIOXIN			
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin (176-40-16)	1613B	1.3 pg/L	5 pg/L
VOLATILE COMPOUNDS			

Pollutant & CAS No. ***(if available)***	**Recommended Analytical Protocol**	**Detection (DL)[1]** ***µg/L unless specified***	**Quantitation Level (QL)[2]** ***µg/L unless specified***
Acrolein (107-02-8)	624	5	10
Acrylonitrile (107-13-1)	624	1.0	2.0
Benzene (71-43-2)	624	1.0	2.0
Bromoform (75-25-2)	624	1.0	2.0
Carbon tetrachloride (56-23-5)	624/601 or SM6230B	1.0	2.0
Chlorobenzene (108-90-7)	624	1.0	2.0
Chloroethane (75-00-3)	624/601	1.0	2.0
2-Chloroethylvinyl Ether (110-75-8)	624	1.0	2.0
Chloroform (67-66-3)	624 or SM6210B	1.0	2.0
Dibromochloromethane (124-48-1)	624	1.0	2.0
1,2-Dichlorobenzene (95-50-1)	624	1.9	7.6
1,3-Dichlorobenzene (541-73-1)	624	1.9	7.6
1,4-Dichlorobenzene (106-46-7)	624	4.4	17.6
Dichlorobromomethane (75-27-4)	624	1.0	2.0
1,1-Dichloroethane (75-34-3)	624	1.0	2.0
1,2-Dichloroethane (107-06-2)	624	1.0	2.0
1,1-Dichloroethylene (75-35-4)	624	1.0	2.0
1,2-Dichloropropane (78-87-5)	624	1.0	2.0
1,3-dichloropropylene (mixed isomers) (542-75-6)	624	1.0	2.0
Ethylbenzene (100-41-4)	624	1.0	2.0
Methyl bromide (74-83-9) (Bromomethane)	624/601	5.0	10.0
Methyl chloride (74-87-3) (Chloromethane)	624	1.0	2.0
Methylene chloride (75-09-2)	624	5.0	10.0
1,1,2,2-Tetrachloroethane (79-34-5)	624	1.9	2.0
Tetrachloroethylene (127-18-4)	624	1.0	2.0
Toulene (108-88-3)	624	1.0	2.0
1,2-Trans-Dichloroethylene (156-60-5) (Ethylene dichloride)	624	1.0	2.0
1,1,1-Trichloroethane (71-55-6)	624	1.0	2.0
1,1,2-Trichloroethane (79-00-5)	624	1.0	2.0
Trichloroethylene (79-01-6)	624	1.0	2.0
Vinyl chloride (75-01-4)	624/SM6200B	1.0	2.0
ACID COMPOUNDS			

Pollutant & CAS No. ***(if available)***	**Recommended Analytical Protocol**	**Detection (DL)[1]** ***µg/L unless specified***	**Quantitation Level (QL)[2]** ***µg/L unless specified***
2-Chlorophenol (95-57-8)	625	1.0	2.0
2,4-Dichlorophenol (120-83-2)	625	0.5	1.0
2,4-Dimethylphenol (105-67-9)	625	0.5	1.0
4,6-dinitro-o-cresol (534-52-1) (2-methyl-4,6,-dinitrophenol)	625/1625B	1.0	2.0
2,4 dinitrophenol (51-28-5)	625	1.0	2.0
2-Nitrophenol (88-75-5)	625	0.5	1.0
4-nitrophenol (100-02-7)	625	0.5	1.0
Parachlorometa cresol (59-50-7) (4-chloro-3-methylphenol)	625	1.0	2.0
Pentachlorophenol (87-86-5)	625	0.5	1.0
Phenol (108-95-2)	625	2.0	4.0
2,4,6-Trichlorophenol (88-06-2)	625	2.0	4.0
BASE/NEUTRAL COMPOUNDS (compounds in bold are Ecology PBTs)			
Acenaphthene (83-32-9)	625	0.2	0.4
Acenaphthylene (208-96-8)	625	0.3	0.6
Anthracene (120-12-7)	625	0.3	0.6
Benzidine (92-87-5)	625	12	24
Benzyl butyl phthalate (85-68-7)	625	0.3	0.6
Benzo(*a*)anthracene (56-55-3)	625	0.3	0.6
Benzo(j)fluoranthene (205-82-3)	625	0.5	1.0
Benzo(r,s,t)pentaphene (189-55-9)	625	0.5	1.0
Benzo(*a*)pyrene (50-32-8)	610/625	0.5	1.0
3,4-benzofluoranthene (Benzo(b)fluoranthene) (205-99-2)	610/625	0.8	1.6
11,12-benzofluoranthene (Benzo(k)fluoranthene) (207-08-9)	610/625	0.8	1.6
Benzo(*ghi*)Perylene (191-24-2)	610/625	0.5	1.0
Bis(*2-chloroethoxy)*methane (111-91-1)	625	5.3	21.2
Bis(*2-chloroethyl*)ether (111-44-4)	611/625	0.3	1.0
Bis(*2-chloroisopropyl*)ether (39638-32-9)	625	0.3	0.6
Bis(*2-ethylhexyl*)phthalate (117-81-7)	625	0.1	0.5
4-Bromophenyl phenyl ether (101-55-3)	625	0.2	0.4

Pollutant & CAS No. ***(if available)***	**Recommended Analytical Protocol**	**Detection (DL)[1]** ***µg/L unless specified***	**Quantitation Level (QL)[2]** ***µg/L unless specified***
2-Chloronaphthalene (91-58-7)	625	0.3	0.6
4-Chlorophenyl phenyl ether (7005-72-3)	625	0.3	0.5
Chrysene (218-01-9)	610/625	0.3	0.6
Dibenzo (a,j)acridine (224-42-0)	610M/625M	2.5	10.0
Dibenzo (a,h)acridine (226-36-8)	610M/625M	2.5	10.0
Dibenzo(a-*h*)anthracene (53-70-3)(1,2,5,6-dibenzanthracene)	625	0.8	1.6
Dibenzo(a,e)pyrene (192-65-4)	610M/625M	2.5	10.0
Dibenzo(a,h)pyrene (189-64-0)	625M	2.5	10.0
3,3-Dichlorobenzidine (91-94-1)	605/625	0.5	1.0
Diethyl phthalate (84-66-2)	625	1.9	7.6
Dimethyl phthalate (131-11-3)	625	1.6	6.4
Di-n-butyl phthalate (84-74-2)	625	0.5	1.0
2,4-dinitrotoluene (121-14-2)	609/625	0.2	0.4
2,6-dinitrotoluene (606-20-2)	609/625	0.2	0.4
Di-n-octyl phthalate (117-84-0)	625	0.3	0.6
1,2-Diphenylhydrazine (*as Azobenzene*) (122-66-7)	1625B	5.0	20
Fluoranthene (206-44-0)	625	0.3	0.6
Fluorene (86-73-7)	625	0.3	0.6
Hexachlorobenzene (118-74-1)	612/625	0.3	0.6
Hexachlorobutadiene (87-68-3)	625	0.5	1.0
Hexachlorocyclopentadiene (77-47-4)	1625B/625	0.5	1.0
Hexachloroethane (67-72-1)	625	0.5	1.0
Indeno(*1,2,3-cd*)Pyrene (193-39-5)	610/625	0.5	1.0
Isophorone (78-59-1)	625	0.5	1.0
3-Methyl cholanthrene (56-49-5)	625	2.0	8.0
Naphthalene (91-20-3)	625	0.3	0.6
Nitrobenzene (98-95-3)	625	0.5	1.0
N-Nitrosodimethylamine (62-75-9)	607/625	2.0	4.0
N-Nitrosodi-n-propylamine (621-64-7)	607/625	0.5	1.0
N-Nitrosodiphenylamine (86-30-6)	625	0.5	1.0
Perylene (198-55-0)	625	1.9	7.6

Pollutant & CAS No. *(if available)*	Recommended Analytical Protocol	Detection (DL)[1] *µg/L unless specified*	Quantitation Level (QL)[2] *µg/L unless specified*
Phenanthrene (85-01-8)	625	0.3	0.6
Pyrene (129-00-0)	625	0.3	0.6
1,2,4-Trichlorobenzene (120-82-1)	625	0.3	0.6
PESTICIDES/PCBs			
Aldrin (309-00-2)	608	0.025	0.05
alpha-BHC (319-84-6)	608	0.025	0.05
beta-BHC (319-85-7)	608	0.025	0.05
gamma-BHC (58-89-9)	608	0.025	0.05
delta-BHC (319-86-8)	608	0.025	0.05
Chlordane (57-74-9)	608	0.025	0.05
4,4'-DDT (50-29-3)	608	0.025	0.05
4,4'-DDE (72-55-9)	608	0.025	0.05[10]
4,4' DDD (72-54-8)	608	0.025	0.05
Dieldrin (60-57-1)	608	0.025	0.05
alpha-Endosulfan (959-98-8)	608	0.025	0.05
beta-Endosulfan (33213-65-9)	608	0.025	0.05
Endosulfan Sulfate (1031-07-8)	608	0.025	0.05
Endrin (72-20-8)	608	0.025	0.05
Endrin Aldehyde (7421-93-4)	608	0.025	0.05
Heptachlor (76-44-8)	608	0.025	0.05
Heptachlor Epoxide (1024-57-3)	608	0.025	0.05
PCB-1242 (53469-21-9)	608	0.25	0.5
PCB-1254 (11097-69-1)	608	0.25	0.5
PCB-1221 (11104-28-2)	608	0.25	0.5
PCB-1232 (11141-16-5)	608	0.25	0.5
PCB-1248 (12672-29-6)	608	0.25	0.5
PCB-1260 (11096-82-5)	608	0.13	0.5
PCB-1016 (12674-11-2)	608	0.13	0.5
Toxaphene (8001-35-2)	608	0.24	0.5

1. Detection level (DL) or detection limit means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure given in 40 CFR part 136, Appendix B.

2. Quantitation Level (QL) is equivalent to EPA's Minimum Level (ML) which is defined in 40 CFR Part 136 as the minimum level at which the entire GC/MS system must give recognizable mass spectra (background corrected) and acceptable calibration points. These levels were published as proposed in the Federal Register on March 28, 1997.

APPENDIX G

East Bay – Port of Olympia Remediation Site Special Conditions

SPECIAL CONDITIONS

S1. DISCHARGE LIMITS

A. Groundwater and Stormwater Discharge

All discharges and activities authorized by this permit must be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of that identified and authorized by this permit violates the terms and conditions of this permit.

For the first two weeks of operation (the shakedown period), the Permittee plans to batch discharge the effluent from Outfall # 001. Each batch must meet the effluent limits before discharge for Outfall # 001. The Permittee must collect daily influent/effluent samples for the first two weeks of operation and measure copper, cadmium, lead, nickel and zinc. The Permittee must submit the Influent/effluent data for the first two weeks of operation to Ecology by **July 31, 2009**.

Beginning on the effective date of this permit and lasting through the expiration date, the Permittee is authorized to discharge treated groundwater and stormwater at the permitted location subject to complying with the following limits (these limits apply to the effluent after the effluent tank and before entering the storm drain):

EFFLUENT LIMITS: OUTFALL # 001	
Parameter	**Maximum Daily [a]**
Flow	Report
Benzo (a) Pyrene	0.031 µg/L [b]
Total Arsenic	36.0 µg/L
Turbidity	12.3 nephelometric turbidity units (NTUs)
pH [c]	Daily minimum is equal to or greater than 6.0 and the daily maximum is less than or equal to 9.0
Acute and Chronic WET Toxicity Characterization	Meet the Acute and Chronic WET Toxicity requirements in Sections S10. and S11.

[a.] Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

[b.] The method 8270C will be used to test Benzo (a) Pyrene, the same method used as in the pilot study. The quantitation level (reporting limit) will be 0.020 µg/L.

[c.] Indicates the range of permitted values. The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.

S2. MONITORING REQUIREMENTS

A. Monitoring Schedule

Ecology will conduct a reasonable potential determination after having 6 monthly effluent test results for copper, cadmium, lead, nickel, and zinc. If the discharge shows reasonable potential for any metal, Ecology will calculate a water quality permit limit and modify the permit. If the calculations show no reasonable potential to violate the surface water quality criteria, Ecology will eliminate the metals monitoring requirements in the permit and inform the Permittee of its decision by letter.

The Permittee must monitor in accordance with the following schedule and must use the laboratory method, detection level (DL), and quantitation level (QL) specified in Appendix A. Alternative methods from 40 CFR Part 136 are acceptable if the DL and QL are equivalent to those specified in Appendix A:

Parameter	Sample Point/Units	Minimum Sampling Frequency	Sample Type
Benzo (a) Pyrene	Influent [e], µg/L	Monthly [b]	Grab [c]
Total Arsenic	Influent [e], µg/L	Monthly [b]	Grab [c]
Total Copper	Influent [e], µg/L	Monthly [b]	Grab [c]
Total Cadmium	Influent [e], µg/L	Monthly [b]	Grab [c]
Total Lead	Influent [e], µg/L	Monthly [b]	Grab [c]
Total Nickel	Influent [e], µg/L	Monthly [b]	Grab [c]
Total Zinc	Influent [e], µg/L	Monthly [b]	Grab [c]
Turbidity	Influent [e], NTUs	Continuous [a]	Metered & Recorded
2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin	Influent [e], pg/L	One Time by August 31, 2009	Grab [c]
Flow	Final Effluent [d], gpd	Continuous [a]	Metered & Recorded
Benzo (a) Pyrene	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Total Arsenic	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Total Copper	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Total Cadmium	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Total Lead	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Total Nickel	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Total Zinc	Final Effluent [d], µg/L	Monthly [b]	Grab [c]
Turbidity	Final Effluent [d], NTUs	Continuous [a]	Metered & Recorded

2,3,7,8-Tetra-Chlorodibenzo-P-Dioxin	Final Effluent [d], pg/L	One time by August 31, 2009	Grab [c]
pH	Final Effluent [d], Standard Units	Continuous [a]	Metered & Recorded
Acute and Chronic WET Toxicity Characterization	Final Effluent [d]	See Sections S10. and S11.	Composite

The Permittee must record and report the:
Number of minutes the pH value measured below or above the permitted range for each day. Total minutes for the month. Periods when values were above and below the permitted range separately. Monthly instantaneous maximum and minimum pH.

[a] Continuous means uninterrupted except for brief calibration, lengths of time for power failure, or for unanticipated equipment repair or maintenance.

[b] Monthly means once every calendar month during alternate weeks.

[c] Grab means an individual sample collected over a fifteen (15) minute, or less, period.

[d] Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.

[e] Influent samples must be taken before settling tanks.

See Appendix A for the required detection (DL) or quantitation (QL) levels.

Report single analytical values below detection as "less than (detection level)" where (detection level) is the numeric value specified in attachment A.

Report single analytical values between the agency-required detection and quantitation levels with qualifier code of j following the value.

To calculate the average value (monthly average):

- Use the reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.
- For values reported below detection, use one-half the detection value if the lab detected the parameter in another sample for the reporting period.

For values reported below detection, use zero if the lab did not detect the parameter in another sample for the reporting period. If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix specific MDL and a QL to Ecology with appropriate laboratory documentation.

B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136.

C. Flow Measurement

The Permittee must:

1. Select and use appropriate flow measurement, devices and methods consistent with accepted scientific practices.

2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.

3. Use field measurement devices as directed by the manufacturer and do not use reagents beyond their expiration dates.

4. Calibrate these devices at the frequency recommended by the manufacturer.

5. Calibrate flow monitoring devices at a minimum frequency of at least one calibration per year.

6. Maintain calibration records for at least three years.

D. Laboratory Accreditation

The Permittee must ensure that all monitoring data required by Ecology is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 Washington Administrative Code (WAC), *Accreditation of Environmental Laboratories.* Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement. The Permittee must obtain accreditation for conductivity and pH if it must receive accreditation or registration for other parameters.

S3. REPORTING AND RECORDKEEPING REQUIREMENTS

The Permittee must monitor and report in accordance with the following conditions. The falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Submit monitoring results each month.

2. Summarize, report, and submit monitoring data obtained during each monitoring period on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by Ecology.

3. Submit DMR forms monthly whether or not the facility was discharging. If the facility did not discharge during a given monitoring period, submit the form as required with the words "NO DISCHARGE" entered in place of the monitoring results.

4. Ensure that DMR forms are postmarked or received by Ecology no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit.

5. Send report(s) to Ecology at:

Industrial Unit Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775

All laboratory reports providing data for organic and metal parameters must include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/ number, method detection limit (MDL) or laboratory quantitation limit (QL or ML), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.
2. The individual who performed the sampling or measurement.
3. The dates the analyses were performed.
4. The individual who performed the analyses.
5. The analytical techniques or methods used.
6. The results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition S2 of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Reporting Permit Violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.

If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within 30 days of sampling.

1. Twenty-four-hour Reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at 360-407-6300, within 24-hours from the time the Permittee becomes aware of any of the following circumstances:

a. Any noncompliance that may endanger health or the environment, unless previously reported under subpart 1, above.

b. Any unanticipated **bypass** that exceeds any effluent limit in the permit (See Part S4.B., "Bypass Procedures").

c. Any **upset** that exceeds any effluent limit in the permit (See G.15, "Upset").

d. Any violation of a maximum daily or instantaneous maximum discharge limit for any of the pollutants in Section S1.A of this permit.

e. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limit in the permit.

2. Report Within Five Days

The Permittee must also provide a written submission within five days of the time that the Permittee becomes aware of any event required to be reported under subparts 1 or 2, above. The written submission must contain:

a. A description of the noncompliance and its cause.

b. The period of noncompliance, including exact dates and times.

c. The estimated time noncompliance is expected to continue if it has not been corrected.

d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

e. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

3. Waiver of Written Reports

Ecology may waive the written report required in subpart 3, above, on a case by case basis upon request if a timely oral report has been received.

4. All Other Permit Violation Reporting

The Permittee must report all permit violations, which do not require immediate or within 24-hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in paragraph E.3, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

5. Report Submittal

The Permittee must submit reports to the address listed in S3.

F. Other Reporting

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of Revised Code of Washington (RCW) 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. OPERATION AND MAINTENANCE

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

The Permittee must schedule any facility maintenance, which might require interruption of wastewater treatment and degrade effluent quality, during non-critical water quality periods and carry this maintenance out in a manner approved by Ecology.

A. Operations and Maintenance Manual

The Permittee must:

1. Prepare an Operations and Maintenance (O&M) Manual in accordance with 173-240-150 WAC and submit it to Ecology for approval by **July 31, 2009**.

2. Review the O&M Manual at least annually and confirm this review by letter to Ecology by **July 31,** of each year.

3. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual.

4. Keep the approved O&M Manual at the permitted facility.

5. Follow the instructions and procedures of this manual.

In addition to the requirements of WAC 173-240-150(1) and (2), the O&M manual must include:

1. Emergency procedures for plant shutdown and cleanup in event of wastewater system upset or failure.

2. Wastewater system maintenance procedures that contribute to the generation of process wastewater.

3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)

4. Wastewater sampling protocols and procedures for compliance with the sampling and reporting requirements in the wastewater discharge permit.

5. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit

6. Treatment plant process control monitoring schedule.

7. Specify other items on case-by-case basis such as O&M for any pump stations, lagoon liners, etc.

B. Bypass Procedures

This permit prohibits a bypass which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for Essential Maintenance without the Potential to Cause Violation of Permit Limits or Conditions.

   Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten days before the date of the bypass.

2. Bypass Which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit.

This bypass is permitted only if:

Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

No feasible alternatives to the bypass exist, such as:

- The use of auxiliary treatment facilities.
- Retention of untreated wastes.
- Stopping production.
- Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
- Transport of untreated wastes to another treatment facility or preventative maintenance), or transport of untreated wastes to another treatment facility.

Ecology is properly notified of the bypass as required in condition S3.E of this permit.

3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

a. The Permittee must notify Ecology at least 30 days before the planned date of bypass. The notice must contain:

- A description of the bypass and its cause.
- An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
- A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
- The minimum and maximum duration of bypass under each alternative.
- A recommendation as to the preferred alternative for conducting the bypass.
- The projected date of bypass initiation.
- A statement of compliance with SEPA.

- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.
- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.
- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.
- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

C. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

S5. APPLICATION FOR PERMIT RENEWAL

The Permittee must submit an application for renewal of this permit by **January 1, 2013**

S6. SOLID WASTES

A. Solid Waste Handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

The plan must be submitted to Ecology for approval (RCW 90.48.080). A focus sheet on preparing a solid waste control plan can be found in http://www.ecy.wa.gov/pubs/0710024.pdf. In addition, the solid waste control plan should specifically address the handling and disposal of the solid/sludge generated from the groundwater/stormwater treatment system. The Solid Waste Handling plan should be submitted by **July 31, 2009**.

B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

S7. ENGINEERING DOCUMENTS

The Permittee must prepare and submit two copies of as-built plans and specifications to Ecology in accordance with chapter 173-240 WAC by **July 31, 2009**.

S8. SPILL PLAN

The Permittee must:

1. Submit to Ecology a spill control plan for the prevention, containment, and control of spills or unplanned releases of pollutants by **July 31, 2009**.

2. Review the plan at least annually and update the Spill Plan as needed.

3. Send changes to the plan to Ecology.

4. Follow the plan and any supplements throughout the term of the permit.

The spill control plan must include the following:

1. A list of all oil and petroleum products and other materials used and/or stored on site, which when spilled, or otherwise released into the environment, designate as Dangerous (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on site which may become pollutants or cause pollution upon reaching state's waters.

2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials.

3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill.

4. A description of operator training to implement the plan. The Permittee may submit plans and manuals required by 40 CFR Part 112, contingency plans required by Chapter

173-303 WAC, or other plans required by other agencies which meet the intent of this section.

S9. BEST MANAGEMENT PRACTICES/ STORMWATER POLLUTION PREVENTION PLAN

The Permittee must include Permit Condition S9. as part of the bid package for hiring a contractor to conduct construction at the site.

The Permittee has submitted a pollution prevention plan to Ecology. Ecology has reviewed and approved this plan. The pollution prevention plan has specifically identified the construction methods the Permittee and its contractor will use to prevent discharge of untreated stormwater from the site. The plan has also addressed means such as silt fencing, plugging the existing catch basins and berms to prevent discharge of untreated stormwater into Budd Inlet.

Stormwater must either infiltrate on site, or the Permittee must treat it with the on-site treatment system prior to discharge into Budd Inlet.

The Best Management Practices/Stormwater Pollution Prevention Plan has addressed the following:

BMPs for Storage of the Contaminated Soil

The Permittee must properly store contaminated soil at the site during the construction project. The Permittee must not hose down the contained stockpile area to a storm drain or a conveyance to a storm drain or directly to the receiving water.

The pollution prevention plan must identify site specific Best Management Practices (BMPs) for the storage of contaminated soils site during construction to prevent discharge of untreated stormwater from the site. The following is a list of BMPs that the Permittee must evaluate and choose from to contain and address the run-on and run-off to and from the contaminated stock pile.

- **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. (BMPs C123: Plastic Covering and C208: Triangular Silt Dike).

- **Applicable Structural Source Control BMP Options:** Choose, by what is appropriate to the site, one or more of the source control BMP options listed below for stockpiles greater than 5 cubic yards.

    - Store in a building or paved and bermed covered area.

    - Place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent) over the material.

    - 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 contaminated soil stock pile 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.

S10. ACUTE TOXICITY

A. Effluent Characterization

1. As necessary Conduct acute toxicity testing on the final effluent twice each year for one year. Characterization should be conducted by **August 31, 2009 and February 28, 2010.**

2. Submit a written reports to Ecology **October 31, 2009 and April 30, 2010.**

3. Use a dilution series consisting of a minimum of five concentrations and a control.

4. Conduct the following two acute toxicity tests on each sample:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia,*	EPA-821-R-02-012

Acute Toxicity Tests	Species	Method
	Daphnia pulex, or *Daphnia magna*	

The Permittee has an effluent limit for acute toxicity if after one year of effluent characterization:

1. The median survival of any species in 100 percent effluent is below 80 percent.

2. Any one test of any species exhibits less than 65 percent survival in 100 percent effluent.

If the Permittee has an effluent limit for acute toxicity, the Permittee must immediately follow the instructions in Subsections B, C, D, E, and G. If the Permittee has no effluent limit for acute toxicity, then the Permittee must follow the instructions in Subsections F and G.

B. Effluent Limit for Acute Toxicity

The effluent limit for acute toxicity is:

No acute toxicity detected in a test concentration representing the acute critical effluent concentration (ACEC).

The ACEC equals 100 percent effluent.

C. Compliance With the Effluent Limit for Acute Toxicity

Compliance with the effluent limit for acute toxicity means the results of the testing specified in subsection D. show no statistically significant difference in survival between the control and the ACEC.

If the test results show a statistically significant difference in survival between the control and the ACEC, the test does not comply with the effluent limit for acute toxicity. The Permittee must then immediately conduct the additional testing described in subsection E. The Permittee will comply with the requirements of this section by meeting the requirements of subsection E.

The Permittee must determine the statistical significance by conducting a hypothesis test at the 0.05 level of significance (Appendix H, EPA/600/4-89/001). If the difference in survival between the control and the ACEC is less than 10 percent, the Permittee must conduct the hypothesis test at the 0.01 level of significance.

D. Compliance Testing for Acute Toxicity

The Permittee must:

1. Perform the acute toxicity tests with 100 percent effluent, the ACEC, and a control, or with a full dilution series.

2. Submit a written report of all test results to Ecology within 60 days after each sample date.

The Permittee must perform compliance tests twice each year, using each of the species and protocols listed below on a rotating basis:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*	EPA-821-R-02-012

E. Response to Noncompliance with the Effluent Limit for Acute Toxicity

If a toxicity test conducted under subsection D. determines a statistically significant difference in response between the ACEC and the control, using the statistical test described in subsection C., the Permittee must begin additional testing within one week from the time of receiving the test results. The Permittee must:

1. Conduct one additional test each week for four consecutive weeks, using the same test and species as the failed compliance test.

2. Test at least five effluent concentrations and a control to determine appropriate point estimates. One of these effluent concentrations must equal the ACEC. The results of the test at the ACEC will determine compliance with the effluent limit for acute toxicity as described in Subsection C.

3. Return to the original monitoring frequency in Subsection D after completion of the additional compliance monitoring.

Anomalous test results: If a toxicity test conducted under subsection D. indicates noncompliance with the acute toxicity limit and the Permittee believes that the test result is anomalous, the Permittee may notify Ecology that the compliance test result may be anomalous. The Permittee may take one additional sample for toxicity testing and wait for notification from Ecology before completing the additional testing. The Permittee must submit the notification with the report of the compliance test result and identify the reason for considering the compliance test result to be anomalous.

If Ecology determines that the test result was not anomalous, the Permittee must complete all of the additional monitoring required in this subsection. Or,

If the one additional sample fails to comply with the effluent limit for acute toxicity, then the Permittee must complete all of the additional monitoring required in this subsection. Or,

If Ecology determines that the test result was anomalous, the one additional test result will replace the anomalous test result.

If all of the additional testing complies with the permit limit, the Permittee must submit a report to Ecology on possible causes and preventive measures for the transient toxicity event, which triggered the additional compliance monitoring. This report must include a search of all pertinent and recent facility records, including:

1. Operating records
2. Monitoring results
3. Inspection records
4. Spill reports
5. Weather records
6. Production records
7. Raw material purchases
8. Pretreatment records, etc.

If the additional testing shows violation of the acute toxicity limit, the Permittee must submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to Ecology within 60 days after the sample date (WAC 173-205-100(2)).

F. Testing When There Is No Permit Limit for Acute Toxicity

The Permittee must:

1. Conduct acute toxicity testing on final effluent once in the last summer and once in the last winter prior to submission of the application for permit renewal.

2. Submit the results to Ecology with the permit renewal application.

3. Conduct acute toxicity testing on a series of at least five concentrations of effluent, including 100 percent effluent, and a control.

4. Use each of the following species and protocols for each acute toxicity test:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*	EPA-821-R-02-012

G. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Ecology's Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.

3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Ecology's Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and Ecology of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.

5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection A. or pristine natural water of sufficient quality for good control performance.

6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the acute critical effluent concentration (ACEC). The ACEC equals 100 percent effluent.

8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing must comply with the acute statistical power standard of 29 percent as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

9. Reports of individual characterization or compliance test results must be submitted to Ecology within 60 days after each sample date.

10. The Acute Toxicity Summary Report must be submitted to Ecology by 120 days after the last date

S11. CHRONIC TOXICITY

A. Effluent Characterization

The Permittee must:

1. Conduct chronic toxicity testing on the final effluent twice each year for one year. Characterization should be conducted by **August 31, 2009 and February 28, 2010.**

2. Submit written reports to Ecology by **October 31, 2009 and April 30, 2010.** .

3. Conduct chronic toxicity testing during effluent characterization on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 100 percent effluent.

The Permittee must conduct the following two chronic toxicity tests on each sample:

Freshwater Chronic Test	Species	Method
Fathead minnow survival and growth	*Pimephales promelas*	EPA-821-R-02-013
Water flea survival and reproduction	*Ceriodaphnia dubia*	EPA-821-R-02-013

The Permittee has an effluent limit for chronic toxicity if after one year of effluent characterization: any test shows a significant difference between the control and the ACEC at the 0.05 level of significance using hypothesis testing (Appendix H, EPA/600/4-89/001).

If the Permittee has an effluent limit for chronic toxicity, the Permittee must immediately follow the instructions in subsections B, C, D, E and G. If the Permittee has no effluent limit for chronic toxicity, then the Permittee must follow the instructions in subsections F and G.

B. Effluent Limit for Chronic Toxicity

The effluent limit for chronic toxicity is:

No toxicity detected in a test concentration representing the chronic critical effluent concentration (CCEC).

The CCEC equals 100 percent effluent.

C. Compliance With the Effluent Limit for Chronic Toxicity

Compliance with the effluent limit for chronic toxicity means the results of the testing specified in subsection D. show no statistically significant difference in response between the control and the CCEC.

If the test results show a statistically significant difference in response between the control and the CCEC, the test does not comply with the effluent limit for chronic toxicity. The Permittee must then immediately conduct the additional testing described in subsection E. The Permittee will comply with the requirements of this section by meeting the requirements of subsection E.

The Permittee must determine the statistical significance by conducting a hypothesis test at the 0.05 level of significance (Appendix H, EPA/600/4-89/001). If the difference in response between the control and the CCEC is less than 20 percent, the Permittee must conduct the hypothesis test at the 0.01 level of significance.

Ecology will re-evaluate the need for the chronic toxicity limit in future permits. Therefore, the Permittee must also conduct this same hypothesis test (Appendix H, EPA/600/4-89/001) to determine whether a statistically significant difference in response exists between the acute critical effluent concentration (ACEC) and the control.

D. Compliance Testing for Chronic Toxicity

The Permittee must:

- Perform the chronic toxicity tests using the CCEC, the ACEC, and a control, or with a full dilution series.

- Submit a written report of all test results to Ecology within 60 days after each sample date. This written report must include the results of hypothesis testing conducted as described in subsection C. using both the ACEC and CCEC versus the control.

- Perform compliance tests biannually using the following species on a rotating basis and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method
Fathead minnow	*Pimephales promelas*	EPA-821-R-02-013
Water flea	*Ceriodaphnia dubia*	EPA-821-R-02-013

E. Response to Noncompliance With the Effluent Limit for Chronic Toxicity

If a toxicity test conducted under subsection D. determines a statistically significant difference in response between the CCEC and the control using the statistical test described in subsection C., the Permittee must begin additional testing within one week from the time of receiving the test results. The Permittee must:

1. Conduct additional testing each month for three consecutive months using the same test and species as the failed compliance test.

2. Use a series of at least five effluent concentrations and a control to determine appropriate point estimates. One of these effluent concentrations must equal the CCEC. The results of the test at the CCEC will determine compliance with the effluent limit for acute toxicity as described in subsection B.

3. Return to the original monitoring frequency in subsection C. after completion of the additional compliance monitoring.

Anomalous test results: If a toxicity test conducted under subsection D. indicates noncompliance with the acute toxicity limit and the Permittee believes that the test result is anomalous, the Permittee may notify Ecology that the compliance test result may be anomalous. The Permittee may take one additional sample for toxicity testing and wait for notification from Ecology before completing the additional testing. The Permittee must submit the notification with the report of the compliance test result and identify the reason for considering the compliance test result to be anomalous.

If Ecology determines that the test result was not anomalous, the Permittee must complete all of the additional monitoring required in this subsection. Or,

If the one additional sample fails to comply with the effluent limit for acute toxicity, then the Permittee must complete all of the additional monitoring required in this subsection. Or,

If Ecology determines that the test result was anomalous, the one additional test result will replace the anomalous test result.

If all of the additional testing complies with the permit limit, the Permittee must submit a report to Ecology on possible causes and preventive measures for the transient toxicity event, which triggered the additional compliance monitoring. This report must include a search of all pertinent and recent facility records, including:

1. Operating records
2. Monitoring results
3. Inspection records
4. Spill reports
5. Weather records
6. Production records
7. Raw material purchases
8. Pretreatment records, etc.

If the additional testing shows violation of the acute toxicity limit, the Permittee must submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to Ecology within 60 days after the sample date (WAC 173-205-100(2)).

F. Testing When There Is No Permit Limit for Chronic Toxicity

The Permittee must:

1. Conduct chronic toxicity testing on final effluent once in the last summer and once in the last winter prior to submission of the application for permit renewal.

2. Submit the results to Ecology with the permit renewal application.

3. Conduct chronic toxicity testing on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 100 percent effluent.

4. Compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.

5. Perform chronic toxicity tests with all of the following species and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method
Fathead minnow	*Pimephales promelas*	EPA-821-R-02-013
Water flea	*Ceriodaphnia dubia*	EPA-821-R-02-013

G. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Ecology's Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.

3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Ecology's Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and the Ecology's Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.

5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection C. or pristine natural water of sufficient quality for good control performance.

6. The Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the CCEC and the ACEC. The CCEC and the ACEC may either substitute for the effluent concentrations that are closest to them in the dilution series or be extra effluent concentrations. The CCEC equals 100 percent effluent. The ACEC equals 100 percent effluent.

8. All whole effluent toxicity tests that involve hypothesis testing must comply with the chronic statistical power standard of 39 percent as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

9. Reports of individual characterization or compliance test results must be submitted to Ecology within 60 days after each sample date.

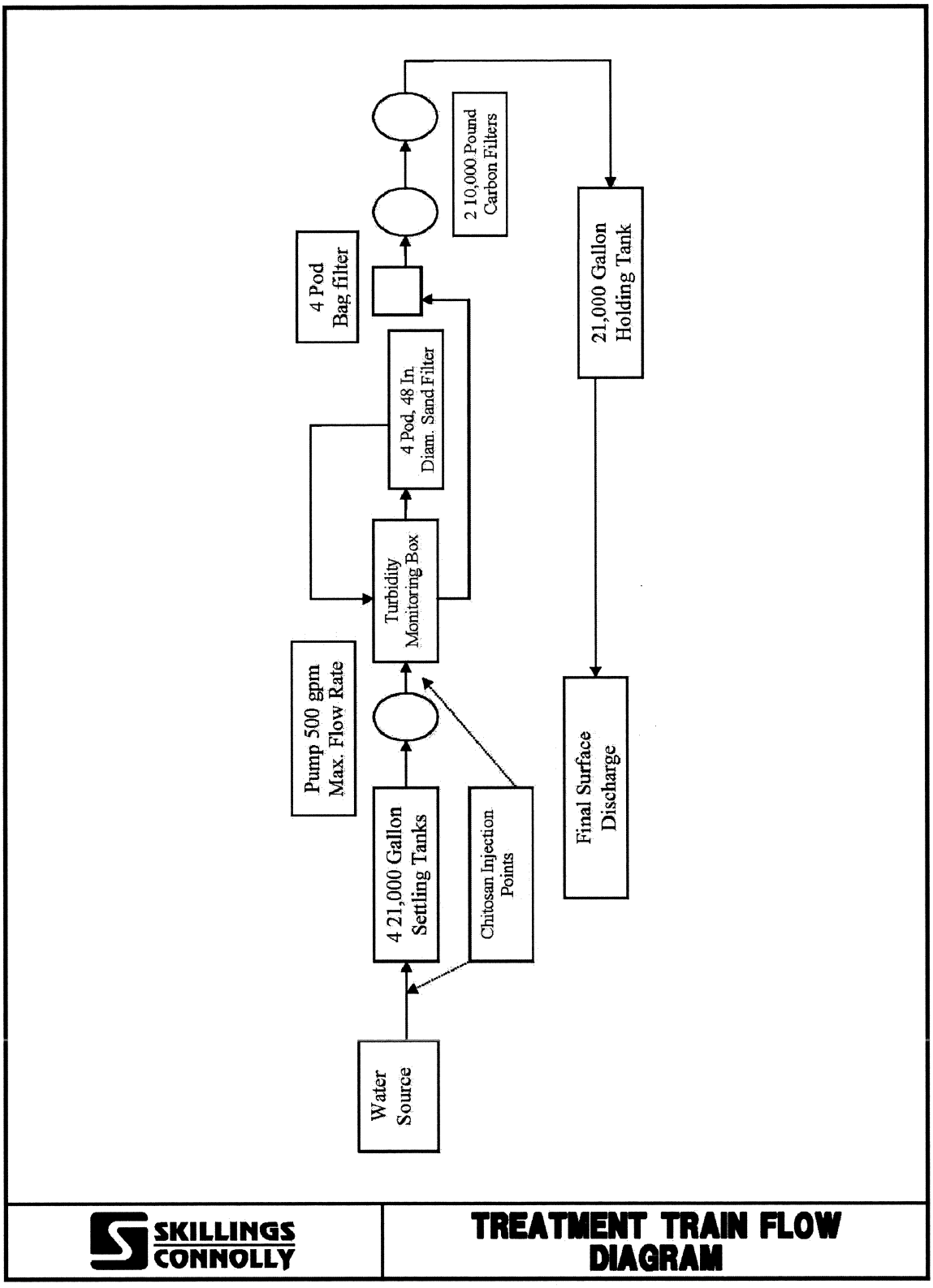
10. The Chronic Toxicity Summary Report must be submitted to Ecology by 120 days after the last test.

S12. BUDD INLET TURBIDITY STUDY WORK PLAN

The Permittee must collect receiving water (Budd Inlet) turbidity data to provide information to determine if the effluent will impact the receiving water. This information will also assist Ecology to determine if the discharge causes increase of 0.5 NTU or greater in the receiving stream (Tier II (WAC 173-201A-320) analysis, WAC 173-201A-320 (3)(e)).

The Permittee must:

1. Submit a work plan that outlines how it will sample receiving water background turbidity measurements plan by **August 31, 2009.**
2. Conduct all sampling and analysis in accordance with the guidelines given in "Guidelines and Specifications for preparing Quality Assurance Project Plans, Ecology Publication 91-16."
3. Conduct sampling for 12 consecutive months after the discharge starts.
4. Submit the measurement results by **October 1, 2010** to Ecology.


Water Source
4 21,000 Gallon Settling Tanks
Chitosan Injection Points
Pump 500 gpm Max. Flow Rate
Turbidity Monitoring Box
4 Pod, 48 In. Diam. Sand Filter
4 Pod Bag filter
2 10,000 Pound Carbon Filters
21,000 Gallon Holding Tank
Final Surface Discharge
SKILLINGS CONNOLLY
TREATMENT TRAIN FLOW DIAGRAM

APPENDIX H

Port of Ridgefield Site Special Conditions

SPECIAL CONDITIONS

S1. DISCHARGE LIMITS

A. Wastewater Discharges

All discharges and activities authorized by this permit must be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of that identified and authorized by this permit violates the terms and conditions of this permit.

Beginning on the effective date of this permit and lasting through the expiration date, the Permittee is authorized to discharge **treated groundwater** at the permitted location subject to complying with the following limits:

EFFLUENT LIMITS: OUTFALL # (L-5)		
Parameter	**Average Monthly [a]**	**Maximum Daily [b]**
Flow	-	Report, mgd
Pentachlorophenol	-	13 µg/L[d]
Total Suspended Solids	5 mg/L	11.0 mg/L
Benzo (a) Pyrene	-	Report µg/L[d]
Temperature	-	18 °C
Total Arsenic	11 µg/L	33 µg/L
Total Copper	-	Report µg/L[d]
Total Residual Chlorine	-	Report µg/L[d]
Total Manganese	1,660 µg/L	4,800 µg/L
pH [c]	Daily minimum is equal to or greater than 6.5 and the daily maximum is less than or equal to 8.5	
Acute and Chronic WET Toxicity Characterization	Meet the Acute and Chronic WET Toxicity requirements in Sections S11. And S12.	

[a] Average monthly effluent limit means the highest allowable average of daily discharges over a calendar month. To calculate the discharge value to compare to the limit, you add the value of each daily discharge measured during a calendar month and divide this sum by the total number of daily discharges measured.

[b] Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.

[c] Indicates the range of permitted values. The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.
[d] Meet Condition S13.

B. Stormwater Discharges

All discharges and activities authorized by this permit must be consistent with the terms and conditions of this permit.

The discharge of any of the following pollutants more frequently than, or at a level in excess of that identified and authorized by this permit violates the terms and conditions of this permit.

The Permittee is authorized to discharge **stormwater** at the permitted locations subject to complying with the following reporting requirements:

FINAL EFFLUENT LIMITS: OUTFALLS 001, 002, 003, and 004	
Parameter	**Daily Maximum [a]**
Pentachlorophenol	Report, µg/L
Benzo (a) pyrene	Report, µg/L
Total Zinc	Report, µg/L
Total Suspended Solids	Report, mg/L
pH [b]	Report, su
[a] Maximum daily effluent limit means the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day. For pollutants with limits expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For other units of measurement, the daily discharge is the average measurement of the pollutant over the day. This does not apply to pH.	
[b] The Permittee must report the instantaneous maximum and minimum pH monthly. Do not average pH values.	

S2. MONITORING REQUIREMENTS

A. Monitoring Schedule for Treated Groundwater

The Permittee must monitor in accordance with the following schedule and must use the laboratory method detection level (DL), and quantitation level (QL) specified in Appendix A.

Parameter	**Units**	**Minimum Sampling Frequency**	**Sample Type**
(1) Treated Groundwater Effluent			
Flow	gpd	Batch	Recording
Pentachlorophenol	µg/L	once/month	24-hour composite

Parameter	Units	Minimum Sampling Frequency	Sample Type
Total Suspended Solids	mg/L	once/month	24-hour composite
Benzo (a) Pyrene	µg/L	once/month	24-hour composite
Total Arsenic	µg/L	once/month	24-hour composite
Total Copper	µg/L	once/month	24-hour composite
Total Manganese	µg/L	once/month	24-hour composite
Total Residual Chlorine	µg/L	once/month	24-hour composite
Temperature	Degrees C	Daily	Grab
Temperature grab sampling must occur when the effluent is at or near its daily maximum temperature which is usually in the late afternoon. If temperature is measured continuously, the Permittee must determine and report a daily maximum from half-hour measurements in a 24-hour period. To determine the daily average, use the temperature on the half-hour from the chart for the 24-hour period and calculate the average of the values. Continuous monitoring instruments must achieve an accuracy of 0.2 degrees C and the Permittee must verify accuracy annually.			
pH	Standard Units	twice/month	Grab
(3) Whole Effluent Toxicity Testing – Final Treated Groundwater Effluent			
Acute Toxicity Testing	-	As noted in Condition S11	24-hour composite
Chronic Toxicity Testing	-	As noted in Condition S12	24-hour composite

1. Continuous means uninterrupted except for brief lengths of time for calibration, for power failure, or for unanticipated equipment repair or maintenance. The Permittee must sample daily when continuous monitoring is not possible.

2. 24-hour composite means a series of individual samples collected over a 24-hour period into a single container, and analyzed as one sample.

3. Grab means an individual sample collected over a 15 minute, or less, period.

4. Final Effluent means wastewater which is exiting, or has exited, the last treatment process or operation.

5. See Appendix A for the required detection (DL) or quantitation (QL) levels.

Report single analytical values below detection as "less than (detection level)" where (detection level) is the numeric value specified in attachment A.

Report single analytical values between the agency-required detection and quantitation levels with qualifier code of j following the value.

To calculate the average value (monthly average):

- Use the reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.
- For values reported below detection, use one-half the detection value if the lab detected the parameter in another sample for the reporting period.

For values reported below detection, use zero if the lab did not detect the parameter in another sample for the reporting period. If the Permittee is unable to obtain the required DL and QL in its effluent due to

Parameter	Units	Minimum Sampling Frequency	Sample Type
matrix effects, the Permittee must submit a matrix specific MDL and a QL to the Department of Ecology (Ecology) with appropriate laboratory documentation.			

B. Monitoring Schedule for Stormwater Outfalls 001, 002, 003, and 004

The Permittee must monitor in accordance with the following schedule and must use the laboratory method detection level (DL), and quantitation level (QL) specified in Appendix A.

Parameter	Units	Minimum Sampling Frequency	Sample Type
(1) Stormwater Effluent			
Pentachlorophenol	µg/L	Monthly	Grab
Benzo (a) pyrene	µg/L	Monthly	Grab
Total Zinc	µg/L	Monthly	Grab
Total Suspended Solids	mg/L	Monthly	Grab
pH	Standard Units	Monthly	Grab

1. Permittee shall collect samples within the first 12 hours of stormwater discharge events. Permittee need not sample outside the regular business hours, during unsafe conditions, or during monitoring periods where there is no discharge, but shall submit a discharge monitoring report each reporting period. Permittee provide an explanation of why it could not collect a sample within the first 30 minutes of a stormwater discharge event, if it was not possible. **The grab sample from Outfall 003 must be representative of only stormwater discharge and should not include the treated groundwater from L-5.**

2. Grab means an individual sample collected over a 15 minute, or less, period.

3. See Appendix A for the required detection (DL) or quantitation (QL) levels.

Report single analytical values below detection as "less than (detection level)" where (detection level) is the numeric value specified in attachment A.

Report single analytical values between the agency-required detection and quantitation levels with qualifier code of j following the value.

To calculate the average value (monthly average):

- Use the reported numeric value for all parameters measured between the agency-required detection value and the agency-required quantitation value.
- For values reported below detection, use one-half the detection value if the lab detected the parameter in another sample for the reporting period.

For values reported below detection, use zero if the lab did not detect the parameter in another sample for the reporting period. If the Permittee is unable to obtain the required DL and QL in its effluent due to matrix effects, the Permittee must submit a matrix specific MDL and a QL to Ecology with appropriate laboratory documentation.

C. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit must represent the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

Sampling and analytical methods used to meet the monitoring requirements specified in this permit must conform to the latest revision of the *Guidelines Establishing Test Procedures for the Analysis of Pollutants* contained in 40 Code of Federal Regulations (CFR) Part 136.

D. Flow Measurement, Field Measurement and Continuous Monitoring Devices

The Permittee must:

1. Select and use appropriate flow measurement, field measurement, and continuous monitoring devices and methods consistent with accepted scientific practices.

2. Install, calibrate, and maintain these devices to ensure the accuracy of the measurements is consistent with the accepted industry standard and the manufacturer's recommendation for that type of device.

3. If the Permittee uses micro-recording temperature devices known as thermistors it must calibrate the devices using protocols from Ecology's Quality Assurance Project Plan Development Tool (*Continuous Temperature Sampling Protocols for the Environmental Monitoring and Trends*). This document is available online at http://www.ecy.wa.gov/programs/eap/qa/docs/QAPPtool/Mod6%20Ecology%20SOPs/Protocols/ContinuousTemperatureSampling.pdf . Calibration as specified in this document is not required if the Permittee uses recording devices which are certified by the manufacturer.

4. Use field measurement devices as directed by the manufacturer and do not use reagents beyond their expiration dates.

5. Calibrate these devices at the frequency recommended by the manufacturer.

6. Calibrate flow monitoring devices at a minimum frequency of at least one calibration per year.

7. Maintain calibration records for at least three years.

E. Laboratory Accreditation

The Permittee must ensure that all monitoring data required by Ecology is prepared by a laboratory registered or accredited under the provisions of chapter 173-50 Washington Administrative Code (WAC), *Accreditation of Environmental Laboratories.* Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement.

F. Request for Reduction in Monitoring

The Permittee may request a reduction of the sampling frequency after 12 months of monitoring. Ecology will review each request and at its discretion grant the request through a permit modification or when it reissues the permit.

The Permittee must:

1. Provide a written request.

2. Clearly state the parameters for which it is requesting reduced monitoring.

3. Clearly state the justification for the reduction.

S3. REPORTING AND RECORDKEEPING REQUIREMENTS

The Permittee must monitor and report in accordance with the following conditions. The falsification of information submitted to Ecology is a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on the effective date of the permit. The Permittee must:

1. Submit monitoring results each month.

2. Summarize, report, and submit monitoring data obtained during each monitoring period on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by Ecology.

3. Submit DMR forms monthly whether or not the facility was discharging. If the facility did not discharge during a given monitoring period, submit the form as required with the words "NO DISCHARGE" entered in place of the monitoring results.

4. Ensure that DMR forms are postmarked or received by Ecology no later than the 25th day of the month following the completed monitoring period, unless otherwise specified in this permit.

5. Send report(s) to Ecology at:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

B. Records Retention

The Permittee must retain records of all monitoring information for a minimum of three years. Such information must include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. The Permittee must extend this period of retention during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by Ecology.

C. Recording of Results

For each measurement or sample taken, the Permittee must record the following information:

1. The date, exact place, method, and time of sampling or measurement.

2. The individual who performed the sampling or measurement.

3. The dates the analyses were performed.

4. The individual who performed the analyses.

5. The analytical techniques or methods used.

6. The results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by Condition S2. of this permit, then the Permittee must include the results of such monitoring in the calculation and reporting of the data submitted in the Permittee's DMR.

E. Reporting Permit Violations

The Permittee must take the following actions when it violates or is unable to comply with any permit condition:

a. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the noncompliance and correct the problem.

b. If applicable, immediately repeat sampling and analysis. Submit the results of any repeat sampling to Ecology within 30 days of sampling.

1. Immediate Reporting

The Permittee must report any failure of the disinfection system immediately to the Department of Ecology's Regional Office 24-hour number listed below:

Southwest Regional Office 360-407-6300

The Permittee must report any failure of the disinfection system, any collection system overflows, or any plant bypass discharging to a waterbody used as a source of drinking water immediately to the Department of Ecology and the Department of Health, Drinking Water Program at the numbers listed below:

Southwest Regional Office	360-407-6300
Department of Health Drinking Water Program	360-521-0323 (business hours) 360-481-4901 (after business hours)

2. Twenty-four-hour Reporting

The Permittee must report the following occurrences of noncompliance by telephone, to Ecology at 360-407-6300, within 24-hours from the time the Permittee becomes aware of any of the following circumstances:

a. Any noncompliance that may endanger health or the environment, unless previously reported under subpart 1, above.

b. Any unanticipated **bypass** that exceeds any effluent limitation in the permit (See Part S4.B., "Bypass Procedures").

c. Any **upset** that exceeds any effluent limitation in the permit (See G.15, "Upset").

d. Any violation of a maximum daily or instantaneous maximum discharge limitation for any of the pollutants in Section S1.A of this permit.

e. Any overflow prior to the treatment works, whether or not such overflow endangers health or the environment or exceeds any effluent limitation in the permit.

3. Report within Five Days

The Permittee must also provide a written submission within five days of the time that the Permittee becomes aware of any event required to be reported under subparts 1 or 2, above. The written submission must contain:

a. A description of the noncompliance and its cause.

b. The period of noncompliance, including exact dates and times.

c. The estimated time noncompliance is expected to continue if it has not been corrected.

d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

e. If the noncompliance involves an overflow prior to the treatment works, an estimate of the quantity (in gallons) of untreated overflow.

4. Waiver of Written Reports

Ecology may waive the written report required in subpart 3, above, on a case-by-case basis upon request if a timely oral report has been received.

5. All Other Permit Violation Reporting

The Permittee must report all permit violations, which do not require immediate or within 24-hours reporting, when it submits monitoring reports for S3.A ("Reporting"). The reports must contain the information listed in paragraph E.3, above. Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

6. Report Submittal

The Permittee must submit reports to the address listed in S3.

F. Other Reporting

The Permittee must report a spill of oil or hazardous materials in accordance with the requirements of Revised Code of Washington (RCW) 90.56.280 and chapter 173-303-145. You can obtain further instructions at the following website: http://www.ecy.wa.gov/programs/spills/other/reportaspill.htm .

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to Ecology, it must submit such facts or information promptly.

The Permittee must submit a new application or supplement at least 180 days prior to commencement of discharges, resulting from the activities listed below, which may result in permit violations. These activities include: any facility expansions, production increases, or other planned changes, such as process modifications, in the permitted facility.

The Permittee must keep a copy of this permit at the facility and make it available upon request to Ecology inspectors.

S4. OPERATION AND MAINTENANCE

The Permittee must, at all times, properly operate and maintain all facilities or systems of treatment and control (and related appurtenances) which are installed to achieve compliance with

the terms and conditions of this permit. Proper operation and maintenance includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

The Permittee must schedule any facility maintenance, which might require interruption of wastewater treatment and degrade effluent quality, during non-critical water quality periods and carry this maintenance out in a manner approved by Ecology.

A. Operations and Maintenance Manual

The Permittee must:

1. Prepare an Operations and Maintenance (O&M) Manual in accordance with 173-240-150 WAC and submit it to Ecology for approval by **March 1, 2011.**

2. Review the O&M Manual at least annually and confirm this review by letter to Ecology.

3. Submit to Ecology for review and approval substantial changes or updates to the O&M Manual whenever it incorporates them into the manual.

4. Keep the approved O&M Manual at the permitted facility.

5. Follow the instructions and procedures of this manual.

In addition to the requirements of WAC 173-240-150(1) and (2), the O&M manual must include:

1. Emergency procedures for plant shutdown and cleanup in event of wastewater system upset or failure.

2. Wastewater system maintenance procedures that contribute to the generation of process wastewater.

3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine.)

4. Wastewater sampling protocols and procedures for compliance with the sampling and reporting requirements in the wastewater discharge permit.

5. Minimum staffing adequate to operate and maintain the treatment processes and carry out compliance monitoring required by the permit

6. Treatment plant process control monitoring schedule.

7. Specify other items on case-by-case basis such as O&M for any pump stations, lagoon liners, etc.

The Permittee must summarize the following information in the initial chapter of the O&M Manual entitled the "Treatment System Operating Plan." For the purposes of this NPDES permit, a Treatment System Operating Plan (TSOP) is a concise summary of specifically defined elements of the O&M Manual. The TSOP must not conflict with the O&M Manual and must include the following information:

1. A baseline operating condition, which describes the operating parameters and procedures, used to meet the effluent limits of S1. at the production levels used in developing these limits.

2. In the event of production rates, which are below the baseline levels used to establish these limits, the plan must describe the operating procedures and conditions needed to maintain design treatment efficiency. The monitoring and reporting must be described in the plan.

3. In the event of an upset, due to plant maintenance activities, severe stormwater events, start ups or shut downs, or other causes, the plan must describe the operating procedures and conditions employed to mitigate the upset. The monitoring and reporting must be described in the plan.

4. A description of any regularly scheduled maintenance or repair activities at the facility which would affect the volume or character of the wastes discharged to the wastewater treatment system and a plan for monitoring and treating/controlling the discharge of maintenance-related materials (such as cleaners, degreasers, solvents, etc.).

The Permittee must submit an updated Treatment System Operating Plan to Ecology with the application for renewal. This plan must be updated and submitted, as necessary, to include requirements for any major modifications of the treatment system.

B. Bypass Procedures

This permit prohibits a bypass which is the intentional diversion of waste streams from any portion of a treatment facility. Ecology may take enforcement action against a Permittee for a bypass unless one of the following circumstances (1, 2, or 3) applies.

1. Bypass for Essential Maintenance without the Potential to Cause Violation of Permit Limits or Conditions.

   Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limits or other conditions of this permit, or adversely impact public health as determined by Ecology prior to the bypass. The Permittee must submit prior notice, if possible, at least ten days before the date of the bypass.

2. Bypass which is Unavoidable, Unanticipated, and Results in Noncompliance of this Permit.

   This bypass is permitted only if:

Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

No feasible alternatives to the bypass exist, such as:

- The use of auxiliary treatment facilities.
- Retention of untreated wastes.
- Stopping production.
- Maintenance during normal periods of equipment downtime, but not if the Permittee should have installed adequate backup equipment in the exercise of reasonable engineering judgment to prevent a bypass.
- Transport of untreated wastes to another treatment facility or preventative maintenance), or transport of untreated wastes to another treatment facility.

Ecology is properly notified of the bypass as required in condition S3.E of this permit.

3. If bypass is anticipated and has the potential to result in noncompliance of this permit.

   a. The Permittee must notify Ecology at least 30 days before the planned date of bypass. The notice must contain:

      - A description of the bypass and its cause.
      - An analysis of all known alternatives which would eliminate, reduce, or mitigate the need for bypassing.
      - A cost-effectiveness analysis of alternatives including comparative resource damage assessment.
      - The minimum and maximum duration of bypass under each alternative.
      - A recommendation as to the preferred alternative for conducting the bypass.
      - The projected date of bypass initiation.
      - A statement of compliance with SEPA.

- A request for modification of water quality standards as provided for in WAC 173-201A-410, if an exceedance of any water quality standard is anticipated.

- Details of the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass.

b. For probable construction bypasses, the Permittee must notify Ecology of the need to bypass as early in the planning process as possible. The Permittee must consider the analysis required above during preparation of the engineering report or facilities plan and plans and specifications and must include these to the extent practical. In cases where the Permittee determines the probable need to bypass early, the Permittee must continue to analyze conditions up to and including the construction period in an effort to minimize or eliminate the bypass.

c. Ecology will consider the following prior to issuing an administrative order for this type of bypass:

- If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of this permit.

- If feasible alternatives to bypass exist, such as the use of auxiliary treatment facilities, retention of untreated wastes, stopping production, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.

- If the Permittee planned and scheduled the bypass to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, Ecology will approve or deny the request. Ecology will give the public an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Ecology will approve a request to bypass by issuing an administrative order under RCW 90.48.120.

C. Duty to Mitigate

The Permittee is required to take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

S5. APPLICATION FOR PERMIT RENEWAL

The Permittee must submit an application for renewal of this permit by **December 1, 2014.**

S6. SOLID WASTES

A. Solid Waste Handling

The Permittee must handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground or surface water.

B. Leachate

The Permittee must not allow leachate from its solid waste material to enter state waters without providing all known, available and reasonable methods of treatment, nor allow such leachate to cause violations of the State Surface Water Quality Standards, Chapter 173-201A WAC, or the State Ground Water Quality Standards, Chapter 173-200 WAC. The Permittee must apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

C. Solid Waste Control Plan

The Permittee must:

1. Submit a solid waste control plan to Ecology by **November 1, 2010.**

2. Submit a revised/final solid waste control plan to Ecology by **February 28, 2011.**

The solid waste control plan must:

1. Follow Ecology's guidance for preparing a solid waste control plan (www.ecy.wa.gov/biblio/0710024.html) and address all solid wastes generated by the Permittee.

2. Include at a minimum a description, source, generation rate, and disposal methods of these solid wastes.

3. Not conflict with local or state solid waste regulations.

S7. NON-ROUTINE AND UNANTICIPATED DISCHARGES

A. Beginning on the effective date of this permit, the Permittee is authorized to discharge non-routine wastewater on a case-by-case basis if approved by Ecology. Prior to any such discharge, the Permittee must contact Ecology and **at a minimum** provide the following information:

1. The proposed discharge location.

2. The nature of the activity that will generate the discharge.

3. Any alternatives to the discharge, such as reuse, storage, or recycling of the water.

4. The total volume of water it expects to discharge.

5. The results of the chemical analysis of the water. The Permittee must analyze the water for all constituents limited for the discharge. The analysis must also include hardness, any metals that are limited by water quality standards, and any other parameter deemed necessary by Ecology. All discharges must comply with the effluent limits as established in Condition S1. of this permit, water quality standards, and any other limits imposed by Ecology.

6. The date of proposed discharge.

7. The expected rate of discharge discharged, in gallons per minute. The Permittee must limit the discharge rate so it will not cause erosion of ditches or structural damage to culverts and their entrances or exits.

B. The discharge cannot proceed until Ecology has reviewed the information provided and has authorized the discharge by letter to the Permittee or by an Administrative Order. Once approved and if the proposed discharge is to a municipal storm drain, the Permittee must obtain prior approval from the municipality and notify it when it plans to discharge.

S8. SPILL PLAN

The Permittee must:

1. Submit to Ecology an update to the existing Spill Control Plan by **December 31, 2010**.

2. Review the plan at least annually and update the Spill Plan as needed.

3. Send changes to the plan to Ecology.

4. Follow the plan and any supplements throughout the term of the permit.

The spill control plan must include the following:

1. A list of all oil and petroleum products and other materials used and/or stored on site, which when spilled, or otherwise released into the environment, designate as Dangerous (DW) or Extremely Hazardous Waste (EHW) by the procedures set forth in WAC 173-303-070. Include other materials used and/or stored on site which may become pollutants or cause pollution upon reaching state's waters.

2. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials.

3. A description of the reporting system the Permittee will use to alert responsible managers and legal authorities in the event of a spill.

4. A description of operator training to implement the plan.

The Permittee may submit plans and manuals required by 40 CFR Part 112, contingency plans required by Chapter 173-303 WAC, or other plans required by other agencies which meet the intent of this section.

S9. STORMWATER POLLUTION PREVENTION PLAN/ BEST MANAGEMENT PRACTICES PLAN

Submit to Ecology an updated stormwater pollution prevention plan/best management practices plan by **as necessary** depending on stormwater effluent data from the four outfalls after two years of permit issuance. Ecology will review two years of stormwater data and based on this review will determine the necessity of a revised stormwater pollution prevention plan/best management practices plan. This plan should be prepared in accordance with "Guidance Manual for Preparing/Updating a Stormwater Pollution Prevention Plan for Industrial Facilities, April 2004, Ecology Publication No. 04-10-030 and applicable sections of Stormwater Management Manual for Western Washington (Revised 2005).

S10. OUTFALL EVALUATION

The Permittee must inspect, every two years, discharge pipes on the Lake River bank. If conditions allow for a photographic verification, it must be included in the report. The inspection report must be submitted to Ecology **July 1, 2011, and July 1, 2013**, after the outfalls evaluations.

S11. ACUTE TOXICITY

A. Effluent Characterization

The Permittee must:

1. Conduct acute toxicity testing on the final effluent quarterly, for one year. Testing must begin by **November 1, 2010.**

2. Submit a written report to Ecology within 60 days after each sample date.

3. Use a dilution series consisting of a minimum of five concentrations and a control.

4. Conduct the following two acute toxicity tests on each sample:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*	EPA-821-R-02-012

The Permittee has an effluent limit for acute toxicity if after one year of effluent characterization:

1. The median survival of any species in 100 percent effluent is below 80 percent.

2. Any one test of any species exhibits less than 65 percent survival in 100 percent effluent.

If the Permittee has an effluent limit for acute toxicity, the Permittee must immediately follow the instructions in Subsections B, C, D, E, and G. If the Permittee has no effluent limit for acute toxicity, then the Permittee must follow the instructions in Subsections F and G.

B. Effluent Limit for Acute Toxicity

The effluent limit for acute toxicity is:

No acute toxicity detected in a test concentration representing the acute critical effluent concentration (ACEC).

The ACEC equals 100 percent effluent.

C. Compliance with the Effluent Limit for Acute Toxicity

Compliance with the effluent limit for acute toxicity means the results of the testing specified in subsection D. show no statistically significant difference in survival between the control and the ACEC.

If the test results show a statistically significant difference in survival between the control and the ACEC, the test does not comply with the effluent limit for acute toxicity. The Permittee must then immediately conduct the additional testing described in subsection E. The Permittee will comply with the requirements of this section by meeting the requirements of subsection E.

The Permittee must determine the statistical significance by conducting a hypothesis test at the 0.05 level of significance (Appendix H, EPA/600/4-89/001). If the difference in survival between the control and the ACEC is less than 10 percent, the Permittee must conduct the hypothesis test at the 0.01 level of significance.

D. Compliance Testing for Acute Toxicity

The Permittee must:

1. Perform the acute toxicity tests with 100 percent effluent, the ACEC, and a control, or with a full dilution series.

2. Submit a written report of all test results to Ecology within 60 days after each sample date.

The Permittee must perform compliance test using each of the species and protocols listed below on a rotating basis:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*	EPA-821-R-02-012

E. Response to Noncompliance with the Effluent Limit for Acute Toxicity

If a toxicity test conducted under subsection D. determines a statistically significant difference in response between the ACEC and the control, using the statistical test described in subsection C., the Permittee must begin additional testing within one week from the time of receiving the test results. The Permittee must:

1. Conduct one additional test each week for four consecutive weeks, using the same test and species as the failed compliance test.

2. Test at least five effluent concentrations and a control to determine appropriate point estimates. One of these effluent concentrations must equal the ACEC. The results of the test at the ACEC will determine compliance with the effluent limit for acute toxicity as described in Subsection C.

3. Return to the original monitoring frequency in Subsection D after completion of the additional compliance monitoring.

Anomalous test results: If a toxicity test conducted under subsection D. indicates noncompliance with the acute toxicity limit and the Permittee believes that the test result is anomalous, the Permittee may notify Ecology that the compliance test result may be anomalous. The Permittee may take one additional sample for toxicity testing and wait for notification from Ecology before completing the additional testing. The Permittee must submit the notification with the report of the compliance test result and identify the reason for considering the compliance test result to be anomalous.

If Ecology determines that the test result was not anomalous, the Permittee must complete all of the additional monitoring required in this subsection. Or,

If the one additional sample fails to comply with the effluent limit for acute toxicity, then the Permittee must complete all of the additional monitoring required in this subsection. Or,

If Ecology determines that the test result was anomalous, the one additional test result will replace the anomalous test result.

If all of the additional testing complies with the permit limit, the Permittee must submit a report to Ecology on possible causes and preventive measures for the transient toxicity event, which triggered the additional compliance monitoring. This report must include a search of all pertinent and recent facility records, including:

1. Operating records

2. Monitoring results

3. Inspection records

4. Spill reports

5. Weather records

6. Production records

7. Raw material purchases

8. Pretreatment records, etc.

If the additional testing shows violation of the acute toxicity limit, the Permittee must submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to Ecology within 60 days after the sample date (WAC 173-205-100(2)).

F. Testing When There Is No Permit Limit for Acute Toxicity

The Permittee must:

1. Conduct acute toxicity testing on final effluent during month, year and month, year (once in the last summer and once in the last winter prior to submission of the application for permit renewal).

2. Submit the results to Ecology with the permit renewal application.

3. Conduct acute toxicity testing on a series of at least five concentrations of effluent, including 100 percent effluent, and a control.

4. Use each of the following species and protocols for each acute toxicity test:

Acute Toxicity Tests	Species	Method
Fathead minnow 96-hour static-renewal test	*Pimephales promelas*	EPA-821-R-02-012
Daphnid 48-hour static test	*Ceriodaphnia dubia*, *Daphnia pulex*, or *Daphnia magna*	EPA-821-R-02-012

G. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.

3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and Ecology of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.

5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection A. or pristine natural water of sufficient quality for good control performance.

6. The Permittee may sample receiving water at the same time as the effluent and instruct the lab to measure the hardness of both and increase the hardness of the effluent sample to match the hardness of the receiving water sample prior to beginning the toxicity test. Otherwise, the Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the acute critical effluent concentration (ACEC). The ACEC equals 100 percent effluent.

8. All whole effluent toxicity tests, effluent screening tests, and rapid screening tests that involve hypothesis testing must comply with the acute statistical power standard of 29 percent as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

9. Reports of individual characterization or compliance test results must be submitted to Ecology within 60 days after each sample date.

10. The Acute Toxicity Summary Report must be submitted to Ecology by **January 30, 2012.**

S12. CHRONIC TOXICITY

A. Effluent Characterization

The Permittee must:

1. Conduct chronic toxicity testing on the final effluent quarterly for one year. Testing must begin by **November 1, 2010.**

2. Submit a written report to Ecology within 60 days after each sample date.

3. Conduct chronic toxicity testing during effluent characterization on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 100 percent effluent.

   The Permittee must conduct the following two chronic toxicity tests on each sample:

Freshwater Chronic Test	Species	Method
Fathead minnow survival and growth	*Pimephales promelas*	EPA-821-R-02-013
Water flea survival and reproduction	*Ceriodaphnia dubia*	EPA-821-R-02-013

   The Permittee has an effluent limit for chronic toxicity if after one year of effluent characterization: any test shows a significant difference between the control and the ACEC at the 0.05 level of significance using hypothesis testing (Appendix H, EPA/600/4-89/001).

   If the Permittee has an effluent limit for chronic toxicity, the Permittee must immediately follow the instructions in subsections B, C, D, E and G. If the Permittee has no effluent limit for chronic toxicity, then the Permittee must follow the instructions in subsections F and G.

B. Effluent Limit for Chronic Toxicity

The effluent limit for chronic toxicity is:

No toxicity detected in a test concentration representing the chronic critical effluent concentration (CCEC).

The CCEC equals 100 percent effluent.

C. Compliance With the Effluent Limit for Chronic Toxicity

Compliance with the effluent limit for chronic toxicity means the results of the testing specified in subsection D. show no statistically significant difference in response between the control and the CCEC.

If the test results show a statistically significant difference in response between the control and the CCEC, the test does not comply with the effluent limit for chronic toxicity. The Permittee must then immediately conduct the additional testing described in subsection E. The Permittee will comply with the requirements of this section by meeting the requirements of subsection E.

The Permittee must determine the statistical significance by conducting a hypothesis test at the 0.05 level of significance (Appendix H, EPA/600/4-89/001). If the difference in response between the control and the CCEC is less than 20 percent, the Permittee must conduct the hypothesis test at the 0.01 level of significance.

Ecology will re-evaluate the need for the chronic toxicity limit in future permits. Therefore, the Permittee must also conduct this same hypothesis test (Appendix H, EPA/600/4-89/001) to determine whether a statistically significant difference in response exists between the acute critical effluent concentration (ACEC) and the control.

D. Compliance Testing for Chronic Toxicity

The Permittee must:

- Begin compliance testing within 60 days of the permit effective date.
- Perform the chronic toxicity tests using the CCEC, the ACEC, and a control, or with a full dilution series.
- Submit a written report of all test results to Ecology within 60 days after each sample date. This written report must include the results of hypothesis testing conducted as described in subsection C. using both the ACEC and CCEC versus the control.
- Perform compliance tests quarterly using the following species on a rotating basis and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method
Fathead minnow	*Pimephales promelas*	EPA-821-R-02-013
Water flea	*Ceriodaphnia dubia*	EPA-821-R-02-013

E. Response to Noncompliance with the Effluent Limit for Chronic Toxicity

If a toxicity test conducted under subsection D. determines a statistically significant difference in response between the CCEC and the control using the statistical test described in subsection C., the Permittee must begin additional testing within one week from the time of receiving the test results. The Permittee must:

1. Conduct additional testing each month for three consecutive months using the same test and species as the failed compliance test.

2. Use a series of at least five effluent concentrations and a control to determine appropriate point estimates. One of these effluent concentrations must equal the CCEC. The results of the test at the CCEC will determine compliance with the effluent limit for chronic toxicity as described in subsection B.

3. Return to the original monitoring frequency in subsection C. after completion of the additional compliance monitoring.

Anomalous test results: If a toxicity test conducted under subsection D. indicates noncompliance with the acute toxicity limit and the Permittee believes that the test result is anomalous, the Permittee may notify Ecology that the compliance test result may be anomalous. The Permittee may take one additional sample for toxicity testing and wait for notification from Ecology before completing the additional testing. The Permittee must submit the notification with the report of the compliance test result and identify the reason for considering the compliance test result to be anomalous.

If Ecology determines that the test result was not anomalous, the Permittee must complete all of the additional monitoring required in this subsection. Or,

If the one additional sample fails to comply with the effluent limit for chronic toxicity, then the Permittee must complete all of the additional monitoring required in this subsection. Or,

If Ecology determines that the test result was anomalous, the one additional test result will replace the anomalous test result.

If all of the additional testing complies with the permit limit, the Permittee must submit a report to Ecology on possible causes and preventive measures for the transient toxicity event, which triggered the additional compliance monitoring. This report must include a search of all pertinent and recent facility records, including:

1. Operating records
2. Monitoring results
3. Inspection records
4. Spill reports
5. Weather records
6. Production records
7. Raw material purchases
8. Pretreatment records, etc.

If the additional testing shows violation of the chronic toxicity limit, the Permittee must submit a Toxicity Identification/Reduction Evaluation (TI/RE) plan to Ecology within 60 days after the sample date (WAC 173-205-100(2)).

F. Testing When There Is No Permit Limit for Chronic Toxicity

The Permittee must:

1. Conduct chronic toxicity testing on final effluent during once in the last summer and once in the last winter prior to submission of the application for permit renewal).

2. Submit the results to Ecology with the permit renewal application.

3. Conduct chronic toxicity testing on a series of at least five concentrations of effluent and a control. This series of dilutions must include the acute critical effluent concentration (ACEC). The ACEC equals 100 percent effluent.

4. Compare the ACEC to the control using hypothesis testing at the 0.05 level of significance as described in Appendix H, EPA/600/4-89/001.

5. Perform chronic toxicity tests with all of the following species and the most recent version of the following protocols:

Freshwater Chronic Test	Species	Method
Fathead minnow	*Pimephales promelas*	EPA-821-R-02-013
Water flea	*Ceriodaphnia dubia*	EPA-821-R-02-013

G. Sampling and Reporting Requirements

1. The Permittee must submit all reports for toxicity testing in accordance with the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*. Reports must contain bench sheets and reference toxicant results for test methods. If the lab provides the toxicity test data in electronic format for entry into Ecology's database, then the Permittee must send the data to Ecology along with the test report, bench sheets, and reference toxicant results.

2. The Permittee must collect 24-hour composite effluent samples for toxicity testing. The Permittee must cool the samples to 0 - 6 degrees Celsius during collection and send them to the lab immediately upon completion. The lab must begin the toxicity testing as soon as possible but no later than 36 hours after sampling was completed.

3. The laboratory must conduct water quality measurements on all samples and test solutions for toxicity testing, as specified in the most recent version of Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.*

4. All toxicity tests must meet quality assurance criteria and test conditions specified in the most recent versions of the EPA methods listed in subsection C. and the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria.* If Ecology determines any test results to be invalid or anomalous, the Permittee must repeat the testing with freshly collected effluent.

5. The laboratory must use control water and dilution water meeting the requirements of the EPA methods listed in subsection C. or pristine natural water of sufficient quality for good control performance.

6. The Permittee may sample receiving water at the same time as the effluent and instruct the lab to measure the hardness of both and increase the hardness of the effluent sample to match the hardness of the receiving water sample prior to beginning the toxicity test. Otherwise, the Permittee must conduct whole effluent toxicity tests on an unmodified sample of final effluent.

7. The Permittee may choose to conduct a full dilution series test during compliance testing in order to determine dose response. In this case, the series must have a minimum of five effluent concentrations and a control. The series of concentrations must include the CCEC and the ACEC. The CCEC and the ACEC may either substitute for the effluent concentrations that are closest to them in the dilution series or be extra effluent concentrations. The CCEC equals 100 percent effluent. The ACEC equals 100 percent effluent.

8. All whole effluent toxicity tests that involve hypothesis testing must comply with the chronic statistical power standard of 39 percent as defined in WAC 173-205-020. If the test does not meet the power standard, the Permittee must repeat the test on a fresh sample with an increased number of replicates to increase the power.

9. Reports of individual characterization or compliance test results must be submitted to Ecology within 60 days after each sample date.

10. The Chronic Toxicity Summary Report must be submitted to Ecology by **Reserved for Issuance.**

S13. COPPER, BENZO (A) PYRENE, PENTACHLOROPHENOL (PCP), AND TOTAL RESIDUAL CHLORINE MONITORING REPORT FOR L-5 AND STORMWATER DATA FOR OUTFALLS 001, 002, 003, AND 004.

The Permittee must submit a report summarizing Copper, Benzo(a)pyrene, PCP and total residual chlorine results in treated groundwater effluent (L-5) and stormwater data for Outfalls 001,002, 003, and 004 by **July 1, 2012.** All laboratory reports providing data must include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/number, method detection limit (MDL) or laboratory quantitation limit (QL or ML), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

S14. BOILER BLOW DOWN REPORT

The Permittee shall submit the following information to Ecology by **October 30, 2010**.

a. Description of the boiler blow down and location it discharge into Outfall 003,

b. Daily volume,

c. Temperature,

d. Chemical added to the City water before the boiler and composition of City water,

e. One time characterization for total copper, zinc, arsenic, lead, iron, manganese, iron, hardness, total suspended solids, and oil and grease.

S15. STORMWATER CATCH BASINS MONITORING (FRESHWATER)

A. Stormwater Catch Basins Sediment Sampling and Analysis Plan

The Permittee must submit to Ecology for review and approval a Storm Drain Sediment Sampling and Analysis Plan by **November 15, 2010.** The purpose of the plan is to characterize stormwater solids to determine whether stormwater has the potential to cause sediment contamination. The Permittee can follow the guidance provided in the *Sediment Source Control Standards User Manual, Appendix B: Sediment Sampling and Analysis Plan* (Ecology 2008), and the *Pollutant Source Tracing in the Lower Duwamish Waterway, Sampling and Analysis Plan* (Seattle Public Utilities 2009).

B. Sediment Data Report

Following Ecology approval of the Storm Drain Sediment Sampling and Analysis Plan, the Permittee must collect stormwater solids in all the stormwater drainage areas. The Permittee must submit to Ecology a Storm Drain Sediment Data Report containing the results of sampling and analysis by **February 15, 2011**. The Storm Drain Sediment Data Report must conform to the approved Sampling and Analysis Plan.

The Stormwater Solids Data must also be submitted to Ecology's Environmental Information Management (EIM) System, and verified for completeness and accuracy.

C. Stormwater Solids Management Plan

If the stormwater solids data or the site sediment data contain concentrations above sediment screening levels, the Permittee shall develop a plan to improve stormwater management to reduce risk. The plan may be developed in coordination with remediation activities at this site. The stormwater management plan may include best management practices to reduce soil erosion, maintenance of stormwater facilities, interim measures prior to remediation activities, prioritization of cleanup activities to prevent sediment contamination, and if needed, a plan for treating stormwater. If a stormwater management plan is required, a draft must be submitted to Ecology for review and approval by **as necessary**. Ecology will determine the necessity of stormwater management plan and inform the Permittee of such a decision.

S16. INTERIM ACTION CLEANUP SWPPP FOR CELLS 1, 2, 3 AND 4

The Permittee must submit to Ecology for review and approval a SWPPP that will be implemented during cells 1, 2, 3 and 4 interim cleanup actions (contaminated soil excavation and capping with clean fill) by **December 31, 2010**. This plan should be prepared in accordance with applicable sections of Stormwater Management Manual for Western Washington (Revised 2005) and conditions of the construction stormwater general permit. This plan specifically would address construction Best Management Practices (BMPs), construction phasing and BMPs implementation, the post interim action stormwater runoff handling, pollution prevention team, inspection and monitoring, and recordkeeping.

APPENDIX I

WSDOT Bremerton Remediation Site Special Conditions

SPECIAL CONDITIONS

S1. DISCHARGE LIMITATIONS

All discharges and activities authorized by this permit shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than, or at a concentration in excess of, that authorized by this permit shall constitute a violation of the terms and conditions of this permit.

Beginning on the effective date and lasting through the expiration date of this permit, the Permittee is authorized to discharge industrial construction dewatering water (also referred to as waste water in this permit) to the City of Bremerton POTW subject to the following limitations:

EFFLUENT LIMITATIONS	
Parameter	**Maximum Daily[a]**
Flow	1.6 MGD
TPH-G	1 mg/L
TPH-D	1 mg/L
Arsenic (total)	4.0 mg/L
Cadmium (total)	0.6 mg/L
Chromium (total)	5.0 mg/L
Copper (total)	8.0 mg/L
Lead (total)	4.0 mg/L
Mercury (total)	0.2 mg/L
Nickel (total)	5.0 mg/L
Silver (total)	3.0 mg/L
Zinc (total)	10 mg/L
Cyanide (total)	3.0 mg/L
Benzene	0.13 mg/L
Ethylbenzene	1.4 mg/L
Toluene	1.5 mg/L
Tetrachloroethylene (Perchloroethylene)	0.13 mg/L
pH	between 6 and 10 standard units

[a] The maximum daily effluent limitation is defined as the highest allowable daily discharge. The daily discharge means the discharge of a pollutant measured during a calendar day.

S2. MONITORING REQUIREMENTS

A. Wastewater Monitoring

The Permittee shall monitor the wastewater according to the following schedule:

Parameter[1]	Units	Sampling Frequency	Sample Type	Analytical Test Method
Flow	gpd	Batch	Meter/recorder	N/A
TPH-G[2]	mg/L	Weekly	Grab	NW TPH-Gx
TPH-D[2]	mg/L	Weekly	Grab	NW TPH-Dx
Arsenic (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Cadmium (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Chromium (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Copper (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Lead (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Mercury (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Nickel (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Silver (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Zinc (total)	mg/L	Weekly	Grab	EPA Method 6010B/7000 series
Cyanide (total)	mg/L	Weekly	Grab	EPA Method 335.2
Benzene	mg/L	Weekly	Grab	EPA Method 8260 B
Ethylbenzene	mg/L	Weekly	Grab	EPA Method 8260 B
Toluene	mg/L	Weekly	Grab	EPA Method 8260 B
Tetrachloroethylene (Perchloroethylene)	mg/L	Weekly	Grab	EPA Method 8260 B
pH	Standard units	Weekly	Grab	EPA Method 150.1 or pH meter
PAHs[3]	mg/L	Weekly	Grab	EPA Method 8270 or equivalent
TTO[4]	mg/L	Annually	Grab	EPA Method 625 or equivalent

[1] The final effluent sample point is defined as the nearest accessible point after final treatment and prior to actual discharge or mixing with other flows.

[2] TPH-G and TPH-D are defined as total petroleum hydrocarbons, gasoline range, and diesel range.

[3] PAHs are defined as polycyclic aromatic hydrocarbons.

[4] TTO is defined as total toxic organic compounds.

B. Sampling and Analytical Procedures

Samples and measurements taken to meet the requirements of this permit shall be representative of the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and maintenance-related conditions affecting effluent quality.

The detection limits achieved for those analytical test methods specified in S2.A shall be lower than the effluent limits listed in S1 of the permit.

C. Flow Measurement

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted industry standard for that type of device. Frequency of calibration shall be in conformance with manufacturer's recommendations and at a minimum frequency of at least one (1) calibration per year. Calibration records shall be maintained for at least three (3) years.

D. Laboratory Accreditation

All monitoring data shall be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, chapter 173-50 WAC. Flow, temperature, settleable solids, conductivity, pH, and internal process control parameters are exempt from this requirement.

S3. REPORTING AND RECORD KEEPING REQUIREMENTS

The Permittee shall monitor and report in accordance with the following conditions. The falsification of information submitted to the Department shall constitute a violation of the terms and conditions of this permit.

A. Reporting

The first monitoring period begins on the effective date of the permit. Monitoring results shall be submitted monthly. Monitoring data obtained during each monitoring period shall be summarized, reported, and submitted on a Discharge Monitoring Report (DMR) form provided, or otherwise approved, by the Department. DMR forms shall be postmarked or received no later than the 15th day of the month following the completed monitoring period, unless otherwise specified in this permit. The report(s) shall be sent to:

WA State Department of Ecology
Water Quality Program
3190 - 160th Avenue SE
Bellevue, WA 98008-5452

All laboratory reports providing data for organic and metal parameters shall include the following information: sampling date, sample location, date of analysis, parameter name, CAS number, analytical method/number, method detection limit (MDL), laboratory practical quantitation limit (PQL), reporting units, and concentration detected. Analytical results from samples sent to a contract laboratory must have information on the chain of custody, the analytical method, QA/QC results, and documentation of accreditation for the parameter.

Discharge Monitoring Report forms must be submitted monthly whether or not the facility was discharging. If there was no discharge during a given monitoring period, the Permittee is required to submit the form as required with the words "no discharge" entered in place of the monitoring results. The first report is due August 15, 2007.

If there was no discharge during a given monitoring period, the Permittee is required to submit the form applicable to that period as required with the words "no discharge" entered in the place of the monitoring results.

B. Records Retention

The Permittee shall retain records of all monitoring information for a minimum of three (3) years. Such information shall include all calibration and maintenance records and all original recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit. This period of retention shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Permittee or when requested by the Director.

C. Recording of Results

For each measurement or sample taken, the Permittee shall record the following information: (1) the date, exact place, method, and time of sampling; (2) the individual who performed the sampling or measurement; (3) the dates the analyses were performed; (4) who performed the analyses; (5) the analytical techniques or methods used; and (6) the results of all analyses.

D. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this permit using test procedures specified by Condition S2 of this permit, then the results of this monitoring shall be included in calculation and reporting of the data submitted in the Permittee's self-monitoring reports.

E. Noncompliance Notification

In the event the Permittee is unable to comply with any of the permit terms and conditions due to any cause, the Permittee shall:

1. Immediately take action to stop, contain, and cleanup unauthorized discharges or otherwise stop the violation, and correct the problem.

2. Repeat sampling and analysis of any violation and submit the results to the Department within thirty (30) days after becoming aware of the violation.

3. Immediately notify the Department and the local sewage treatment plant manager of the failure to comply.

4. Submit a detailed, written report to the Department within 30 days (five days for upsets and bypasses), unless requested earlier by the Department. The report should describe the nature of the violation, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of the resampling, and any other pertinent information.

Compliance with these requirements does not relieve the Permittee from responsibility to maintain continuous compliance with the terms and conditions of this permit or the resulting liability for failure to comply.

F. Dangerous Waste Discharge Notification

The Permittee shall notify the POTW and the Department in writing of the intent to discharge into the POTW any substance designated as a dangerous waste in accordance with the provisions of WAC 173-303-070. This notification shall be made at least ninety (90) days prior to the date that discharge is proposed to be initiated.

G. Spill Notification

The Permittee shall notify the POTW immediately (as soon as discovered) of all discharges that could cause problems to the POTW, such as process spills and unauthorized discharges (including slug discharges).

S4. OPERATION AND MAINTENANCE

The Permittee shall at all times be responsible for the proper operation and maintenance of any facilities or systems of control installed to achieve compliance with the terms and conditions of the permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of this permit.

A. Operations and Maintenance Manual

An Operations and Maintenance (O&M) Manual shall be prepared by the Permittee in accordance with WAC 173-240-150 and be submitted to the Department for approval within thirty (30) days after permit issuance date. The existing O&M Manual shall be reviewed by the Permittee at least annually. The Permittee shall confirm the review by letter and/or a manual update to the Department. All manual changes or updates shall be submitted to the Department within thirty (30) days of incorporation into the manual. The approved operation and maintenance manual shall be kept available at the permitted facility.

The operation and maintenance manual shall contain the treatment plant process control-monitoring schedule. All operators shall follow the instructions and procedures of this manual.

The manual shall include:

1. Emergency procedures for the facility shutdown and cleanup in event of wastewater system upset or failure.

2. Wastewater system maintenance procedures that contribute to the generation of process wastewater.

3. Any directions to maintenance staff when cleaning, or maintaining other equipment or performing other tasks which are necessary to protect the operation of the wastewater system (for example, defining maximum allowable discharge rate for draining a tank, blocking all floor drains before beginning the overhaul of a stationary engine).

4. The treatment plant process control monitoring schedule.

5. The change-out frequency of the Granular Activated Carbon columns shall be based on internal process control results.

6. The automatic shutoff of the discharge pump(s) when back wash or the sand filtration units are not working.

7. The contingency plan for unanticipated failure of the sand filtration units (for example, backwash, etc.).

The following information shall be summarized in the initial chapter of the O&M Manual. This chapter shall be entitled the "Treatment System Operating Plan." For the purposes of this NPDES permit, a Treatment System Operating Plan (TSOP) is a concise summary of specifically defined elements of the O&M Manual. The TSOP shall not conflict with the O&M Manual and shall include the following information:

1. A baseline operating condition, which describes the operating parameters and procedures, used to meet the effluent limitations of S1 at the production levels used in developing these limitations.

2. In the event of production rates, which are below the baseline levels used to establish these limitations, the plan shall describe the operating procedures and conditions needed to maintain design treatment efficiency. The monitoring and reporting shall be described in the plan.

3. In the event of an upset, due to plant maintenance activities, severe stormwater events, start ups or shut downs, or other causes, the plan shall describe the operating procedures and conditions employed to mitigate the upset. The monitoring and reporting shall be described in the plan.

4. A description of any regularly scheduled maintenance or repair activities at the facility which would affect the volume or character of the wastes discharged to the wastewater treatment system and a plan for monitoring and treating/controlling the discharge of maintenance-related materials (such as cleaners, degreasers, solvents, etc.).

B. Bypass Procedures

The Permittee shall immediately notify the Department and the receiving POTW of any spill, overflow, or bypass from any portion of the collection or treatment system.

The bypass of wastes from any portion of the treatment system is prohibited unless one of the following conditions (1, 2, or 3) applies:

1. Unavoidable Bypass—Bypass is unavoidable to prevent loss of life, personal injury, or severe property damage. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass.

   If the resulting bypass from any portion of the treatment system results in noncompliance with this permit, the Permittee shall notify the Department and the receiving POTW in accordance with Condition S3.E "Noncompliance Notification."

2. Anticipated Bypass That Has the Potential to Violate Permit Limits or Conditions—Bypass is authorized by an administrative order issued by the Department. The Permittee shall apply to the Department for the administrative order and submit written notice to the POTW at least thirty (30) days before the planned date of bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The Department will consider the following prior to issuing an administrative order:

a. If the bypass is necessary to perform construction or maintenance-related activities essential to meet the requirements of the permit.

b. If there are feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, maintenance during normal periods of equipment down time, or transport of untreated wastes to another treatment facility.

c. If the bypass is planned and scheduled to minimize adverse effects on the public and the environment.

After consideration of the above and the adverse effects of the proposed bypass and any other relevant factors, the Department will approve or deny the request. The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible. Approval of a request to bypass will be by administrative order issued by the Department under RCW 90.48.120.

3. Bypass For Essential Maintenance Without the Potential to Cause Violation of Permit Limits or Conditions—Bypass is authorized if it is for essential maintenance and does not have the potential to cause violations of limitations or other conditions of the permit, a violation of a pretreatment standard or requirement, or adversely impact public health as determined by the Department prior to the bypass.

4. Approved Bypass—Bypass of the treatment system is authorized during the dry weather season if the untreated wastewater meets the effluent limits listed in S1 of the permit, and a written approval is obtained from the City of Bremerton POTW (West Plant). The Permittee must notify the Department prior to bypassing the treatment system and prior to discharging directly to the sanitary sewer system.

S5. PROHIBITED DISCHARGES

A. General Prohibitions

The Permittee shall not introduce into the POTW pollutant(s) which cause pass-through or interference.

B. Specific Prohibitions

In addition, the following shall not be introduced into the POTW:

1. Pollutants which create a fire or explosion hazard in the POTW, including, but not limited to, waste streams with a closed cup flashpoint of less than 60°C (140°F) using the test methods specified in 40 CFR 261.21.

2. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference.

3. Any pollutant, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which will cause interference with the POTW.

4. Heat in amounts which will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 40°C (104°F) unless the approval authority, upon request of the POTW, approves alternative temperature limits.

5. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass-through.

6. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.

7. Any trucked or hauled pollutants, except at discharge points designated by the POTW.

8. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 6.0 or greater than 10.0, unless the works is specifically designed to accommodate such discharges.

C. Prohibited Unless Approved

1. Any of the following discharges are prohibited unless approved by the Department under extraordinary circumstances (such as a lack of direct discharge alternatives due to combined sewer service or a need to augment sewage flows due to septic conditions):

   a. Noncontact cooling water in significant volumes.

   b. Storm water and other direct inflow sources. Storm water that falls directly into the tunnel excavation area will be permitted to be routed through the treatment system for discharge to the POTW.

   c. Waste waters significantly affecting system hydraulic loading, which do not require treatment or would not be afforded a significant degree of treatment by the system.

2. Unless specifically authorized in this permit, the discharge of dangerous wastes as defined in chapter 173-303 WAC, is prohibited.

S6. DILUTION PROHIBITED

The Permittee shall not dilute the wastewater discharge with storm water or increase the use of potable water, process water, noncontact cooling water, or, in any way, attempt to dilute an effluent as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in this permit.

S7. SOLID WASTE DISPOSAL

A. Solid Waste Handling

The Permittee shall handle and dispose of all solid waste material in such a manner as to prevent its entry into state ground water, surface water, or a POTW.

B. Leachate

The Permittee shall not allow leachate from its solid waste material to enter state waters without providing all known, available, and reasonable methods of treatment, nor allow such leachate to cause violations of the state surface water quality standards, chapter 173-201A WAC, or the state ground water quality standards, chapter 173-200 WAC. The Permittee shall apply for a permit or permit modification as may be required for such discharges to state ground or surface waters.

S8. SPILL PLAN

Thirty (30) days prior to the start of construction, the Permittee shall submit to the Department a spill control plan for the prevention, containment, and control of spills or unplanned discharges of: 1) oil and petroleum products, 2) materials, which when spilled, or otherwise released into the environment, are designated dangerous waste (DW) or extremely hazardous waste (EHW) by the procedures set forth in WAC 173-303-070, or 3) other materials which may become pollutants or cause pollution upon reaching state's waters. The Permittee shall review and update the spill plan, as needed, at least annually. Changes to the plan shall be sent to the Department within two weeks of adoption. The plan and any supplements shall be followed throughout the term of the permit.

The spill control plan shall include the following:

- A description of operator training to implement the plan.
- A description of the reporting system which will be used to alert responsible managers and legal authorities in the event of a spill.
- A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) which prevent, contain, or treat spills of these materials.

- A list of all oil and petroleum products, materials, which when spilled, or otherwise released into the environment, are designated dangerous waste (DW) or extremely hazardous waste (EHW) by the procedures set forth in WAC 173-303-070, or other materials which may become pollutants or cause pollution upon reaching state's waters.

Plans and manuals required by 40 CFR Part 112, contingency plans required by chapter 173-303 WAC, or other plans required by other agencies which meet the intent of this section may be submitted.

S9. CHITOSAN DOSAGE RATE AND OPERATION

The Department has approved two chemical flocculant products: Liqui-Floc chitosan-enhanced sand filtration produced by Natural Site Solutions, and Floc-Clear chitosan-enhanced sand filtration produced by Clear Creek Systems, Inc. If either chemical flocculent products are used, the Permittee is required to follow the Maintenance of Safety Margin (dosage rate) and Safety Margin Checklist as listed in Appendix I and II of the permit, for whichever approved product the Permittee chooses to use.

Both products contain different weight percentages of chitosan acetate. The dosage rate and the safety margin checklists for each product as referenced-above are not the same. Chitosan acetate can be employed to effectively treat stormwater turbidity up to 600 NTU without using chitosan acetate concentrations above 1.06 mg/L. Application at concentrations in excess of this level may result in toxicity in the effluent.

APPENDIX I

LIQUID-FLOC CHITOSAN-ENHANCED SAND FILTRATION
(Natural Site Solutions)

Maintenance of Safety Margin

Chitosan acetate can effectively treat stormwater turbidity up to 600 NTU without using a concentration above 1.06 mg/L. 1.06 mg/L chitosan is below its toxic threshold of 1.21 mg/L in clear water. In addition, chitosan will be removed from solution by binding to solids and by being withheld in the sand filter. The safety margin will certainly be maintained if the treatment concentration is kept to 1.06 mg/L or below. Any mechanical failure of the positive displacement metering pump will immediately cause a reduction in Liqui-Floc dosing, so pump failure is only a problem for treatment effectiveness and not safety margin maintenance.

The following dose rate table shall be used to ensure both treatment plant effectiveness and a chitosan concentration below 1.06 mg/L prior to sand filtration.

Dose Rate Table for Liqui-Floc (1% Chitosan Acetate) Based on Flow and Turbidity

Turbidity	Stormwater Flow Rate	Liqui-Floc Dose Rate	Chitosan Concentration
50 - 200 NTU	200 gpm	20 ml/min or 0.32 gph	0.26 mg/L
	300 gpm	30 ml/min or 0.48 gph	
	400 gpm	40 ml/min or 0.64 gph	
	500 gpm	50 ml/min or 0.8 gph	
	600 gpm	60 ml/min or 0.96 gph	
	700 gpm	70 ml/min or 1.11 gph	
200 - 400 NTU	200 gpm	40 ml/min or 0.64 gph	0.53 mg/L
	300 gpm	60 ml/min or 0.96 gph	
	400 gpm	80 ml/min or 1.27 gph	
	500 gpm	100 ml/min or 1.6 gph	
	600 gpm	120 ml/min or 1.91 gph	
	700 gpm	140 ml/min or 2.23 gph	
400 - 600 NTU	200 gpm	80 ml/min or 1.27 gph	1.06 mg/L
	300 gpm	120 ml/min or 1.91 gph	
	400 gpm	160 ml/min or 2.54 gph	
	500 gpm	200 ml/min or 3.17 gph	
	600 gpm	240 ml/min or 3.81 gph	
	700 gpm	280 ml/min or 4.45 gph	

Checking formula:
chitosan concentration in mg/L = (ml/min Liqui-Floc x 0.01 x 1 g/ml x 1000 mg/g)/system flow rate in liters/min
liters/min = gpm x 3.78 liters/gal

Safety Margin Checklist

- Only Storm Klear Liqui-Floc™ containing 1 percent chitosan acetate shall be used.
- The metering pump shall be calibrated using a calibration cylinder at startup and every time that the Liqui-Floc dose rate needs changed. The calibration shall be recorded in the log. The stroke frequency shall be set as high as possible, and the stroke length adjusted to provide the correct dosing.
- The system flow rate and the turbidity of both influent and effluent shall be measured hourly and recorded in the log.
- No chitosan-treated water shall be discharged to surface water without first being sand-filtered.
- Secondary containment for the Liqui-Floc storage container and the metering pump shall be at least equal to the volume of the storage container.
- Spill adsorbent material shall be readily available to immobilize any spill of Liqui-Floc during handling.
- If the treatment system is located less than 50 feet from surface water, a 1-foot high earthen berm shall be constructed and maintained down-gradient as additional spill containment.
- Only discharges to streams or sanitary sewer are allowed at this time.
- The occasional use of the Residual Chitosan Field Screening Test to confirm a discharge concentration below 0.1 is encouraged in order to further build confidence in CESF system safety.

APPENDIX II

FLOC-CLEAR CHITOSAN-ENHANCED SAND FILTRATION
(Clear Creek Systems, Inc.)

Maintenance of Safety Margin

Chitosan acetate can effectively treat storm water up to 600 NTU without using a concentration above 1.06 mg/L. 1.06 mg/L chitosan from FlocClear™ is below its toxic threshold of 2.5 mg/L in clear water. The chitosan concentration will decrease after dosing due to binding to solids and the sand filter. If the metering pump fails, the anti-siphon valve will prevent FlocClear™ from being siphoned into the system. If the metering pump is incorrectly calibrated and the storm water is overdosed, treated water will not coagulate well enough to be clarified and the turbidimeter will trigger the return of effluent to the detention structure instead of discharge.

The following dose rate table shall be used to ensure both treatment plant effectiveness and a chitosan concentration below 1.06 mg/L prior to sand filtration.

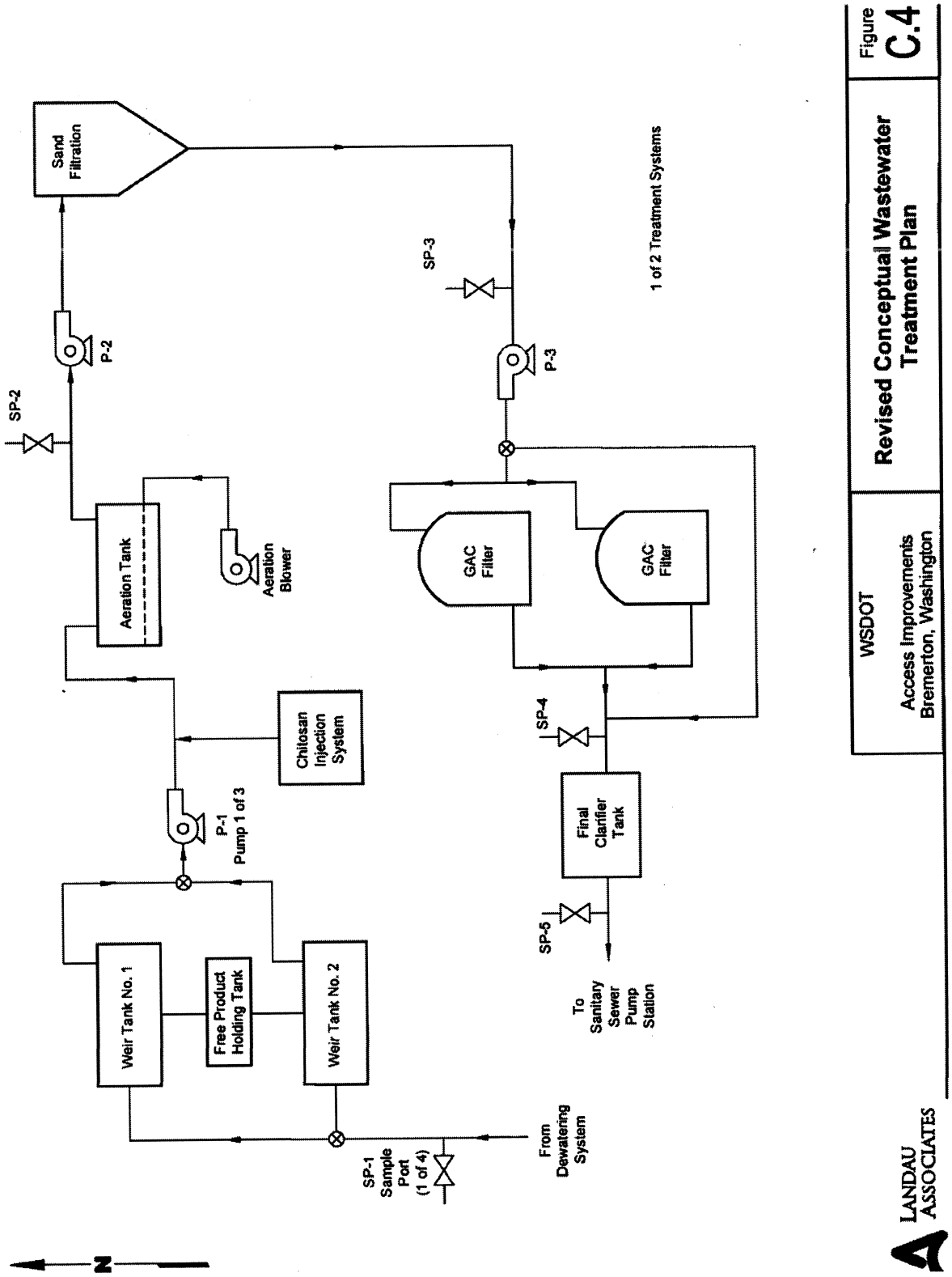
Influent Turbidity (NTU)	Influent Flow Rate (gpm)	FlocClear™ 2% Solution Dose Rate		chitosan (mg/L)	Influent Turbidity (NTU)	Influent Flow Rate (gpm)	FlocClear™ 2% Solution Dose Rate		chitosan (mg/L)
		ml/min	gph				ml/min	gph	
50 - 150	100	5	0.08	***0.265***	**150 - 300**	100	10	0.16	***0.529***
	200	10	0.16			200	20	0.32	
	300	15	0.24			300	30	0.48	
	400	20	0.32			400	40	0.63	
	500	25	0.40			500	50	0.79	
	600	30	0.48			600	60	0.95	
	700	35	0.56			700	70	1.11	
	800	40	0.64			800	80	1.27	
	900	45	0.72			900	90	1.43	
	1000	50	0.79			1000	100	1.59	
300 - 450	100	15	0.24	***0.794***	**450 - 600**	100	20	0.32	***1.058***
	200	30	0.48			200	40	0.63	
	300	45	0.71			300	60	0.95	
	400	60	0.95			400	80	1.27	
	500	75	1.19			500	100	1.59	
	600	90	1.43			600	120	1.90	
	700	105	1.67			700	140	2.22	
	800	120	1.91			800	160	2.54	
	900	135	2.14			900	180	2.86	
	1000	150	2.38			1000	200	3.17	

Checking formula:
chitosan concentration in mg/L = (ml/min FlocClear™ x 0.02 x 1 g/ml x 1000 mg/g)/system flow rate in liters/min
liters/min = gpm x 3.78 liters/gal

Safety Margin Checklist

- Only FlocClear™ containing 2 percent chitosan acetate shall be used and discharges shall only be to streams or sanitary sewer.
- No chitosan-treated water shall be discharged without first receiving sand filtration.
- Secondary containment for the FlocClear™ tote and metering pump shall be at least equal to the tote volume.
- FlocClear™ shall be stored at least 50 feet away from all natural drainages, conveyances, and storm drain inlets or a 1-foot high earthen berm shall be constructed and maintained downgradient as additional containment.
- Spill absorbent material shall be readily available to immobilize any spill during handling.
- The FlocClear™ metering pump shall be positive displacement and provided with an anti-siphon valve which shall be inspected and the inspection recorded at the beginning of each treatment shift.
- The metering pump shall be calibrated using a calibration cylinder at the beginning of each treatment shift and every time that the FlocClear™ dose rate changes. The calibration shall be recorded in the log. The stroke frequency shall be set as high as possible, and the stroke length/speed adjusted to provide correct dosing.
- Flow rate, turbidity, and pH of influent and effluent shall be recorded at startup and every 2 hours thereafter.
- Bench/jar testing shall be done at startup and when influent turbidity changes more than 50 NTU. If the results of the jar tests indicate that the dose needs to be adjusted, the jar testing results and the indicated dose rate change shall be documented in the daily operating log.
- The volume of chitosan in the tote shall be recorded at the beginning and end of the treatment period. The volume used shall be determined and compared to the volume of water treated to further validate dose rate.
- The Residual Chitosan Field Screening Test shall be used twice per day during CESF operation at 1 hour and 2 hours after startup to confirm a discharge concentration below 0.1. If any chitosan is detected in the discharge, the operator shall shut down the CESF until the malfunction has been found and fixed.
- All inspections, calibrations, tests, measurements, dose rate changes, and equipment adjustments shall be recorded in a daily operating log which must be kept available for at least the duration of the treatment project.

APPENDIX C—SITE MAPS AND TREATMENT SYSTEM FLOW DIAGRAM



APPENDIX J

Budd Inlet SWPPP

Stormwater Pollution Prevention Plan and Temporary Erosion and Sediment Control Measures (Includes Spill Control Plan)

Former Maintenance and Fueling Facility

Skykomish, Washington

Prepared by:

The ENSR Corporation Inc (ENSR)
1011 SW Klickitat Way, Suite 207
Seattle, WA 98134-1162

ENSR Project Number: 01140-204-0260

Prepared for:

The BNSF Railway Company
2454 Occidental Street, Suite 1A
Seattle, Washington 98134

July 7, 2008

Stormwater Pollution Prevention Plan and Temporary Erosion and Sediment Control Measures (Includes Spill Control Plan)

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July 7, 2008

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Stormwater Pollution Prevention Plan and Temporary Erosion and Sediment Control Measures 2008-2012 Skykomish Remediation Activities
Former Maintenance and Fueling Facility
Skykomish, Washington

01140-204-0260
July 7, 2008

This plan has been prepared by ENSR under the professional supervision of the person whose seal and signature appear hereon.

Halah M. Voges
Senior Program Manager
State of Washington Registered Professional Engineer #30352

Signatures (General Condition G.1)

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:_____ Date:_____

Printed Name: _____

Record of Amendments

Date	Change Number	Summary of Amendment	Amended By (initials)

Note: Permittee shall modify the SWPPP when there is a change in design, construction, operation, or maintenance of any BMP which causes the SWPPP to be less effective in controlling pollutants.

1 Introduction

1.1 Project Overview

This Stormwater Pollution Prevention Plan (SWPPP) and Temporary Erosion and Sediment Control Measures has been prepared for 2008-2012 remediation activities being conducted at the former BNSF Railway Company (BNSF) maintenance and fueling facility (site) located in the east King County town of Skykomish (town). The site is currently owned and operated by BNSF as a track maintenance base. The location of Skykomish and the site are shown on Figure 1. Historical activities conducted at the site since it opened in the late 1890s have included refueling and maintaining steam-driven locomotives and operating an electrical substation for diesel-electric locomotives. These activities have resulted in the release of contaminants to the surrounding environment. BNSF is currently completing remediation activities at the site to address impacts resulting from these releases, consistent with the Model Toxics Control Act (MTCA).

1.2 SWPPP Scope

This SWPPP addresses remediation activities and was prepared pursuant to the requirements in National Pollutant Discharge Elimination System (NPDES) Permit Number WA-003212-3 and in accordance with the *Stormwater Management Manual for Western Washington* (Washington State Department of Ecology, 2005). This SWPPP provides an overview of the measures that will be taken to ensure the protection of public waterways during the remediation activities described in the 2008 Engineering Design Report EDR. Updates to the SWPPP will be issued as needed to address the specific work that will be completed in that calendar year, as described in annual EDRs.

1.3 SWPPP Objectives

The objectives of this SWPPP are to:

- implement Best Management Practice (BMPs) to prevent erosion and sedimentation from construction activities;
- prevent exceedences of surface water quality criteria; and
- control peak volumetric flow rates and velocities of stormwater discharges.

2 Construction Activities

2.1 Project Description

This SWPPP covers remediation activities occurring in 2008, as described in the 2008 EDR. The activities covered by this SWPPP will take place in the Northwest Developed Zone (NWDZ), the Northeast Developed Zone (NEDZ), and the Railyard Zone (RYZ), all of which are shown in Figure 2. The remediation activities in these zones will consist of the following.

Railyard Zone

- Depot Relocation: The existing Railyard Depot Building will be temporarily relocated from the NWDZ to facilitate excavation and construction of the HCC system. Following completion of the HCC the depot will either be placed back in its original location or placed at another location acceptable to the Town and BNSF.

- Utility Crossing Construction: A new utility crossing of the mainline tracks will be constructed to provide a conduit for remediation systems – this second crossing will be used by the remediation systems and controls only and is not available for other utilities.

- Hydraulic Control and Containment (HCC) System: An HCC system consisting of a redundant groundwater barrier and a groundwater interception trench will be constructed near the north RYZ boundary with Railroad Avenue.

- HCC Water Treatment System: An HCC water treatment system will be constructed to treat groundwater recovered via the HCC system. A remediation utility corridor will be constructed in the RYZ. A conduit will be installed within the corridor underneath the railroad tracks in anticipation of installing conveyance piping for transferring HCC water to the treatment system and from the treatment system to permitted surface discharge points, injection wells, surface waters, and/or the Town stormwater system.

- HCC System Treated Groundwater Injection: Treated groundwater from the HCC system will be reintroduced into the railyard subsurface at appropriate locations and by appropriate means in order to flush petroleum contamination toward the HCC system.

- HCC Treated Groundwater Discharge: Treated groundwater from the HCC system may be 1) discharged to surface water; and/or 2) discharged to the Town storm water system consistent with applicable state and local substantive requirements and with applicable permits.

- Construction Water Treatment: A temporary system will be constructed in the RYZ to treat water generated from construction activities.

- Treated Construction Water Discharge: Treated construction water may be 1) discharged to surface water; and/or 2) discharged to the Town storm water system consistent with applicable state and local substantive requirements and with applicable permits.

- Air Sparging (AS) System Construction: An AS system, including sparging wells, underground piping, and blowers will be installed to treat impacted soil and groundwater in the NEDZ. Sparging wells and underground piping will be installed in the NEDZ. A mechanical building will be constructed in the RYZ to house AS system blowers and controls. AS system piping will be installed in trenches in the NEDZ and in the conduit installed in the remediation utility corridor to supply pressurized air from the blowers to the sparging wells.

- Remediation Equipment Building Construction: One or more mechanical building(s) will be constructed in the RYZ to house equipment and controls for the HCC, water treatment, and AS systems.

- Demolition of Operations Building: The existing Operations Building on the railyard may be demolished to allow construction of a new operations Building.

- New Operations Building Construction: A new Operations Building may be constructed on the railyard to replace the office space currently provided by the Depot.

- Groundwater Well Installation: Groundwater monitoring wells will be installed to support monitoring of the HCC system. Details will be provided in the HCC Special Design Report.

- Compliance Monitoring: The following compliance monitoring activities will be conducted during and after remediation activities. These activities will be described in the Compliance Monitoring Plan (CMP).

    - Protection monitoring to confirm that human health and the environment are adequately protected during remediation activities.

    - Performance monitoring to assess whether or not the cleanup action has attained the designated Cleanup Levels (CULs), RLs, and other performance standards.

- Municipal Wastewater Treatment System Construction: Infrastructure to connect to the community wastewater collection system will be constructed at the McEvoy house and the Whistling Post Tavern

properties if, as anticipated, access is granted to these properties. Similar infrastructure may also be constructed at the depot, depending on its final location.

- Right-of-Way (ROW) Restoration – ROWs that are excavated as part of remediation activities will be restored to meet current applicable King County standards as adopted by the Town, or as agreed by BNSF and the Town.

- Utilities Construction and Restoration – Electrical and telecommunications services may be reconfigured as necessary to maintain these services to residences and businesses that remain inhabitable/operational during remediation activities. New permanent electrical, communications, and potable water utilities that are removed as part of remediation activities will be restored in-kind, or redeveloped as agreed by BNSF, property owners and the Town.

- Soil Handling Facility Structure – A soil handling facility (SHF) structure could be constructed in the soil handling area in the RYZ.

NWDZ

- The following cleanup activities are planned for the NWDZ:

- Building Relocation: The McEvoy house and the Whistling Post Tavern will be temporarily relocated to facilitate excavation of impacted soil. Building relocation will be contingent upon obtaining access from the owners.

- Excavation: Free product and soil with concentrations of lead exceeding 250 mg/kg and arsenic exceeding 20 mg/kg, and all free product and/or soil with concentrations of petroleum hydrocarbons exceeding 3,400 mg/kg NWTPH-Dx. The proposed excavation extents have been determined based on investigation results. Actual extents could vary and will be verified based on field observations and performance monitoring.

- Containment Structures: Excavation of impacted soil may not occur under some buildings if access is denied or if temporary relocation of the building is not feasible. Containment structures will be constructed on adjacent excavated properties as necessary to prevent recontamination. Design of these containment structures will be addressed on a case-by-case basis in consultation with Ecology and affected property owners. Containment structure design for buildings to which BNSF is denied access by owners within the 2008 excavation area will be described in the 2009 EDR, however, at this time BNSF does not expect that any such containment structures will be required.

- Temporary Containment Structures: A temporary barrier wall will be installed at the north and west 2008 excavation limits to delineate the

limits of the excavation and prevent clean backfill from contacting LNAPL and impacted soils that will be remediated in subsequent years.

- Compliance Monitoring: The following compliance monitoring activities will be conducted during and after remediation activities. These activities will be described in the CMP.

- Protection monitoring to confirm that human health and the environment are adequately protected during remediation activities.

- Performance monitoring to assess whether or not the cleanup action has attained the designated CULs, RLs, and other performance standards.

- Municipal Wastewater Treatment System Construction: Infrastructure to connect to the community wastewater collection system will be constructed at the McEvoy house and the Whistling Post Tavern properties if, as anticipated, access is granted to these properties.

- Right-of-Way Restoration: ROWs that are excavated as part of remediation activities will be restored to meet current applicable King County standards as adopted by the Town, or as agreed by BNSF and the Town.

- Utilities Construction and Restoration: Electrical and telecommunications services will be reconfigured as necessary to maintain these services to residences and businesses that remain inhabitable/operational during remediation activities. New permanent electrical, communications, and potable water utilities that are removed as part of remediation activities will be restored in-kind, or constructed as agreed by BNSF and the Town.

- Vapor Mitigation: It is anticipated that vapor mitigation will not be required in the RYZ because no buildings or structures will remain in place or will be built over petroleum contamination exceeding 3,400 mg/kg NWTPH-Dx.

NEDZ

- The following cleanup activities are planned for the NEDZ:

- Excavation: Free product and soil with petroleum concentrations exceeding 30,000 mg/kg NWTPH-Dx, as identified during previous investigations, will be removed from the area shown on Construction Plans and Specs Drawing C-6 (not included). Shallow soils on the Johnson property and/or Church property will be sampled more extensively to determine the need for and extents of excavation to remove soil within 2 feet of the surface with concentrations of lead exceeding 250 mg/kg and/or arsenic exceeding 20 mg/kg. Soil

sampling and possible excavation will not require temporary relocation of buildings located on the Johnson and/or Church property.

- Air Sparging (AS) System Construction: An AS system will be installed and operated in the area where petroleum concentrations remain above 3,400 mg/kg NWTPH-Dx following excavation, as identified during previous investigations.

- Compliance Monitoring: The following compliance monitoring activities will be conducted during and after remediation activities. These activities will be described in the CMP.

  - Protection monitoring to confirm that human health and the environment are adequately protected during remediation activities.

  - Performance monitoring to assess whether or not the cleanup action has attained the designated CULs, RLs, and other performance standards.

- Vapor Mitigation: Protective measures will be designed and implemented for buildings, structures, and enclosed spaces that remain in place or are built over petroleum contamination exceeding 3,400 mg/kg NWTPH-Dx if the concentration of total petroleum hydrocarbons in indoor air exceeds the cleanup level of 1,346 µg/m3.

- Right-of-Way Restoration: ROWs that are excavated as part of remediation activities will be restored to meet current applicable King County standards as adopted by the Town, or as agreed by BNSF and the Town.

- Utilities Construction and Restoration – Electrical and telecommunications services may be reconfigured as necessary to maintain these services to residences and businesses that remain inhabitable/operational during remediation activities. New permanent electrical, communications, and potable water utilities that are removed as part of remediation activities will be restored in-kind, or constructed as agreed by BNSF and the Town.

2.2 Pre-Construction/Post-Construction Site Conditions

Remediation activities will include excavating and restoring the site to near pre-construction conditions. Excavation activities in the NEDZ, NWDZ, and RYZ will require disturbing impervious surfaces including roads, sidewalks, and buildings. Roads and sidewalks will be restored and buildings will be returned to their original properties (with the possible exception of the Depot) after excavation activities have been completed such that there are no significant net losses or gains to impervious or pervious surface area within each zone. Excavation activities within these zones will also require removal

of some catch basins and stormwater conveyance piping. New upgraded catch basins and/or conveyance piping will be installed to replace equipment that is removed. All new equipment will meet current King County municipal codes. Catch basins that are not removed, but that will be affected by each phase of construction, will be protected as outlined in Section 10 of this SWPPP. A treatment system will be implemented to treat water generated by excavation dewatering.

3 Monitoring Requirements (Condition S2)

BNSF will conduct monitoring as required by NPDES permit Condition S2. Monitoring requirements are described in the permit.

4 Reporting and Record Keeping Requirements (Condition S3)

The summary table provided below shows inspections, reports, and records required by the permit.

Report/Inspection Documentation	Reporting Frequency	Send to Ecology Y or N	Permit Condition
Flow measurement calibration	At least once a year and in conformance with manufacturer's requirements	N	S2.C
Discharge Monitoring Report	Monthly	Y	S3.A
Calibration/maintenance of continuous monitoring devices	As needed	N	S3.B
Recordings of continuous monitoring devices	Continuous	N	S3.B
Noncompliance Notification	Notify Ecology as soon as practicable, but within 24 hours by telephone in instances described in S3.E; a written report must be submitted within 5 days following the telephone notification	Y	S3.E
Noncompliance Notification	If noncompliance is not as described in S3.E, notify Ecology as soon as practicable, but within 24 hours by telephone, then include a report with the DMR	Y	S3.F
Essential Maintenance Bypass	Submit report 10 days prior to any treatment system bypass for essential maintenance without the potential to cause violation of permit limits or conditions	Y	S4.B.1
Anticipated Bypass	Submit report 30 days prior to any anticipated bypass that has the potential to result in noncompliance of Permit	Y	S4.B.3
Chitosan metering pump log	Daily	N	S2A
Treatment system flow rate and turbidity of influent/effluent	Daily	N	S2.A
Spill Plan updates	Update at least annually and submit to Ecology within 14 days of adoption	Y	S7
Oil/Water Separator inspection and maintenance	Weekly	N	S8.1
Disposal of oil sludges from oil/water separator	As needed	N	S8.1
Accidental Releases of oil, chemicals, toxic or hazardous materials to waters	Notify Ecology as soon as practicable, but within 24 hours by telephone, in addition a written report must be submitted within 5 days following the telephone notification	Y	S8.2
Outfall inspection	Daily	N	S8.6

Report/Inspection Documentation	Reporting Frequency	Send to Ecology Y or N	Permit Condition
SWPPP updates	Update as needed and record amendments, submit SWPPP at least annually to Ecology	Y	S9
Rain gauge	Daily	N	S9.A.8
Experimental BMP use request	Submit written request 30 days prior to the propose use of experimental BMP	Y	S9.A.11
BMP inspections, maintenance, and repairs	As needed	N	S9.B.1(c)
Erosion and sediment control measures inspection	Daily, when construction is occurring Within 24 hours after any storm event of greater than 0.25 inches of rain per 24-hour period	N	S9.B.1(c)

4.1 Reporting

The first monitoring period begins in the same month as the effective date of the permit. Monitoring data will be documented in the Discharge Monitoring Report (DMR) and submitted to Ecology no later than the 15th day of the month after the completed monitoring period month. If there is no discharge for the monitoring period, then a DMR stating that there was no discharge will be submitted. The DMRs will include laboratory reports of analyses conducted on stormwater samples collected to fulfill monitoring requirements.

Laboratory reports will include:

- Sample data
- Sample location
- Date of analysis
- Parameter name
- CAS number
- Analytical method/number
- Method detection limit (MDL)
- Laboratory practical quantitation limit (PQL)
- Reporting units
- Concentration detected
- Chain of custody
- QA/QC results
- Documentation of accreditation for the parameter.

4.2 Records Retention

Monitoring records will be kept for a minimum of three years, consistent with Permit requirement S3.B, Record Retention.

4.3 Recording of Results

For each sample or measurement taken, the following information will be recorded.

1) Date, exact place, method, and time of sampling or measurement
2) Name of person taking sample or measurement
3) Dates analyses were performed
4) Name of the person who performed the analyses
5) Analytical techniques or methods used
6) Results of all analyses

4.4 Notice of Noncompliance Reporting

Ecology will be notified of noncompliances (if any) by telephone at (425) 649-7000. As required by Condition S3.E, the call to Ecology will be made as soon as practicable, but within 24 hours from the time BNSF becomes aware of the following circumstances:

- Any noncompliance that may endanger health or the environment;
- Any unanticipated bypass that exceeds any effluent limitation in the permit (detailed in Condition S4.B);
- Any upset that exceeds any effluent limitation in the permit (detailed in G.16);
- Any violation of a maximum daily or instantaneous maximum discharge limitation for any of the pollutants in Condition S1.A; or
- Any overflow prior to the water treatment system, whether or not such an overflow endangers health or the environment or exceeds any effluent limitation in the permit.

In addition, a report must be written and submitted to Ecology within five (5) days of the time that BNSF becomes aware of the event that was reported to Ecology by telephone. The report must include:

- A description of the noncompliance and its cause;
- The period of noncompliance, including exact dates and times;
- The estimated time noncompliance is expected to continue if it has not been corrected;
- Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance; and
- If the noncompliance involves an overflow prior to the treatment system, an estimate of the quantity (in gallons) of untreated flow.

4.5 Maintaining a Copy of the Permit

A copy of the Permit will be kept at the ENSR field office and made available upon request to Department of Ecology inspectors.

5 Operations and Maintenance (Condition S4)

Operations and Maintenance will be addressed in the annual SWPPP updates, which will include information specific to each calendar year's remediation activities. Per the requirements in Condition S4, this document will include the Operations and Maintenance Manual, Bypass Procedures, and Duty to Mitigate.

6 Chitosan Dosage Rate and Operation (Condition S5)

Chitosan dosage rates, operations, and storage according to the Permit specifications in Condition S5. The chitosan dosage rates corresponding to a 2 percent solution are listed in the following table.

Dose Rate Table for Chitosan Solution (2 % Chitosan Acetate) Based on Flow and Turbidity

Turbidity	Stormwater Flow Rate	Chitosan Solution Dose Rate	Chitosan Concentration
50 - 200 NTU	200 gpm	20 ml/min or 0.32 gph	0.26 mg/L
"	300 gpm	30 ml/min or 0.48 gph	"
"	400 gpm	40 ml/min or 0.64 gph	"
"	500 gpm	50 ml/min or 0.8 gph	"
"	600 gpm	60 ml/min or 0.96 gph	"
"	700 gpm	70 ml/min or 1.11 gph	"
200 - 400 NTU	200 gpm	40 ml/min or 0.64 gph	0.53 mg/L
"	300 gpm	60 ml/min or 0.96 gph	"
"	400 gpm	80 ml/min or 1.27 gph	"
"	500 gpm	100 ml/min or 1.6 gph	"
"	600 gpm	120 ml/min or 1.91 gph	"
"	700 gpm	140 ml/min or 2.23 gph	"
400 - 600 NTU	200 gpm	80 ml/min or 1.27 gph	1.06 mg/L
"	300 gpm	120 ml/min or 1.91 gph	"
"	400 gpm	160 ml/min or 2.54 gph	"
"	500 gpm	200 ml/min or 3.17 gph	"
"	600 gpm	240 ml/min or 3.81 gph	"
"	700 gpm	280 ml/min or 4.45 gph	"

Checking Formula:
Chitosan concentration in mg/L = (ml/min chitosan solution x 0.01 x 1 g/mL x 1,000 mg/g)/system flow rate in liters/min
liters/min = gpm x 3.78 liters/gal

6.1 Chitosan Best Management Practices

Per the requirements of Condition S5, chitosan acetate and the associated equipment must meet the best management practices listed below.

1) The metering pump must be calibrated using a calibration cylinder at startup and each time the chitosan solution needs to be changed. The date and calibration will be recorded in the log. An example log is presented in Appendix B. In addition, the stroke frequency should be set as high as possible and the stroke length adjusted to provide for correct dosing.

2) The system flow rate and the turbidity of the influent and effluent will be mearsured at least hourly and recorded.

3) No chitosan-treated water will be discharged to surface water unless it has been sand filtered first and meets the chitosan acetate limit of 0.1 mg/L.

4) Secondary containment for the chitosan solution storage container and the metering pump must be at least equal to the volume of the storage container.

5) Spill absorbent material must be readily available to immobilze any spill of chitosan solution during handling.

The logbook will be available for inspectors as necessary.

7 Solid Waste Control Plan (Condition S6)

7.1 Introduction

The Solid Waste Control Plan includes descriptions, sources, and disposal methods of the solid wastes that will be generated during 2008 remediation activities taking place in Skykomish, Washington. Generation rates will be included in the annual SWPPP updates. Solid waste generated by BNSF Railway Company in Skykomish that will result in operation of the water treatment system and discharge to the South Fork of the Skykomish River will be addressed by plan revision. Additionally, an update of this solid waste control plan will be submitted with the application for NPDES permit renewal one hundred eighty (180) days prior to the expiration date of the permit. This plan includes all solid wastes with the exception of those solid wastes regulated by Washington Administrative Code (WAC) 173-303 (Dangerous Waste Regulations).

7.2 Solid Waste

Solid wastes that will be generated during the 2008 activities, their sources, and disposal methods are listed in the table below. This table will be revised in upcoming SWPPPs to include quantities generated.

Waste Stream	Source	Disposal Methods
Excavated soils	Excavation of upland soils	Material will be taken to a Subtitle D disposal facility
Granular activated carbon	Water treatment system	Material will be taken to a Subtitle D disposal facility
Sand from sand filters	Water treatment system	Material will be taken to a Subtitle D disposal facility
Construction debris including building foundations, well casings, well tubing	Excavation in residential areas, well decommissioning	Impacted material will be taken to a Subtitle D disposal facility, un-impacted material to a construction debris facility
Personal protective equipment- including Tyvek suits, chemical-resistant gloves,	Worker protection	Impacted material will be taken to a Subtitle D disposal facility, un-impacted material to a permitted solid waste facility
Sampling equipment- including resealable bags	Soil, sediment, and water sampling	Impacted material will be taken to a Subtitle D disposal facility, un-impacted material to a permitted solid waste facility
HDPE and PVC liners	stockpile area liner	Impacted material will be taken to a Subtitle D

Waste Stream	Source	Disposal Methods
		disposal facility, un-impacted material to a permitted solid waste facility
Polyethylene sheeting	Stockpile covers, dust control	Impacted material will be taken to a Subtitle D disposal facility, un-impacted material to a permitted solid waste facility
Asphalt	Current and temporary road demolition	Asphalt recycling
Silt fencing, orange safety fence, catch basin socks	Temporary Erosion and Sediment Control Measures	Impacted material will be taken to a Subtitle D disposal facility, un-impacted material to a permitted solid waste facility
Non-aqueous Phase Liquid (NAPL)	Product recovery operations	Recovered NAPL will be properly contained and taken to an off-site permitted disposal or recycling facility
Septic Tank and Septage	Septic tank abandonment	Septage will be removed by a county approved pumper and will be treated in accordance with applicable regulations, empty tanks will be taken to a Subtitle D disposal facility

8 Operational Best Management Practices (BMPs) (Condition S8)

Operational Best Management Practices (BMPs) will meet the requirements in Condition S8, which are as follows.

1) Oil/water separators will be inspected weekly and maintained as needed. Records of inspections will be recorded on the form in Appendix B and kept on site. Oil sludges will be disposed of at a permitted disposal facility. Records of inspection, maintenance, and disposal will be kept onsite.

2) In the event of an accidental release of oil, chemical, toxic, or hazardous materials into the waters of the state or onto land with a potential for entry into state waters, including groundwater, BNSF will notify the Northwest Regional Office Spill Response Team, as soon as practicable, but within 24 hours at (425) 649-7000. In addition, a written report will be submitted to Ecology's Water Quality Program within five days of the time BNSF becomes aware of the circumstances of the release, unless Ecology waives or extends this requirement.

3) Sludges, scales, and sediments collected from tanks will be disposed of properly in a manner that does not violate federal, state, or local statues, ordinances or regulations.

4) All barrels, drums, or similar containers containing toxic or deleterious materials, which may include petroleum products, organic solvents, strong acids and bases will be stored in an upright position, in a bermed, covered area sufficient to prevent discharge into state ground or surface waters in the event of leakage or rupture.

5) Empty barrels will be stored with all openings plugged, in an upright position, and at least 20 feet from storm drains.

6) A daily outfall inspection will be conducted when the water treatment system is discharging to the stormwater sewer system.

7) Chitosan (if used) will be controlled according to manufacturer instructions, as well as the requirements in Condition S5.

9 General Requirements (Condition S9.A)

9.1 Project Contacts

Project contact information is provided below. This information will be reviewed on an annual basis and will be revised, as needed, in the annual updates to the SWPPP. BNSF and Ecology contacts will remain the same.

Title	Name	Telephone Number
BNSF Railway Company Duly Authorized Representative	Bruce Sheppard	Office: (206) 625-6035 Cell: (206) 790-0696
ENSR Project Engineer (24 hr contact)	Mike Byers	Cell: (206) 660-9945 Office: (206) 624-9349
Ecology Site Manager	Brian Sato	Office: (425) 649-7265

9.2 SWPPP Implementation, Review, and Modifications

This SWPPP will be kept on site at the ENSR field office and updated as needed to convey changes in construction activities, pollution sources, pollutant types/quantities, and personnel. Amendments will be made as necessary and documented on the Record of Amendments page. The SWPPP will be modified if site observations and practices reveal that the description of pollutant sources or BMPs identified in the SWPPP are inadequate.

Updates to the SWPPP will be submitted to Ecology annually.

Copies of this SWPPP, inspection reports, and other required reports, will be retained by ENSR for three years after the date of final stabilization of the site and will be available upon request.

9.3 Rain Gauge

BNSF will obtain and record rainfall data daily during active construction.

10 Erosion and Sediment Control Plan (Condition S9.B.1)

This section presents general methods and Best Management Practices (BMPs) for soil erosion and sediment control. These BMPs are referenced in the text below by the numbers assigned in the *Stormwater Management Manual for Western Washington.* The purpose of these general methods and BMPs is to control erosion of soil by wind and water and to minimize the migration of soil and sediments due to construction operations. These control measures and BMPs will be implemented by the construction contractor in all construction-affected areas.

10.1 General Methods

In general, methods used to control soil erosion and sediment migration may include, but may not be limited to, the following.

- Slope stabilization
- Construction sequencing
- Control of vehicular traffic
- Interception of stormwater runoff and delivery to a stable area
- Sediment filtration
- Control of soil loss from driveway entrances and exits, streams, natural and man-made drainage ways, and large cleared areas subject to wind and water erosion
- Limiting disturbed areas of soils
- Temporary stabilization of disturbed areas
- Dust suppression

Control features may include, but are not limited to, silt fences, berms, temporary drainage facilities, vegetative cover and dust monitoring and control as needed. Control features will be maintained in a functional condition and adjusted as necessary for the duration of the construction activities to ensure that applicable standards are met.

10.2 Stabilization Practices

Stabilization practices may include, but are not limited to, the following BMPs to meet the requirements outlined in Condition S9.B.1(a) of NPDES permit WA-003212-3.

10.2.1 BMP C162 Scheduling

Scheduling phases of a large construction project reduces the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. Staging excavation activities will limit the volume of stockpiled impacted soil at any given time, and limit the volume of any open excavations which may collect water. Staging construction equipment will limit the areas where equipment will be driven. Development of a construction equipment roadway (asphalt or equivalent) on site will limit erosion of soil caused by traffic. Rainy periods will be avoided to the extent allowed by the other scheduling constraints. Additionally, backfilling and grading will be completed as soon as possible following the completion of the excavation.

Each annual SWPPP update will include a description of stabilization BMPs, including site-specific scheduling of the implementation of the practices. A record of the dates when major grading activities occur, or when construction activities temporarily or permanently cease, and when stabilization measures are initiated will be included in the plan.

10.2.2 Seasonal Work Limitations

From October 1 through April 30, no soils will remain exposed and unworked for more than 2 days. From May 1 to September 30, no soils will remain exposed and unworked for more than 7 days. This condition applies to all soils on site. These time limits may be adjusted by the local permitting authority if it can be shown that the average time between storm events justifies a different standard.

Soils shall be stabilized prior to a holiday or weekend based on local weather forecasts. Stabilizing soils includes but is not limited to covering with plastic.

10.2.3 Preserve Vegetation/Mark Clearing Limits

Prior to the start of construction each year, the following controls will be put in place.

- Installation of high visibility plastic or metal fencing to mark the clearing limits of the construction and establish construction access

- Vegetation, including trees, shrubs, and grass that are removed from private residential and commercial properties will be replaced in-kind or with other vegetation as agreed by BNSF and the individual property owners.

10.2.4 BMP C103 High Visibility Plastic or Metal Fencing

High visibility fencing will be installed around all excavation areas and work zones to mark the limits for clearing and grubbing, the limits of the work area and staging/stockpile areas and to control construction access. Fence locations will be detailed in the annual SWPPP updates. Fences shall be at least 3 feet tall and highly visible. Fence layout and installation will be completed according to manufacturer's specifications.

10.2.5 BMP C101 Preserving Natural Vegetation

Preserving natural vegetation is the single most effective method for reducing erosion. Rain falling on trees can be taken up by the tree or evaporates, preventing the water from reaching the ground. Vegetation within the project area will be removed, as necessary. After excavation backfilling and topsoiling (see Section 10.2.6), removed vegetation will be replaced in-kind or with other vegetation as agreed by BNSF and the individual property owners.

10.2.6 BMP C125 Topsoiling

Topsoiling provides a suitable growth medium for final site stabilization with vegetation. Yards and other areas disturbed by the construction will be replaced and a layer of topsoil will be placed in the yards as well.

10.2.7 BMP C120 Temporary and Permanent Seeding

Permanent seeding is intended to reduce erosion by stabilizing exposed soil when land disturbing activities are complete in an area. Temporary seeding may be put in place following the completion of construction when it is expected that additional land disturbing activities will be required in an area at a later time. If seeding occurs between October 1 and March 30 a mulch or plastic cover will be used until the grass cover is established. The seedbed will be firm and rough.

10.2.8 BMP C220 Protect Drain Inlets

Storm drain inlet protection (BMP C220) will be installed to protect those catch basins that are not being removed and the new catch basins as they are installed if the grading is not yet complete. Inserts or socks designed to retain oil and sediment will be placed in the existing catch basins during site preparation. Regular inspections will be made of the catch basins, particularly following heavy rain, and maintenance will be conducted as needed, such as removal of oil and sediment or sock replacement. Socks will be replaced once they are one-third full or per the manufacturer's directions.

10.2.9 BMP C123 Plastic Covering

Plastic covering will be used to protect stockpiles of soil and other granular material on the site. Per the permit, discharges of industrial stormwater and dewatering water including stormwater runoff from uncovered or exposed

sand, gravel and soil stockpiles, leachate from stockpiles of contaminated soils, and any water resulting from soil remediation activities, to waters of the state, are prohibited. Stockpile leachate and stormwater that comes into contact with contaminated soil in the stockpile area will be collected in one or more sumps. This water will be removed from the sumps by vacuum truck and transferred offsite for disposal.

Stockpile bottom liners will be used for contaminated material stockpiles constructed in areas where the underlying material will not be removed during 2007-2012 remediation activities. Liner material will be a minimum of 40 mil and will consist of HDPE that is resistant to weathering and degradation due to contact with impacted materials for the duration of the work. Plastic sheeting used as a cover will have a minimum thickness of 6 mils. Sand bags or other ballast will be placed to hold the stockpile cover in position.

10.2.10 BMP C140 Dust Control

Dust control prevents wind transport of dust from disturbed soil surfaces onto roadways, drainage ways, and surface waters. Activities which create large amounts of dust will use dust control techniques to limit transport of airborne pollutants. However, water or slurry used to control dust will be filtered to prevent sediment from entering the water courses or stormwater conveyance systems. Using untreated water for dust control is prohibited.

Blowing dust will be controlled by using the following methods:

1) Irrigation by water sprinkling. Water will be sprinkled on the site until the surface is wet and repeated as needed.

2) Operation of a mechanical street sweeper at least once a day when hauling activities occur.

3) Covering and lining of haul trucks carrying soil from the excavation area to the stockpile area if needed.

Dust control methods will be implemented immediately whenever dust can be observed blowing on the project site and/or particulate monitoring results exceed limits specified in the annual *2008 Skykomish Air & Noise Monitoring Plan*.

10.2.11 Establish Construction Access

Construction access will be established using fencing. Access roadways will be stabilized to reduce the tracking of sediments onto public right-of-ways. Construction access plans will be detailed in annual SWPPP updates.

10.2.12 BMP C106 Wheel Wash/Decontamination Pad

When necessary, equipment and machinery will be decontaminated at a designated wheel wash/decontamination area prior to exiting the construction

area. The wheel wash/decontamination area will include in a temporary lined basin to hold used wash water. The collected washwater will evaporate, and/or be pumped to an on-site water storage unit, potentially reused, and then taken to a licensed facility for treatment or disposal.

10.2.13 Street Cleaning

Streets will be kept clean of construction debris and mud carried by construction vehicles and equipment. In lieu of stabilized construction exits, the pavement will be shoveled or swept to the extent necessary to keep the street clean. Shoveled or swept debris will be collected and disposed of appropriately. Washing and/or moving debris and mud off of the street into adjacent areas is not allowed.

10.3 Structural Practices

Structural BMPs divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. The following structural BMPs will be implemented to limit runoff from exposed areas, where necessary,

10.3.1 BMP C233 Silt Fences

Silt fences will be installed and maintained in order to reduce the transport of coarse sediment from the construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow. Silt fences will have a minimum height of 24 inches and a maximum height of 30 inches above the ground surfaces. The geotextile fabric at the bottom of the fences will be buried in a trench to a minimum depth of 4 inches below the ground surface. When joints in the silt fences are necessary, the adjoining sections will overlap a minimum of 6 inches and seal securely.

Only wood, steel, or equivalent fence posts approved by the Engineer shall be used. Posts shall be spaced no more than 6 feet apart, unless prohibited by existing structures. Posts should be driven a minimum of 12 inches or adequately secured by bracing or guying to prevent overturning of the fence due to sediment loading.

Soil and debris that accumulates on silt fences and/or straw bale dikes will be removed when it becomes approximately 6 inches thick. Soil and debris will be disposed at the designated spoil site for the project and/or spread evenly throughout the site, compacted and stabilized. Soil and debris will not be allowed to flush into any drainage way. If soil and/or debris have been contaminated, they will be disposed of in accordance with existing federal, state, and local rules and regulations.

If any signs of damage or ultraviolet breakdown of the silt fence is observed, the silt fence fabric will be repaired or replaced immediately.

10.3.2 BMP C250 Construction Stormwater Chemical Treatment

Water that collects in open excavations will be removed from the excavation as necessary for construction, and will be sent to the NPDES-permitted water treatment system for treatment prior to discharge to the South Fork Skykomish River.

10.3.3 Control Flow Rates

During construction, flow rates will be controlled by allowing sheet flow into the excavation and restricting flow off-site. Properties and waterways downstream from the site will be protected from erosion due to increases in the velocity and peak volumetric flow rate of stormwater runoff because during construction activities there will be less impervious area, increasing the amount of stormwater infiltrating at the site.

Post-construction site conditions are expected to closely resemble pre-construction conditions and any increase in the velocity or peak volumetric flow rate of stormwater runoff is expected to be managed by a replacement stormwater system. Any changes to the hydrologic character of the site due to an increase in impervious area from the widening of roads, the construction of sidewalks or any other change will be analyzed in each annual update to the SWPPP.

10.3.4 Control De-watering

De-watering activities will be completed on an as-needed basis. Water that is removed from the excavation will be treated using the NPDES permitted water treatment facility as outlined above.

10.3.5 Discharge to Natural Location

Pre-construction drainage patterns will remain the same to the maximum extent practicable.

10.4 Inspections and Maintenance

The prime contractor selected for this phase of the remediation will be responsible for the following inspections.

- Disturbed areas and areas used for storage of materials that are exposed to precipitation will be inspected for evidence of, or the potential for, erosion and/or runoff.

- Erosion and sediment control measures identified in this SWPPP will be observed to ensure that they are operating correctly.

- Locations where vehicles enter or exit the construction area will be inspected for evidence of off-site sediment tracking.

- Silt fences will be inspected within 24 hours after a storm event of 0.25 inch or more, daily during periods of prolonged rainfall, and at a minimum of once per week. Repair or replacement of damaged sections will be completed immediately and sediment deposits will be removed when silt reaches a depth of approximately 6 inches.

During active construction, the above inspections will be conducted by the responsible person at least once every seven calendar-days and within 24 hours after a storm of 0.25 inch of precipitation or greater. During inactive construction (after environmental remediation, but prior to site restoration), the area will be inspected only within 24 hours after a storm of 0.5 inch of precipitation or greater.

Deficiencies identified during the inspection will be corrected before the next rainfall event whenever practicable.

Inspection logs summarizing the scope of the inspection, major observations and actions taken in accordance with the inspection duties listed above, will be completed and retained as part of the SWPPP for at least 3 years from the date that construction is complete.

All temporary and permanent erosion and sediment control BMPs will be maintained and repaired as needed to assure continued performance of their intended function. Temporary erosion and sediment control BMPs will be removed within 30 days after final site stabilization is achieved. The *Levee Planting Plan and Monitoring Program* (Grette, 2006) outlines maintenance requirements for the vegetation planted along the levee.

10.4.1 BMP C160 Certified Erosion and Sediment Control Lead

Upon commencement of each phase of soil disturbing activities during 2008 remediation, a certified erosion and sediment control lead (CESCL) will be on site if one acre or more that discharges stormwater to surface waters of the state will be disturbed. The CESCL will be certified through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology, and will be appointed by the contractor.

The CESCL has the authority to act on the behalf of the contractor and must be available 24 hours per day throughout the project. The CESCL is responsible for updating drawings, identifying points of stormwater runoff from the project site, identifying the location where sheet flow collects, and implementing BMPs requirements and associated activities.

Additionally, the CESCL will maintain a permit file that includes the SWPPP and Erosion and Sediment Control Plan included as Section 10.0 of this SWPPP.

11 Control of Pollutants Other than Sediment on Construction Sites (Condition S9.B.2)

All onsite pollutants will be handled and properly disposed. In addition, the following Spill Prevention and Emergency Cleanup Plan (Spill Plan) will be followed to address pollutants other than sediment.

11.1 Spill Prevention and Emergency Cleanup Plan

This section satisfies Conditions S7 and S9.B.2 and outlines the important practices, procedures, and BMPs for spill prevention, containment, and control at the site. The objective of this plan is to prevent materials from entering the waters of the state.

11.1.1 Facility Information

The site is a former railway maintenance and fueling facility owned by BNSF and is located in Skykomish, Washington. This SWPPP, and subsequently this Spill Plan, are specifically for construction and remediation activities described in detail in Section 2 of this SWPPP.

11.1.2 Inventory for Pollution Prevention Plan

Dangerous and/or hazardous substances expected to be stored and used onsite during remediation include petroleum-based fuels and lubricants, chitosan acetate solution, lime, sand filter media (glass), carbon, de-emulsifiers, and other water treatment plant products. These substances will be present in small quantities only. MSDS sheets will be maintained, as required, with the operational site records. Procedures for the storage and handling of these substances will prevent contamination of storm or ground water. Any other materials stored on site will be managed in the same manner.

11.1.3 Control Pollutants

Pollutants will be controlled by inspecting equipment, managing waste, implementing good housekeeping practices, and properly storing materials on-site. Additionally, all chemicals will be stored under cover in a centralized impervious containment area. Any spills and waste in this area will be collected and disposed of properly.

11.1.4 Equipment Inspection

Prior to use on site, all equipment and machinery will be inspected for leaks and tested to ensure proper operational conditions are met. While on site, equipment will be parked, serviced and fueled within designated areas, as

detailed in the annual SWPPP updates. Equipment and vehicles will be prohibited by the Contractor from maneuvering on areas outside of dedicated rights-of-way and construction areas. Damage caused by construction traffic to erosion and sediment control systems will be repaired immediately by the Contractor.

Periodic inspections of equipment and control procedures will be implemented. All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.

11.1.5 Equipment Fueling

Selected equipment may be fueled in place using fuel trucks. Where needed, equipment will be brought to the edge of the exclusion zone and serviced there, or decontaminated and removed from the exclusion zone when major equipment repairs are needed.

11.1.6 Waste Disposal

The Contractor will be responsible for collecting, storing, hauling, and disposing of excavation spoils and waste materials in compliance with applicable federal, state, and local rules and regulations. Areas will be provided with adequate waste disposal receptacles for liquid as well as solid waste.

11.1.7 Sanitary Waste

The contractor will provide portable lavatory units. Sanitary waste will be regularly collected by a licensed sanitary waste management contractor and disposed of in an approved manner.

11.1.8 Good Housekeeping

The good housekeeping practices listed below will be followed on site during construction:

- An effort will be made to store only enough product required for task completion
- All materials stored on site will be stored in a neat and orderly manner in appropriate containers and, where possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label
- Substances will not be mixed with one another unless recommended by the manufacturer
- Whenever possible, all of the product will be used before disposing of the container

- Manufacturer's recommendations for proper use and disposal will be followed

- The Contractor superintendent will inspect the area daily to ensure proper use and disposal of materials.

11.1.9 Hazardous Materials

These practices will be used to reduce the risks associated with hazardous materials, if hazardous materials are used:

- Products will be kept in original containers unless they are not re-sealable.

- Original labels and material safety data sheets will be retained.

If surplus product must be disposed of, disposal will be in accordance with applicable regulations and procedures.

11.1.10 Spill Prevention and Countermeasures

In addition to the good housekeeping and material management practices, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be trained in the procedures and the location of the information and cleanup supplies.

- Materials and equipment necessary for spill cleanup (Spill Kit) will be kept in an onsite material storage area. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, and plastic absorbent materials and metal trash containers specifically for this purpose.

- All spills will be cleaned up immediately after discovery.

- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, in accordance with appropriate regulations.

The contractor will be responsible for designating a superintendent responsible for the day-to-day operations. This superintendent will also be the spill prevention and cleanup coordinator. She/he will designate at least three other personnel (Spill Team) who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the office trailer.

The construction contractor will report all spills immediately to the ENSR representative on site/on-call. Additionally, the contractor will be responsible for calling 911 if deemed appropriate.

11.1.11 Spill Notification Procedures

Should a spill occur, the contractor's designated spill prevention and cleanup coordinator as well as other spill prevention and cleanup team personnel should be notified.

Immediately Upon Detection of a Spill

Measures to be taken immediately upon detection of a spill:

1. Stop the Product Flow – Take immediate action (secure pumps, close valves, etc.) to stop the release at the source.

2. Warn Other Personnel – Enforce safety and security measures.

3. Shut Off Ignition Sources – All electrical circuits or motors, etc.

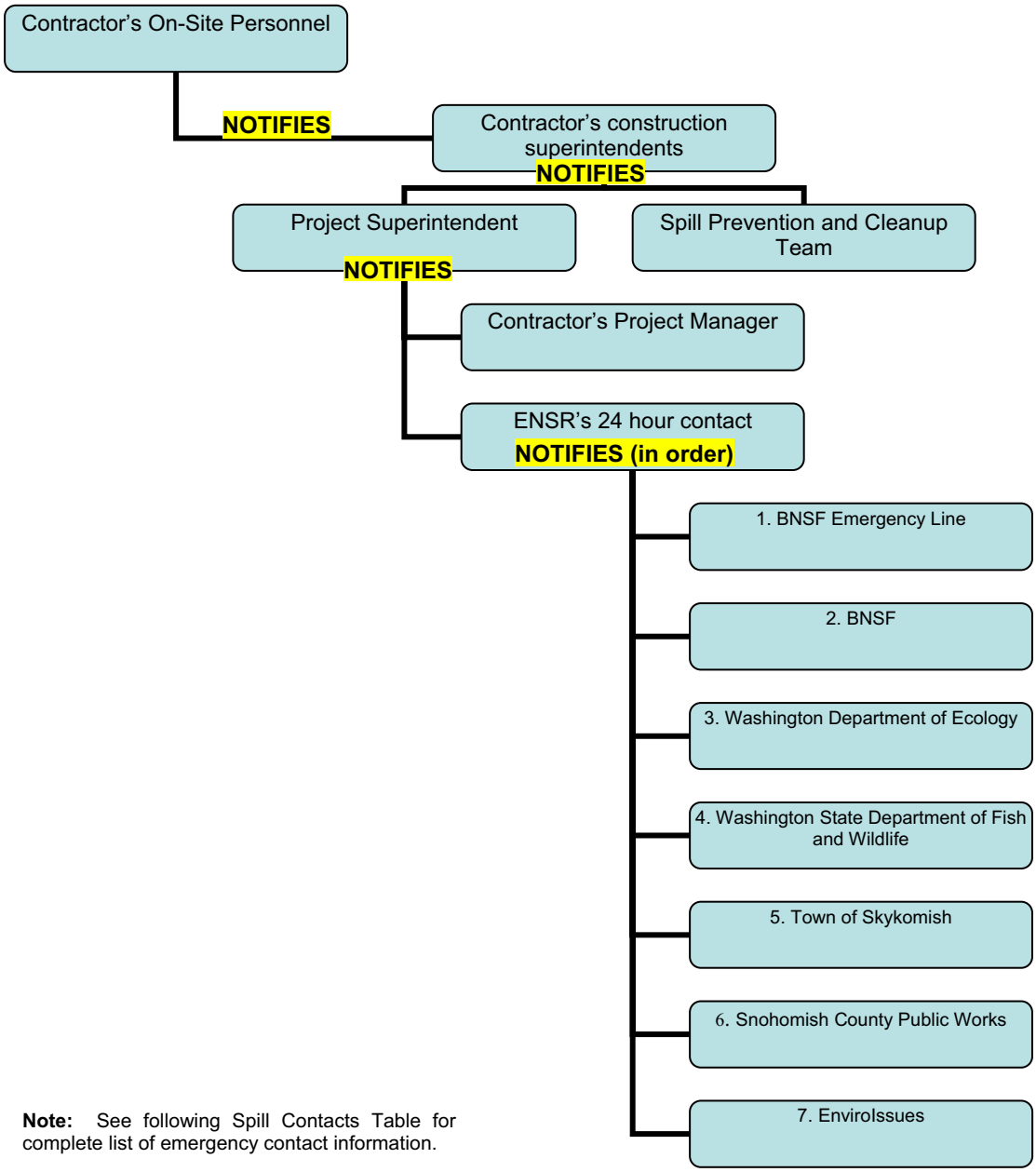
4. Initiate Containment – At storm drains and/or near the source.

5. Contact the contractor's construction superintendent

6. Notify ENSR's on site/on-call personnel

ENSR's on site/on-call personnel will be responsible for notifying Ecology and the appropriate project managers and legal authorities. Ecology must be notified immediately, by telephone at (425) 649-7000, if a spill reaches sanitary or storm sewers, ground water, or surface water.

Operational Chain of Command



Note: See following Spill Contacts Table for complete list of emergency contact information.

Spill Contacts

Organization	Name	Contact Information
ENSR's 24hr Contact	Mike Byers	Cell: (206) 660-9945 Office (206) 624-9349
BNSF Emergency Response		(800) 832-5452
BNSF Railway Company	Bruce Sheppard	Office: (206) 625-6035 Cell: (206) 790-0696
Ecology	Brian Sato	Office: (425) 649-7265
Ecology – if spill reaches storm sewers, ground water, or surface water.		(425) 649-7000
Washington Department of Fish and Wildlife – if spill reaches Skykomish River (Agreed Order, Exhibit H.1)		(360) 534-8233
Town of Skykomish	Charlotte Mackner	Office: (360) 677-2388
Snohomish County Public Works	Candice Soine	Office: (425) 388-3488 Ext. 4259 E-mail: Candice.soine@co.snohomish.was.us Address: 2930 Wetmore, 4th Floor Everett, WA 98201
EnviroIssues	Hillary Johnson	Office: (206) 269-5041 Pager: 1-800-228-1849

11.1.12 BMP C153 Material Delivery, Storage and Containment

Material delivery, storage, and containment will be managed to prevent discharge of pollutants to the stormwater system by minimizing the types and volumes of hazardous materials stored on site, placing materials in secondary containment if needed, and maintaining a spill kit in the material storage area.

Additional storage requirements include the following.

- All materials will be stored in a way as to prevent spills due to overfilling, tipping, or rupture.

- All liquid products and wastes will be stored on durable impervious surfaces and within bermed containment capable of containing 110% of the largest single container in the storage area. In addition, reasonable steps will be taken to prevent releases of liquid products from malicious tampering or vandalism.

- During the wet weather season (approximately Oct 1 – April 30), all waste will be stored under cover. The waste storage areas, whether for waste oil or hazardous waste, will be clearly designated as such and kept separate from the new product storage area.

- A spill kit will be kept in close proximity to waste storage areas to allow for quick clean-up response.

11.1.13 Employee Training

On-site workers will receive SWPPP training. Operators and workers will be made aware of the structural and operational BMPs that are in place to prevent pollution to stormwater, where the structural BMPs are located, and how the BMPs function to prevent stormwater pollution.

Topics such as good housekeeping, pollutant control, and the spill plan will be discussed in their training.

11.1.14 Recordkeeping

Records of inspections and spills will be kept for three (3) years.

11.1.15 Plan Updates

The Spill Plan will be reviewed and updated annually.

Interim changes made to this plan will be sent to Ecology within 14 days of adoption. Interim updates to the Spill Plan may include changes to the following.

- The reporting system used to alert relevant personnel and agencies in the event of a spill

- Preventative measures and facilities that prevent, contain, or treat spills. An overall facility plot illustrating drainage patterns will be included in this section

- A list of all oil and chemicals used, processed, or stored at the facility that could be spilled into state waters.

12 Coordination with Local Requirements (Condition S9.B.4)

BNSF will comply with any more stringent requirements of local governments.

13 References

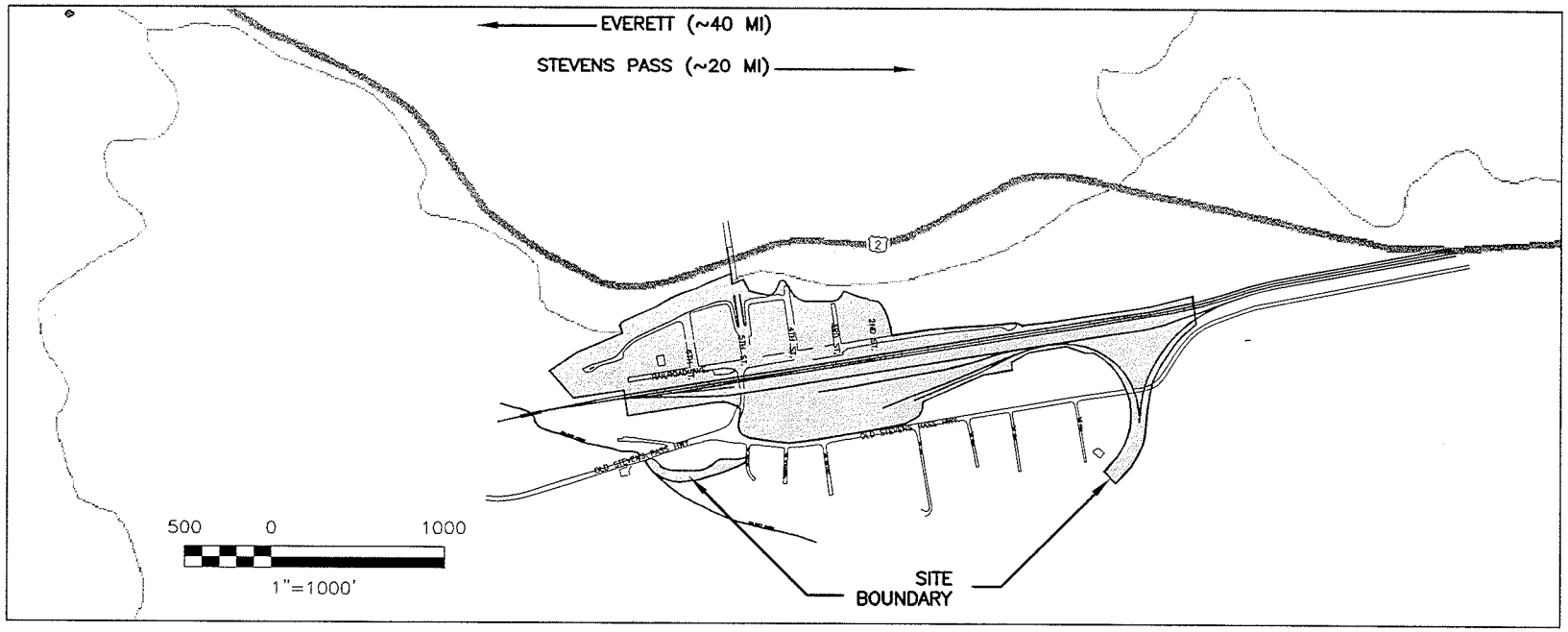
Argus Pacific, 2008. *BNSF Skykomish Air & Noise Monitoring Plan*. Prepared for ENSR on behalf of BNSF Railway Company. Seattle. May 31.

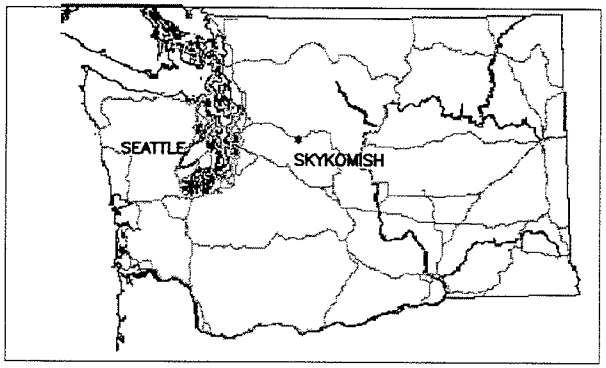
ENSR, 2006. National Pollutant Discharge Elimination System. Waste Discharge Permit WA-003212-3. Prepared for BNSF Railway Company. Seattle. May 4. Modification #2, June 30, 2008.

Washington State Department of Ecology – Water Quality Program, 2005. *Stormwater Management Manual for Western Washington*. February.

Figures

File: H:\16423\ECOLOGY\6-4-07\FIG_1-SITE_LOCATION.dwg Layout: FIG 1 User: emarshall Plotted: Jun 04, 2007 - 4:28pm Xref's:





WASHINGTON STATE DEPARTMENT OF ECOLOGY

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BNSF RAILWAY SITE SKYKOMISH, WA			SITE LOCATION MAP
DATE: 6/5/07	DRWN:		FIGURE 1

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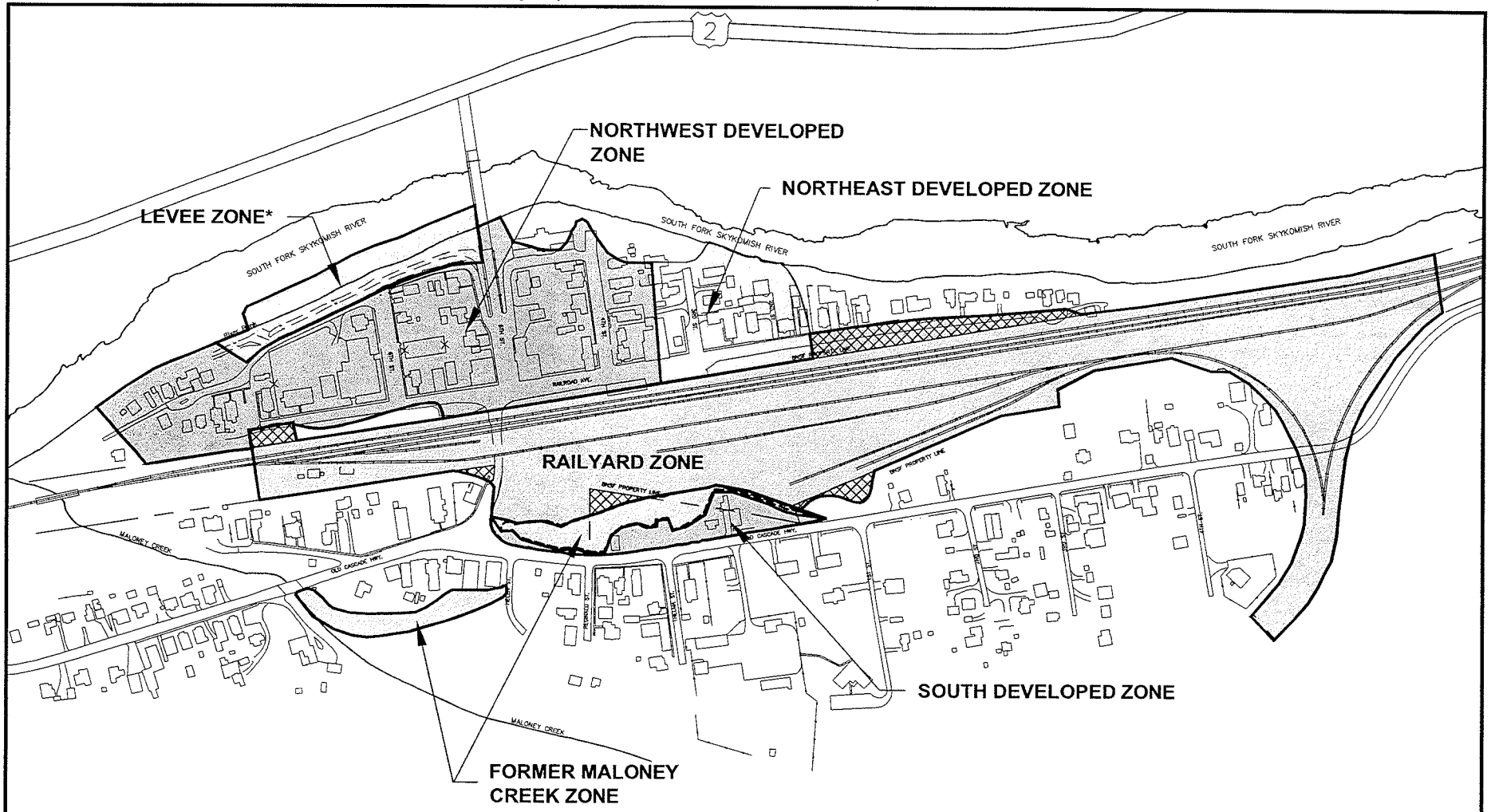

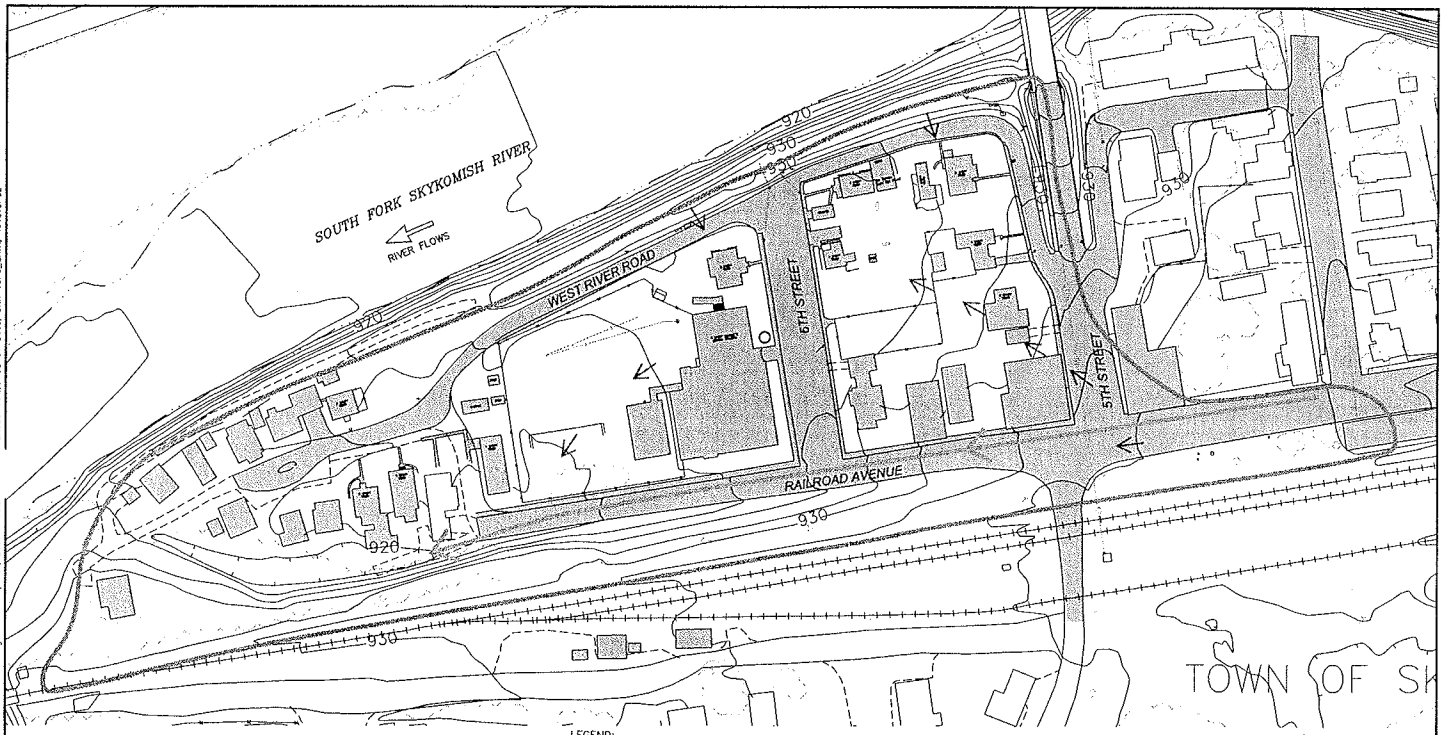

LEGEND:

- DRAINAGE BASIN BOUNDARY
- LONGEST SURFACE WATER DRAINAGE PATH
- DIRECTION OF SURFACE FLOW ARROWS
- IMPERVIOUS AREA
- STREAMBED/WATER CHANNEL
- FENCE
- RAILROAD TRACK
- CONTOUR (2-FOOT)
- VEGETATION

N

50 0 100

SCALE IN FEET

RETEC

THE BNSF RAILWAY COMPANY SKYKOMISH, WASHINGTON BN050-16423-521	DRAINAGE MAP
DATE: 04/25/06 DRWN: A.S./SEA	FIGURE 1

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BN050-16423-GC-ST-0003 BRH-TOPO_BATH, 4018TOPO2

Appendix A

Summary of Existing Conditions

Summary of Existing Conditions

This section describes the existing site conditions, including topography, runoff, soils, ground cover, critical areas, and sensitive areas such as wetlands or vegetated buffers. Figure 1 shows site topography and location of the site.

For the purposes of this SWPPP, the site is considered to be the areas shown in Figure 2 previously described as the NEDZ, NWDZ, BZ, FMCZ, SDV and RYZ. The total area to be disturbed during phases occurring between 2007 and 2012 is roughly 21 acres with approximately half of that area consisting of impervious surfaces like asphalt pavement, driveways, sidewalks, and buildings such as single family homes and public buildings. The slope of the existing land surface is typically 2 percent except at the levee where it is approximately a 50 percent slope to the crest of the levee. The existing ground cover at the site consists of lawns and gardens, brushy areas, and gravel pavement.

The surficial soil at the site consists of a thin layer of topsoil and/or fill underlain by glaciofluvial sediments, mainly sand and gravel.[1] The only exception to this is in the levee zone which was remediated and backfilled with rock fills late in 2006. That area is underlain with stabilization rock and structural fill material which is covered with a layer of topsoil. According to the Soil Survey Report of Snoqualmie Pass Area, Parts of King and Pierce Counties, published by the Soil Conservation Services, the surficial soils at the site consist of Arents (Soil Map Unit No. 9).[2] The permeability of the Arents soil is moderate to moderately rapid, with low available water capacity, slow runoff, and slight water erosion potential. The Final Feasibility Study details the underlying geology. The native soils consist primarily of sand and gravel, with shallow discontinuous lenses of silt and clay. The ratio of sand to gravel and the grain size of the material are highly variable throughout Skykomish.

The stormwater runoff in the streets is collected by catch basins located along Railroad Ave., 5th and 6th Streets. Storm water collected in these basins is piped to the river. In non-paved open areas, little surface runoff occurs due to the moderate permeability of the soils. Surface runoff that does not immediately infiltrate into the site soils is collected by the catch basins and conveyed through the levee or runs down Railroad Avenue and collects in a marshy area north of the railyard. Water which falls on the levee runs off directly into the South Fork Skykomish River or infiltrates.

Post-construction site conditions are expected to closely resemble pre-construction conditions and any increase in the velocity or peak volumetric flow rate of stormwater runoff is expected to be managed by a replacement stormwater system. Any changes to the hydrologic character of the site due to an increase in impervious

[1] ENSR, 2005. *Final Feasibility Study- Skykomish, Washington*. Prepared for BNSF Railway Company. Seattle, March 15.

[2] U.S. Department of Agriculture, 1992. *Soil Survey report of Snoqualmie Pass Area, Parts of King and Pierce Counties*.

area from the widening of roads, the construction of sidewalks or any other change will be analyzed in each year's SWPPP.

A temporary asphalt pad was constructed in the railyard during the summer of 2006 to stockpile soils which were removed during the levee zone remediation. The location of the soil handling area's asphalt pad can be seen in Figure 2. The topography of the pad is such that rainwater falling on the pad runs toward a low lying sump located on a southwestern edge. During the levee zone remediation, the sump collected the rainwater which was then removed by a vacuum truck and delivered to the NPDES permitted water treatment plant for discharge to the south fork of the Skykomish River. Currently the sump has been perforated and rainwater falling on the pad flows westward towards the sump where it leaves the pad and infiltrates into the nearby ground. Before construction of the soil handling area begins, either the sump will be repaired so that water can be collected and disposed of or a suitable BMP will be designed and installed which will prevent sediment laden stormwater from leaving the pad without adequate treatment.

Appendix B

Logs and Inspection Forms

EXAMPLE CHITOSAN METERING PUMP LOG

Date	Calibration*	Calibrated By:	Notes

* Metering pump must be calibrated using a calibration cylinder at startup and each time the chitosan solution needs to be changed.

EXAMPLE WEEKLY OIL/WATER SEPARATOR INSPECTION FORM

Date: _____ Inspected by: _____ Location: _____ Weather Conditions: _____

Inspector's signature: _____

Structure/Unit ID/Location	Condition	Repair Needed? (Y or N)	Cleaning Needed? (Y or N)	Repair or Cleaning Completed (Fill in Date, What was Done)	Comments/Other Action Needed/ Adjustments to SWPPP

APPENDIX K

East Bay SWPPP

Stormwater Pollution Prevention Plan

CASCADE POLE SITE PHASE III

Owner	Developer	Operator/Contractor
Port of Olympia	Port of Olympia	To be provided.
415 Washington Street NE	415 Washington Street NE	Mailing Address
Olympia, WA 98501	Olympia, WA 98501	City, State Zip
(360) 528-8000	(360) 528-8000	Phone

Project Site Location	Cascade Pole Site Phase III
Certified Erosion and Sediment Control Lead	To Be Determined Phone Number
SWPPP Prepared By	Curtis Heinold **Hatton Godat Pantier** 1840 Barnes Boulevard SW Tumwater, WA 98512 (360) 943-1599
Prepared On	March 11, 2010
Approximate Construction Start Date	June 1, 2010
Approximate Construction End Date	October 1, 2010

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1.0 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared as part of the NPDES stormwater permit requirements for the Cascade Pole Phase III construction project in Olympia, Washington. The project is located in the northeasterly portion of the Port of Olympia on the north & east side of Marine Drive adjacent to the Cascade Pole Phase II project, and is bordered on the north by Budd Inlet (See Appendix A for Site Map). The project is the last phase of the remedial action of the former Cascade Pole Company site. The existing site is 1.88-acres in size, and is a portion of the former Cascade Pole Phase II site. The project will include the excavation of the shallow, contaminated soils which have been identified west of the cutoff wall (Figure 3, Appendix A) under Landau Associates' two phases of work; 2005a (February 3) and 2005b (October 24) as referenced in the reports and evaluation by GeoEngineers dated 2006. The excavated soil would be placed in the adjacent area east of the cutoff wall (westerly portion of the Phase II containment area). The Phase III west area would then be reclaimed with a pervious cap. The Phase III area east would then be capped with a low permeable surface barrier.

Construction activities will include placement of Best Management Practices (BMPs) and erosion and sediment control consisting of erosion control fencing, sediment traps and stormwater runoff treatment facilities and excavation of approximately 1,000 -1,500 cy of contaminated material from two areas identified in Phase III for remedial action. The shallow excavation would be in the range of 1.5 feet in depth. This material would be transported across the Phase III west area and temporarily stockpiled in the Phase III east area, then leveled and graded. Upon successful completion of soil testing, the Phase III west area would be provided with an 18-inch depth of approximately 2,400 cy of clean granular import fill and graded. A pathway would be constructed along the shoreline.

The purpose of this SWPPP is to describe the proposed construction activities and all temporary and permanent erosion and sediment control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and recordkeeping that will be implemented during the proposed construction project. The objectives of the SWPPP are to:

1. Implement Best Management Practices (BMPs) to prevent erosion and sedimentation, and to identify, reduce, eliminate or prevent stormwater contamination and water pollution from construction activity.
2. Prevent violations of surface water quality, groundwater quality or sediment management standards.
3. Prevent, during the construction phase, adverse water quality impacts including impacts on beneficial uses of the receiving water by controlling peak flow rates and volumes of stormwater runoff at the Permittee's outfalls.

This SWPPP was prepared based on the requirements set forth in the Construction Stormwater General Permit and Stormwater Management Manual for Western Washington (SWMMWW 2005). The report is divided into seven main sections with several appendices that include stormwater-related reference materials. The topics presented in the each of the main sections are:

- Section 1 – INTRODUCTION. This section provides a summary description of the project and the organization of the SWPPP document.
- Section 2 – SITE DESCRIPTION. This section provides a detailed description of the existing site conditions, proposed construction activities, and calculated stormwater flow rates for existing conditions and post-construction conditions.
- Section 3 – CONSTRUCTION BMPs. This section provides a detailed description of the BMPs to be implemented based on the 12 required elements of the SWPPP.
- Section 4 – CONSTRUCTION PHASING AND BMP IMPLEMENTATION. This section provides a description of the timing of the BMP implementation in relation to the project schedule.
- Section 5 – POLLUTION PREVENTION TEAM. This section identifies the appropriate contact names (emergency and non-emergency), monitoring personnel, and the onsite temporary erosion and sedimentation control inspector.
- Section 6 – INSPECTION AND MONITORING. This section provides a description of the inspection and monitoring requirements such as the parameters of concern to be monitored, sample locations, sample frequencies, and sampling methods for all stormwater discharge locations from the site.
- Section 7 – RECORDKEEPING. This section describes the requirements for documentation of the BMP implementation, site inspections, monitoring results, and changes to the implementation of certain BMPs due to site factors experienced during construction.

Supporting documentation and standard forms are provided in the following appendices:

Appendix A – Site Plans
Appendix B – Construction BMPs
Appendix C – Alternative Construction BMP List
Appendix D – General Permit
Appendix E – Site Log and Inspection Forms
Appendix F – Engineering Calculations

2.0 Site Description

2.1 Existing Conditions

As noted in Section 1.0, the site (1.88 ac) is located in the northeast portion of the Port of Olympia peninsula (See Vicinity Map in Appendix A). There are no structures within the Phase III area. The only utilities within the area are adjacent to Marine Drive on the southerly edge of the site. There is an underground radio tower array within the northwesterly area servicing the adjacent radio tower to the west of the site.

Topography in the Phase III area west of the underground cutoff wall varies in elevation from the shoreline edge, Elevation 15.0 to Elevation 20.0 at the northerly edge of Marine Drive, and Elevation 18.0 to 19.0 on the west boundary. The site generally slopes northeast and northwest, west of the underground cutoff wall. Grades range from 1% to 6%. Soil is upland-mixed import, consisting of generally Type B-D soils. There is a small stockpile of debris of broken concrete, steel, wood, and piping on the site. Groundcover consists of grasses, a small patch of brush and a few madrona trees. There are three piles of broken concrete chunks at the north edge of the shoreline and a strip of broken asphalt pavement at the center of the site west of the underground cutoff.

The Phase III cap area east of the cutoff wall contains a portion of the underground extraction system for Phase II along with underground power and electrical system for the manhole pump located along the easterly edge of the site. There is a stockpile of soil material in the central area of the site ranging in Elevation from 20.0 to 27.0. Area slopes are approximately 3%, excluding the stock pile and retention pond. The site is graded to the retention pond at the easterly 1/3 of the site.

The Phase III area west of the cutoff wall does not receive any offsite runoff and there is no drainage system on the site, except for a small temporary retention pond at the southwest corner of the site. Stormwater infiltrates into the soil or sheet flows offsite. A small area is tributary to the existing pond. The remaining runoff sheet flows offsite and enters Budd Inlet. The Phase III area west of the cutoff wall has a slightly moderate erosion risk based on existing soils and slope. The shoreline area adjacent to the site has been mitigated and reclaimed to a gravel beach with a salt water enhanced planting area. The shoreline is a critical area.

The Phase III area east of the cutoff wall infiltrates runoff into the soil or sheet flows to the existing onsite retention pond.

The Phase III area east of the cutoff wall has a moderate to high risk of erosion based on soil type, compaction, and slope. The area is bermed off from the adjacent critical area shoreline.

2.2 Proposed Construction Activities

The proposed development includes the Phase III area west of the cutoff wall and is being developed as vacant area with a shoreline path. Possible future development could include structures with associated parking facilities.

Construction activities will include installation of temporary erosion control fencing and a sediment control trap with stormwater pump system. Controlled discharge will be pumped to the existing pond on the east side of the cutoff wall. Approximately 1,000 -1,500 cy of excavation will take place in the two areas identified for clean-up. Excavated soil will be transported to the Phase III area east of the cutoff wall after successful testing of the area to verify acceptable soil conditions and removal of the existing stockpiled concrete, steel, wood and piping to an approved waste site. Removal of the three broken concrete piles at the north end of the site down to Elevation 15.0 will also take place. Import of 2,500 cy of clean material will be placed and graded to contain the stormwater runoff and to bring the site to finish grade. A pathway will be constructed along the shoreline.

The Phase III area east of the cutoff wall is to be developed with an asphalt paved cap. Construction activities will include use of the existing detention area as a sedimentation trap and installation of a stormwater filtration treatment plant. The existing Phase II extraction system will remain intact. Excavation & installation of a new drainage system will take place for a portion of the previously remediated area of Phase II. Grading of the imported excavated Phase III excavated stockpile will level the area and fill the existing sediment trap. A catchment area will be constructed to collect stormwater runoff for the area east of the cutoff wall, and a temporary filtration treatment plant will be installed which will discharge to the Port of Olympia's existing outfall. A separation layer will be placed on the area and a 14-inch depth of clean glandular will be added to the site. A final asphalt cap will be installed over the area. The temporary filtration treatment plant will use sand filtration or similar method.

General design criteria are taken from the Department of Ecology's (DOE) Stormwater Management Manual for Western Washington (rev) 2005. Substantive requirements for handling construction stormwater, including BMP's and other construction related criteria are proposed for this project.

Stormwater runoff volumes were calculated using the Western Washington Hydrology Model WWHM ver. 2. Temporary sediment traps were designed using the 2-year storm event since construction will occur over a time period of less than one year.

The following summarizes details regarding site areas:

West of the cutoff wall

- Total Site Area: 0.96 acres
- Percent Impervious Area before Construction: 4.9%
- Percent Impervious Area after Construction: 0%
- Disturbed Area during Construction: 0.96 acres
- Disturbed Area that is characterized as Impervious (i.e., access roads, staging, parking, pond water surface): 0.09 acres

Status	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)
Prior to Construction	0.052	0.097
During Construction	0.338	0.455
After Construction	0	0

All stormwater flow calculations are provided in Appendix E.

East of the cutoff wall

- Total Site Area: 0.92 acres
- Percent Impervious Area before Construction: 15.2%
- Percent Impervious Area after Construction: 100%
- Disturbed Area during Construction: 0.92 acres
- Disturbed Area that is characterized as Impervious (i.e., access roads, staging, parking, pond water surface): 0.14 acres

Status	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)
Prior to Construction	0.05	0.093
During Construction	0.324	0.436
After Construction	0.324	0.436

All stormwater flow calculations are provided in Appendix E.

Criteria:

Runoff: WWHM 09-101 Outside Wall
WWHM 09-101b Inside Wall
Sediment Trap #1 & #2 DOE BMP C-240
Discharge Structure #1 & #2 DOE BMP C-241

3.0 Construction Stormwater BMPs

3.1 The 12 BMP Elements

3.1.1 Element #1 – Mark Clearing Limits

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. Trees that are to be preserved, as well as all sensitive areas and their buffers, shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible. The BMPs relevant to marking the clearing limits that will be applied for this project include:

- Preserving Natural Vegetation (BMP C101)
- High Visibility Plastic or Metal Fence (BMP C103)
- Stake and Wire Fence (BMP C104)

The existing saltwater planting enhancement area is to be preserved. High visibility fence shall be placed prior to any construction work in the area indicated on the plans to protect the enhancement area. Stake and wire fabric fence along with bio-wattle shall be placed at the site limits as shown on the plans prior to construction work.

Alternative BMPs for marking clearing limits are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the NPDES Permit. To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES with approved SWPPP, the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.2 Element #2 – Establish Construction Access

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads. Wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. All wash wastewater shall be controlled onsite. The specific BMPs related to establishing construction access that will be used on this project include:

- Stabilized Construction Entrance (BMP C105)
- Wheel Wash (BMP C106)
- Construction Road/Parking Area Stabilization (BMP C107)

The existing construction entry from the previous phase of work is to be utilized and upgraded as required prior to any construction activity. The existing small pond to the west of the entry will be used as truck wheel wash and construction equipment washdown.

3.1.3 Element #3 – Control Flow Rates

In order to protect the properties and waterways downstream of the project site, stormwater discharges from the site will be controlled. The specific BMPs for flow control that shall be used on the project include:

- Sediment Trap (BMP C240)
- Stormwater Treatment Plant (BMP C251)

Sediment traps shall be constructed at the beginning of any clearing operations. Refer to Plan for location and size.

The project is located west of the Cascade Mountain Crest. As such, the project must comply with Minimum Requirement 7 (SWMMWW 2005).

In general, discharge rates of stormwater from the site will be controlled where increases in impervious area or soil compaction during construction could lead to downstream erosion, or where necessary to meet local agency stormwater discharge requirements (e.g. discharge to combined sewer systems).

Alternative BMPs for flow control are included in Appendix C as a quick reference tool for the onsite inspector in the event BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater Permit (Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.4 Element #4 – Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMPs to be used for controlling sediment on this project include:

- Mulching (BMP C121)
- Silt Fence (BMP C233)
- Sediment Trap (BMP C240)
- Storm Drain Inlet Protection (BMP C220)
- Materials on Hand (BMP C150)

Bio-wattles, silt fence, sediment trap, and storm drain inlet protection shall be placed as shown on the plans at the start of the project. Additional locations may be required based on site conditions. Each BMP shall be monitored and maintained on a regular developed schedule. Maintain stockpile or BMPs for upgrading or replacement.

In addition, sediment will be removed from paved areas in and adjacent to construction work areas manually or using mechanical sweepers, as needed, to minimize tracking of sediments on vehicle tires away from the site and to minimize wash-off of sediments from adjacent streets in runoff.

Alternative BMPs for sediment control are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the general NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater Permit (Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that the existing BMPs are ineffective or failing.

3.1.5 Element #5 – Stabilized Soils

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. The specific BMPs for soil stabilization that shall be used on this project include:

- Mulching (BMP C121)
- Plastic Covering (BMP C123)
- Topsoiling (BMP C125)
- Dust Control (BMP C140)
- Early Application of Gravel Base on Areas to be Paved
- Materials on Hand (BMP C150)

Straw cover may be applied to all areas which will be exposed and are at or near finish grade. Plastic covering is to be used to cover all soil stockpiled areas during construction. Dust control shall be implemented to prevent airborne particle spread from vehicles and construction equipment during construction within the dry season (May 1 to September 30). Water application by sprinkling/truck mounted sprayer of other methods maybe used to control dust by regular applications based on soil condition, weather and construction activity. Early application of gravel base to the areas which will be paved should be done when subgrade has been established. Grade should be maintained until paving. Stockpiling of material for erosion control should be centralized and made easily assessable for easy use in case of BMP failure to provide for back-up protection.

The project site is located west of the Cascade Mountain Crest. As such, no soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of the time of year, all soils shall

be stabilized at the end of a shift before a holiday or weekend if needed based on weather forecasts.

In general, cut and fill slopes will be stabilized as soon as possible and soil stockpiles will be temporarily covered with plastic sheeting. All stockpiled soils shall be stabilized for erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

3.1.6 Element #6 – Protect Slopes

All cut and fill slopes will be designed, constructed, and protected in a manner that minimizes erosion. The specific BMPs for slope protection that shall be used on this project include:

- Mulching (BMP C121)

The project will have minor cut and fill slopes, no major cut or fill will be required. Any minor slopes should be provided with temporary or permanent seeding. Once grading has been finalized, mulch should be provided to protect seed and slope.

Alternative BMPs for soil stabilization are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater Permit (Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.7 Element #7 – Protect Drain Inlets

All storm drain inlets and culverts made operable during construction shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash-water separate from entering storm drains until treatment can be provided. Storm Drain Inlet Protection (BMP C220) will be implemented for all drainage inlets and culverts that could potentially be impacted by sediment-laden runoff on and near the project site. The specific BMPs for slope protection that shall be used on this project include:

Drop Inlet Protection

- Catch Basin Filters

The inlet sediment protection sock shown on the plans should be placed in all existing and proposed catch basins at locations shown on plans. Each location should be checked weekly and replaced as required. Provide adequate personnel for removal and replacements.

Culvert Inlet Protection

- Culvert Inlet Sediment Trap

Culvert inlets shall be protected with a sumped sediment trap at locations noted on plans. Regular maintenance is required to maintain sump.

Alternative BMPs for inlet protection are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the General NPDES Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Construction Stormwater Permit (Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.8 Element #8 – Stabilize Channels and Outlets

Where site runoff is to be conveyed in channels, or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion. The specific BMPs for protection that shall be used on this project include:

No discharge to stream and other natural drainage points at proposed. No conveyance channels will be constructed.

3.1.9 Element #9 – Control Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

3.1.9.1 VEHICLES, CONSTRUCTION EQUIPMENT, AND/OR PETROLEUM PRODUCT STORAGE/DISPENSING:

- All vehicles, equipment and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on-site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

3.1.9.2 CHEMICAL STORAGE:

- Any chemicals stored in the construction areas will conform to the appropriate source control BMPs listed in Volume IV of the Ecology stormwater manual. In western Washington, all chemicals shall have cover, containment, and protection provided on-site, per BMP C153 for Material Delivery, Storage and Containment in SWMMWW 2005.
- Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

3.1.9.3 EXCAVATION AND TUNNELING SPOILS DEWATERING WASTE:

- Dewatering BMPs and BMPs specific to the excavation and tunneling (including handling of contaminated soils) are discussed under Element 10.

3.1.9.4 DEMOLITION:

- Dust released from demolished sidewalks, buildings or structures will be controlled using Dust Control measures (BMP C140).
- Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection (BMP C220).
- Process water and slurry resulting from sawcutting and surfacing operations will be prevented from entering the waters of the State by implementing Sawcutting and Surfacing Pollution Prevention measures (BMP C152).

3.1.9.5 CONCRETE AND GROUT:

- Concrete work can generate process water and slurry that contain fine particles and high pH, both of which can violate water quality standards in the receiving water. This BMP is intended to minimize and eliminate concrete process water and slurry from entering waters of the state.
- BMP C151 Concrete Handling

  Anytime concrete is used, these management practices shall be utilized.

3.1.9.6 SOLID WASTE:

- Solid waste will be stored in secure, clearly marked containers.

3.1.9.7 OTHER:

- Other BMPs will be administered as necessary to address any additional pollutant sources onsite.

The facility is not transportation-related and, therefore, does not require a Spill Prevention, Control and Countermeasure (SPCC) Plan is required under the Federal regulations of the Clean Water Act (CWA).

3.1.10 Element #10 – Control Dewatering

All dewatering water from open cut excavation, tunneling, foundation work, trench, or underground vaults shall be discharged into a controlled conveyance system prior to discharge to a sediment trap or sediment pond. Clean, non-turbid dewatering water will not be routed through stormwater sediment ponds, and will be discharged to the storm system. Discharge to the receiving waters of the State shall be in a manner that does not cause erosion, flooding, or a violation of State water quality standards in the receiving water. Highly turbid dewatering water from soils known or suspected to be contaminated, or from use of construction equipment, will require additional monitoring and treatment as required for the specific pollutants. Such monitoring is the responsibility of the contractor.

However, the dewatering of soils known to be free of contamination will trigger BMPs to trap sediment and reduce turbidity. At a minimum, geotextile fabric socks/bags/cells will be used to filter this material. Other BMPs to be used for sediment trapping and turbidity reduction include the following:

- Concrete Handling (BMP C151)
- Temporary Sediment Pond (BMP C241)

3.1.11 Element #11 – Maintain BMPs

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with each particular BMP's specifications. Visual monitoring of the BMPs will be conducted at least every calendar week and within 24 hours of any rainfall event that causes a discharge from the site. If the site becomes inactive, and is temporarily stabilized, the inspection frequency will be reduced to once every month.

All temporary erosion and sediment control BMPs shall be removed within 30 days after the final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on site. Disturbed soil resulting from removal of BMPs or vegetation shall be permanently stabilized.

3.1.12 Element #12 – Manage the Project

Erosion and sediment control BMPs for this project have been designed based on the following principles:

- Design the project to fit the existing topography, soils, and drainage patterns.
- Emphasize erosion control rather than sediment control.
- Minimize the extent and duration of the area exposed.
- Keep runoff velocities low.
- Retain sediment on site.
- Thoroughly monitor site and maintain all ESC measures.
- Schedule major earthwork during the dry season.

As this project site is located west of the Cascade Mountain Crest, the project will be managed according to the following key project components:

3.1.12.1 PHASING OF CONSTRUCTION

- The construction project is being phased to the extent practicable in order to prevent soil erosion, and, to the maximum extent possible, the transport of sediment from the site during construction.
- Protection of exposed areas and maintenance of the enhanced vegetation area shall be an integral part of the clearing activities during each phase of construction, per the Scheduling BMP (C162).

3.1.12.2 SEASONAL WORK LIMITATIONS

- From October 1 through April 30, clearing, grading, and other soil disturbing activities shall only be permitted if shown to the satisfaction of the local permitting authority that silt-laden runoff will be prevented from leaving the site through a combination of the following:
  - Site conditions including existing vegetative coverage, slope, soil type, and proximity to receiving waters
  - Limitations on activities and the extent of disturbed areas
  - Proposed erosion and sediment control measures
- Based on the information provided and/or local weather conditions, the local permitting authority may expand or restrict the seasonal limitation on site disturbance.
- The following activities are exempt from the seasonal clearing and grading limitations:
  - Routine maintenance and necessary repair of erosion and sediment control BMPs
  - Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil
  - Activities where there is 100 percent infiltration of surface water runoff within the site in approved and installed erosion and sediment control facilities

3.1.12.3 COORDINATION WITH UTILITIES AND OTHER JURISDICTIONS

- Care has been taken to coordinate with utilities, other construction projects, and local jurisdiction in preparing the SWPPP and scheduling the construction work.

3.1.12.4 INSPECTION AND MONITORING

- All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Site inspections shall be conducted by a person who is knowledgeable in the principles and practices of erosion and sediment control. This person has the necessary skills to:
  - Assess the site conditions and construction activities that could impact the quality of stormwater
  - Assess the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges
- A Certified Erosion and Sediment Control Lead shall be on-site or on-call at all times.
- Whenever inspection and/or monitoring reveals that the BMPs identified in this SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, appropriate BMPs or design changes shall be implemented as soon as possible.

3.1.12.5 MAINTAINING AN UPDATED CONSTRUCTION SWPPP

- This SWPPP shall be retained on-site or within reasonable access to the site.
- The SWPPP shall be modified whenever there is a change in the design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the state.
- The SWPPP shall be modified if, during inspections or investigations conducted by the owner/operator, or the applicable local or state regulatory authority, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within seven (7) days following inspections.

3.2 Site Specific BMPs

Site specific BMPs are shown on the TESC Plan Sheets and Details in Appendix A. These site specific plan sheets will be updated weekly as required.

3.3 Additional Advanced BMPs

For BMP 251, Construction Stormwater Filtration, written pre-approval is not required (see SWMMWW 2005).

The temporary stormwater treatment plant shall be in place prior to any offsite discharge.

4.0 Construction Phasing and BMP Implementation

The BMP implementation schedule will be driven by the construction schedule. The following provides a sequential list of the proposed construction schedule milestones and the corresponding BMP implementation schedule. The list contains key milestones such as wet season construction.

The BMP implementation schedule listed below is keyed to proposed phases of the construction project, and reflects differences in BMP installations and inspections that relate to wet season construction. The project site is located west of the Cascade Mountain Crest. As such, the dry season is considered to be from May 1 to September 30 and the wet season is considered to be from October 1 to April 30.

Activity	Date
Estimate of Construction start date:	**06/01/2010**
Estimate of construction finish date:	10/01/2010
Mobilize equipment on site:	06/04/2010
Mobilize and store all ESC and soil stabilization products (store materials on hand [BMP C150]):	06/07/2010
Install ESC measures:	06/08/2010
Install stabilized construction entrance:	06/09/2010
Begin clearing and grubbing:	06/14/2010
Demolish existing structures:	06/21/2010
Excavation for utilities:	07/
Soil stabilization on excavated sideslopes (in idle, no work areas as shown on ESC plans):	08/
Temporary erosion control measures (hydroseeding):	N/A
Site inspections once a month:	
Begin concrete pour and implement BMP C151:	N/A
Begin implementing soil stabilization and sediment control BMPs throughout the site in preparation for wet season:	N/A
Wet Season starts:	**N/A**
Site inspections and monitoring conducted weekly and for applicable rain events as detailed in Section 6 of this SWPP:	**6/5/10-9/30/10**
Implement Element #12 BMPs and manage site to minimize soil disturbance during the wet season:	**10/01/2010**
Dry Season starts:	**05/01/2010**
Site grading ends:	09/01/2010
Final plat landscaping and planting begins:	N/A
Permanent erosion control measures:	9/15/2010
Final plat:	N/A
Begin building construction:	N/A

5.0 Pollution Prevention Team

5.1 Roles and Responsibilities

The pollution prevention team consists of personnel responsible for implementation of the SWPPP, including the following:

- Certified Erosion and Sediment Control Lead (CESCL) – primary contractor contact, responsible for the site inspections (BMPs, visual monitoring, sampling, etc.); to be called upon in case of failure of any ESC measures.
- Resident Engineer – for projects with engineered structures only (sediment ponds/traps, sand filters, etc.): site representative for the owner that is the project's supervising engineer responsible for inspections and issuing instructions and drawings to the contractor's site supervisor or representative.
- Emergency Ecology Contact – DOE office to be contacted in case of emergency.

  Southwest Region Office (360) 407-6300

- Emergency Owner Contact – individual that is the site owner or representative of the site owner to be contacted in the case of an emergency.
- Non-Emergency Ecology Contact – individual that is the site owner or representative of the site owner than can be contacted if required.
- Monitoring Personnel – personnel responsible for conducting water quality monitoring; for most sites this person is also the Certified Erosion and Sediment Control Lead.

5.2 Team Members

Names and contact information for those identified as members of the pollution prevention team are provided in the following table.

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	**TBD**	**TBD**
Resident Engineer	**Steven D. Hatton, PE**	**(360) 943-1599**
Emergency Ecology Contact	**Southwest Region DOE Office**	**(360) 407-6300**
Emergency Owner Contact	**Don Bache**	**(360) 528-8062**
Non-Emergency Ecology Contact	**Mohsen Kouredar**	**(360) 407-6256**
Monitoring Personnel Contact	**Monitoring Contact**	**Monitoring Number**

6.0 Site Inspections and Monitoring

Monitoring includes visual inspection, monitoring for water quality parameters of concern, and documentation of the inspection and monitoring findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements
- Site inspections
- Stormwater quality monitoring

For convenience, the inspection form and water quality monitoring forms including in this SWPPP include the required information for the site log book. This SWPPP may function as the site log book if desired, or the forms may be separated and included in a separate site log book. However, if separated, the site log book must be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

6.1 Site Inspection

All BMPs will be inspected, maintained, and repaired as needed to assure continued performance of their intended function. The inspector will be a Certified Erosion and Sediment Control Lead (CESCL) per BMP C160. The name and contact information for the CESCL is provided in Section 5 of this SWPPP.

Site inspection will occur in all areas disturbed by construction activities and at all stormwater discharge points. Stormwater will be examined for the presence of suspended sediment, turbidity, discoloration, and oily sheen. The site inspector will evaluate and document the effectiveness of the installed BMPs and determined if it is necessary to repair or replace any of the BMPs to improve the quality of stormwater discharges. All maintenance and repairs will be documents in the site log book or forms provided in this document. All new BMPs or design changes will be documented in the SWPPP as soon as possible.

6.1.1 Site Inspection Frequency

Site inspections will be conducted at least once a week and within 24 hours following any rainfall event which causes a discharge of stormwater from the site. For sites with temporary stabilization measures, the site inspection frequency can be reduced to once every month.

6.1.2 Site Inspection Documentation

The site inspector will record each site inspection using the site log inspection forms provided in Appendix E. The site inspection log forms may be separated from this SWPPP document, but will be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

6.2 Stormwater Quality Monitoring

IMPORTANT: The proposed construction site discharges via Port of Olympia facilities and the City of Olympia storm drain to an impaired water body on the Section 303(d) list. The applicant must

monitor for the parameter(s) of concern and document monitoring result in the site log book during construction that no further impacts to the water quality parameter(s) of concern will occur, or that the discharge is consistent with the TMDL or control plan requirements set forth for the specific downstream water body (see Sections S1.D5, S1.D6, and S4.G2 of the Construction Stormwater General Permit).

6.2.1 Turbidity

Turbidity sampling and monitoring will be conducted during the entire construction phase of the project. Samples will be collected daily at *the temporary filtration treatment plant.* If there is no flow, the attempt to sample will be recorded in the site log book and reported to Ecology in the monthly Discharge Monitoring Report (DMR) as "No Discharge". Samples will be analyzed for turbidity using the EPA 180.1 analytical method.

The key benchmark turbidity value is 25 nephelometric turbidity units (NTU) for the downstream receiving water body. If the 25 NTU benchmark is exceeded in any sample collected from *(collection point)*, the following steps will be conducted:

1. Ensure all BMPs specified in this SWPPP are installed and functioning as intended.
2. Assess whether additional BMPs should be implemented, and document modified BMPs in the SWPPP as necessary.
3. Sample discharge daily until the discharge is 25 NTU or lower.

If the turbidity exceeds 250 NTU at any time, the following steps will be conducted:

1. Notify Ecology by phone within 24 hours of analysis (see Section 5.0 of this SWPPP for contact information).
2. Continue sampling daily until the discharge is 25 NTU or lower. Initiate additional treatment BMPs such as off-site treatment, infiltration, filtration and chemical treatment within 24 hours, and implement those additional treatment BMPs as soon as possible, but within a minimum of 7 days.
3. Describe inspection results and remedial actions taken in the site log book and in monthly discharge monitoring reports as described in Section 7.0 of this SWPPP.

6.2.2 Temperature

Site discharge during construction will drain via storm drain to Budd Inlet. *Budd Inlet is* not listed on the Clean Water Act Section 303(d) list as impaired for temperature.

7.0 Recordkeeping and Reporting

7.1 Recordkeeping

7.1.1 Site Log Book

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements,
- Site inspections, and
- Stormwater quality monitoring.

This SWPPP may function as the site log book if the project has minimal monitoring requirements or construction duration is shorter than 2 or 3 months. The appendices can include multiple copies of the blank checklists and inspection forms as needed to supplement for the site log book. This is recommended for smaller, simple construction sites. This is flexible and depends on the preference of the applicant. If the duration of the project is greater than 2 or 3 months, or if there is significant monitoring requirements, it is recommended that a separate site log be maintained incorporating the example forms provided in this SWPPP document.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book.

The Site Log Book is found in Appendix E.

7.1.2 Records Retention

Records of all monitoring information (site log book, inspection reports, inspection checklists, etc.), this Stormwater Pollution Prevention Plan and any other documentation of compliance with permit requirements will be retained during the life of the construction project and for a minimum of three years following the termination of permit coverage in accordance with permit condition S5.C.

7.1.3 Access to Plans and Records

The SWPPP, General Permit, Notice of Authorization letter, and Site Log Book will be retained on-site or within reasonable access to the site and will be made immediately available upon request to Ecology or the local jurisdiction. A copy of this SWPPP will be provided to ecology within 14 days of receipt of a written request for the SWPPP from Ecology. Any other information requested by Ecology will be submitted within a reasonable time. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with permit condition S5.G.

7.1.4 Updating the SWPPP

In accordance with Conditions S3, S4.B, and S9.B.3 of the General Permit, this SWPPP will be modified if the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site or there has been a change in design, construction, operation, or maintenance at the site that has a significant effect on the discharge, or potential for discharge, of pollutants to the waters of the State. The SWPPP will be modified within seven (7) days of determination based on inspection(s) that additional or modified BMPs are necessary to correct problems identified, and updated timeline for BMP implementation will be prepared.

7.2 Reporting

7.2.1 Discharge Monitoring Reports

Water quality sampling results will be submitted to Ecology monthly on Discharge Monitoring Report (DMR) forms in accordance with permit condition S5.B. If there was no discharge during a given monitoring period, the form will be submitted with the words "no discharge" entered in place of the monitoring results. If a benchmark was exceeded, a brief summary of inspection results and remedial actions taken will be included. If sampling could not be performed during a monitoring period, a DMR will be submitted with an explanation of why sampling could not be performed.

7.2.2 Notification of Noncompliance

If any of the terms and conditions of the permit are not met, and it causes a threat to human health or the environment, the following steps will be taken in accordance with permit section S5.F:

1. Ecology will be immediately notified of the failure to comply.
2. Immediate action will be taken to control the noncompliance issue and to correct the problem. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
3. A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

Any time turbidity sampling indicates turbidity is 250 nephelometric turbidity units (NTU) or greater or water transparency is 6 centimeters or less, the Ecology regional office will be notified by phone within 24 hours of analysis as required by permit conditions (see Section 5.0 of this SWPPP for contact information).

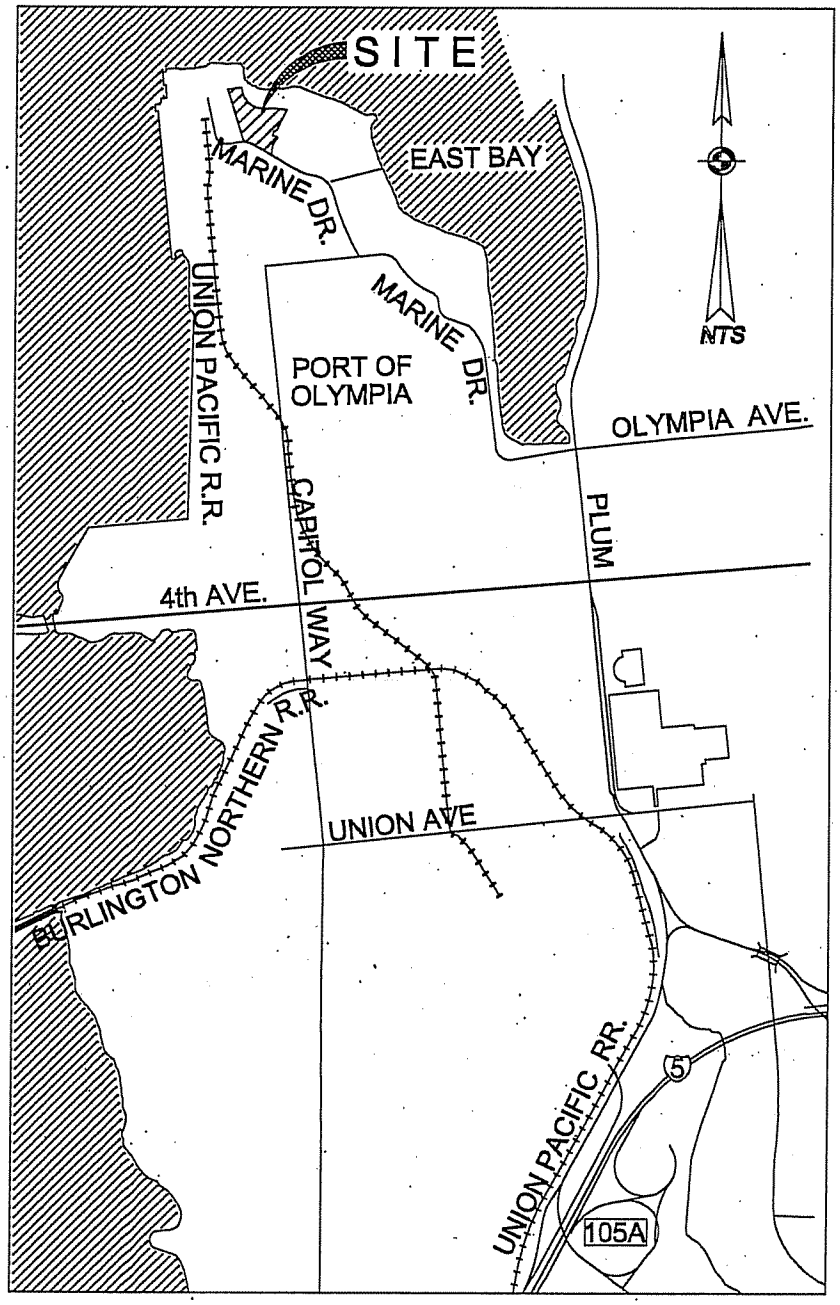
In accordance with permit condition S4.F.6.b, the Ecology regional office will be notified if chemical treatment other than CO2 sparging is planned for adjustment of high pH water (see Section 5.0 of this SWPPP for contact information).

Describe what is being sampled, the benchmark value for compliance/noncompliance, and any special notification requirements.

7.2.3 Permit Application and Changes

The treated discharge will be under the NPDES permit with the approved stormwater pollution prevention plan.

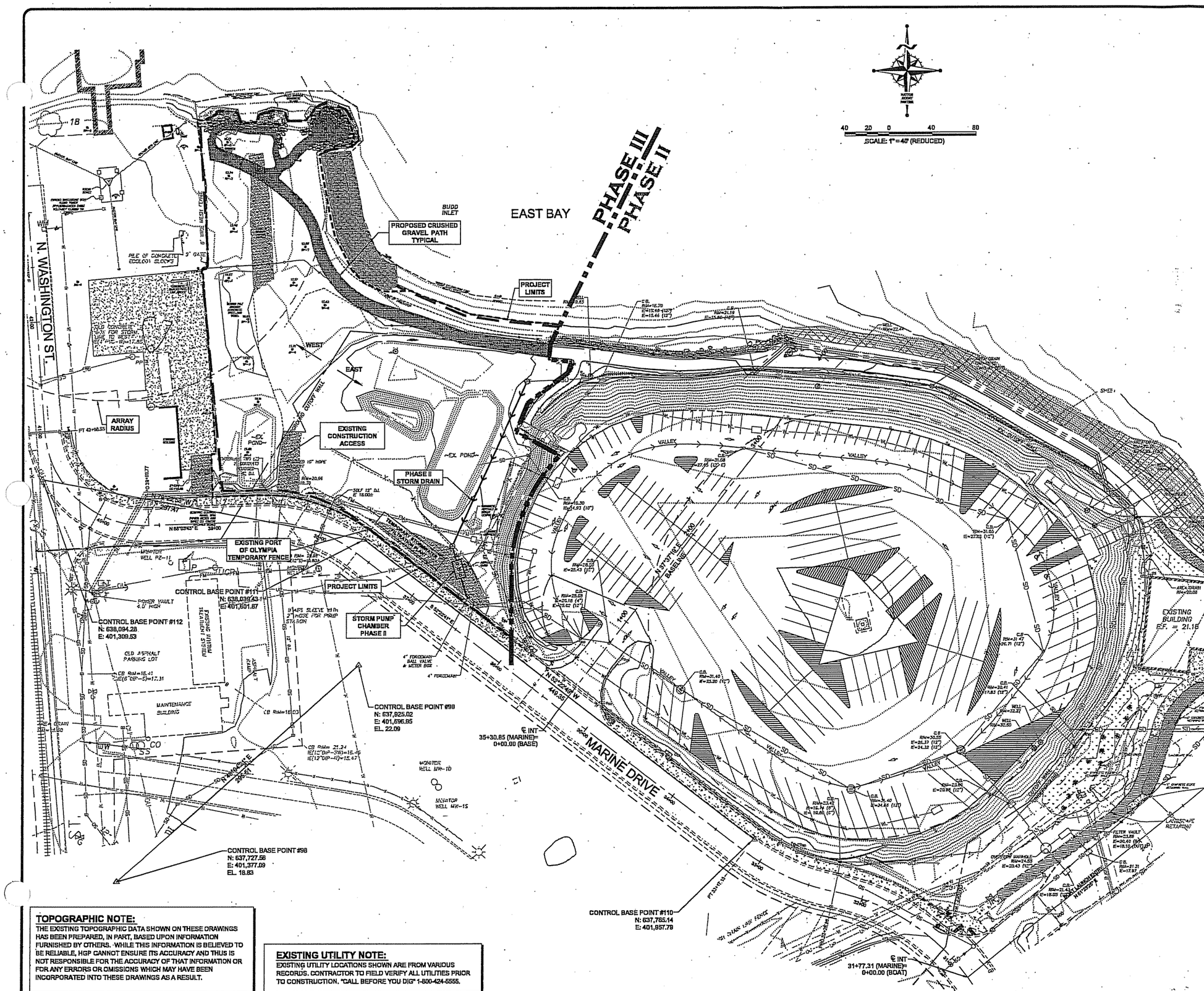
Appendix A Site Plans



VICINITY MAP

(FIGURE 1)

A PORTION OF SECTION 4, TOWNSHIP 18 NORTH, RANGE 2W, W.M.



40 20 0 40 80

SCALE: 1"=40' (REDUCED)

VERTICAL DATUM

ESTABLISHED BY HATTON GODAT PANTIER, INC.
FOR THE PORT OF OLYMPIA,
LOTT OUTFALL & CASCADE POLE PROJECTS
POINT #CP-99 ELEVATION=22.09
REFERENCE CASCADE POLE SITE CAPPING
PHASE 1-MARINE DRIVE NORTH, #287,
ENGINEERING PLANS,
SIGNED MAY 12, 2004,
PREPARED BY HATTON GODAT PANTIER, INC.

LEGEND

- EX. FIRE HYDRANT
- EX. CONIFEROUS TREE
- EX. DECIDUOUS TREE
- EX. CONTOURS, MINOR (65)
- EX. CONTOURS, MAJOR (70)
- EX. WASTE LINE
- EX. WATER
- EX STORM DRAIN
- EX. GAS LINE
- EX. FENCE LINE
- EX. POWER POLE
- EX. GUY WIRE
- EX. POWER VAULT
- EX. STREET LIGHT
- EX. TELEPHONE PEDESTAL
- EX. CABLE PEDESTAL
- EX. SEWER MANHOLE
- EX. CLEANOUT
- EX. STORM MANHOLE
- EX. CATCHBASIN
- EX. WATER WELL
- EX. MONITORING WELL
- EX. VALVE
- EX. MONITORING WELL
- EX. SIGN
- ELECTRICAL JUNCTION BOX
- ELECT. SERVICE DISCONNECT
- NEW WATER METER
- NEW VALVE
- NEW REDUCED PRESSURE BACKFLOW ASSEMBLY
- NEW FENCE LINE
- NEW CLEANOUT
- NEW STORM MANHOLE
- NEW CATCH BASIN
- NEW STORM DRAINAGE
- PROPOSED CONTOURS, MINOR (60)
- PROPOSED CONTOURS, MAJOR (70)
- FINISHED ELEVATION (XXX)
- NEW ASPHALT
- EX. CONCRETE
- NEW CONCRETE

TOPOGRAPHIC NOTE:
THE EXISTING TOPOGRAPHIC DATA SHOWN ON THESE DRAWINGS HAS BEEN PREPARED, IN PART, BASED UPON INFORMATION FURNISHED BY OTHERS. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, HGP CANNOT ENSURE ITS ACCURACY AND THUS IS NOT RESPONSIBLE FOR THE ACCURACY OF THAT INFORMATION OR FOR ANY ERRORS OR OMISSIONS WHICH MAY HAVE BEEN INCORPORATED INTO THESE DRAWINGS AS A RESULT.

EXISTING UTILITY NOTE:
EXISTING UTILITY LOCATIONS SHOWN ARE FROM VARIOUS RECORDS. CONTRACTOR TO FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. "CALL BEFORE YOU DIG" 1-800-424-5555.

DESIGNED BY: CH
DRAWN BY: JSK
CHECKED BY:
DATE: JAN., 2010
SCALE: H 1"=40'
V N/A

STEVEN D. HATTON — STATE OF WASHINGTON — 24193 — REGISTERED PROFESSIONAL ENGINEER

HATTON GODAT PANTIER
ENGINEERS AND SURVEYORS
1840 BARNES BOULEVARD S W
TUMWATER, WA 98512
TEL: 360.943.1599 FAX: 360.357.9299
hattonpantier.com

REVISIONS: DATE:

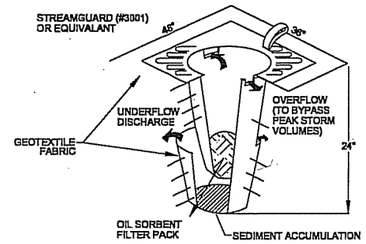
CASCADE POLE SITE PHASE III

OLYMPIA, WA

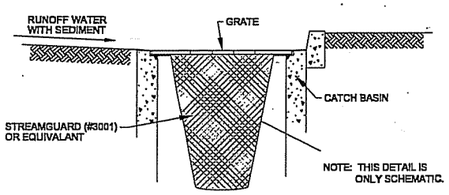
SITE LAYOUT (FIGURE 2)

AGENCY NO.
SHEET: OF
E:\dgn\09-000\09-101
INDEX: 09-101site.dwg
JOB: 09-101

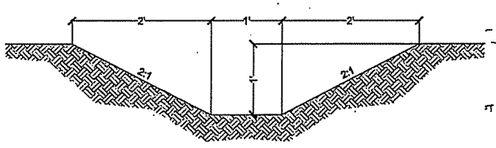
A PORTION OF SECTION 4 , TOWNSHIP 18 , NORTH, RANGE 2W , W.M.



SILT SOCK
N.T.S.



CATCH BASIN INSERT FOR INLET SEDIMENT PROTECTION
N.T.S.



SWALE DETAIL
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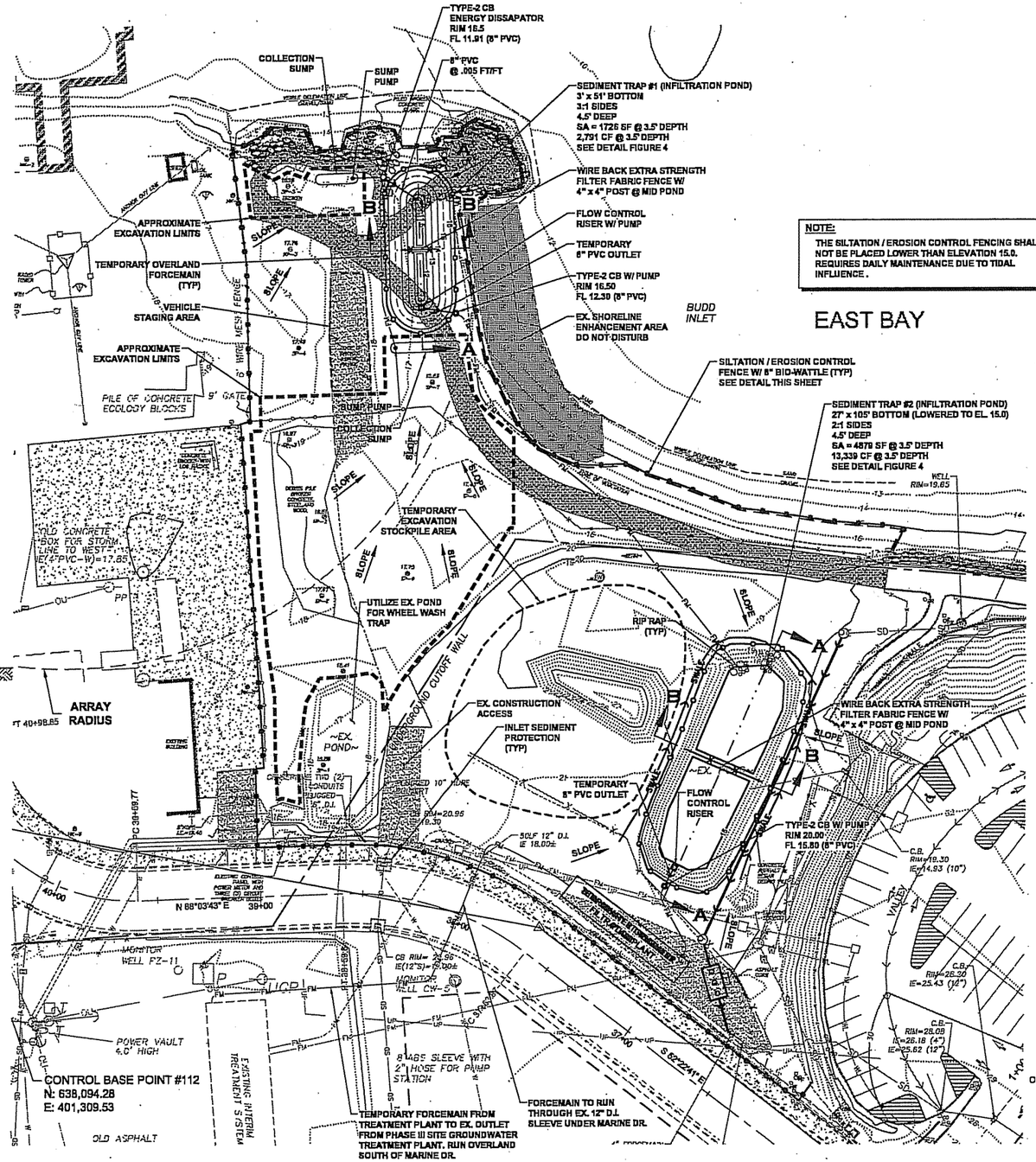

NOTE:
THE SILTATION / EROSION CONTROL FENCING SHALL NOT BE PLACED LOWER THAN ELEVATION 15.0. REQUIRES DAILY MAINTENANCE DUE TO TIDAL INFLUENCE.

VERTICAL DATUM
ESTABLISHED BY HATTON GODAT PANTIER, INC.
FOR THE PORT OF OLYMPIA,
LOTT OUTFALL & CASCADE POLE PROJECTS
POINT #CP-09 ELEVATION=22.09
REFERENCE CASCADE POLE SITE CAPPING
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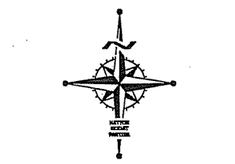
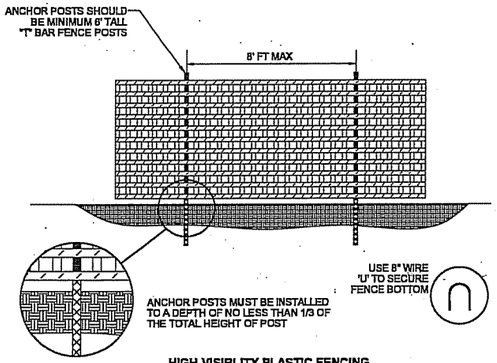
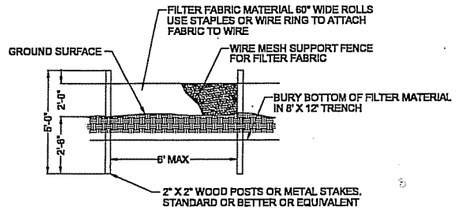
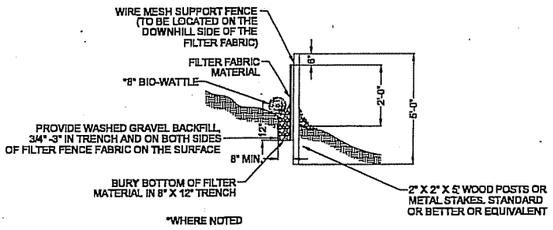


LEGEND
- EX. CONTOURS, MINOR
- EX. CONTOURS, MAJOR
- EROSION CONTROL FENCE
- TEMPORARY BIO-WATTLE
- INLET SEDIMENT PROTECTION



HIGH VISIBLITY PLASTIC FENCING
NTS





SILTATION / EROSION CONTROL FENCE DETAIL
N.T.S.

EXISTING UTILITY NOTE:
EXISTING UTILITY LOCATIONS SHOWN ARE FROM VARIOUS RECORDS. CONTRACTOR TO FIELD VERIFY ALL UTILITIES PRIOR TO CONSTRUCTION. *CALL BEFORE YOU DIG* 1-800-424-5555.

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DESIGNED BY: CH
DRAWN BY: JSK
CHECKED BY:
DATE: JAN. 2010
SCALE: H 1"=40'
V N/A

HATTON GODAT PANTIER
ENGINEERS AND SURVEYORS
1640 BARNES BOULEVARD S W
TUMWATER, WA 98512
TEL: 360.943.1599 FAX: 360.357.6299
hattonpantier.com

REVISIONS: DATE:

CASCADE POLE SITE PHASE III
OLYMPIA, WA
TEMPORARY EROSION SEDIMENTATION CONTROL PLAN
(FIGURE 3)

AGENCY NO.
SHEET: OF
E:/dgn/09-000/09-101
INDEX: 09-101tesc.dwg
JOB: 09-101

E:\dgn\09-000\09-101\Drainage Report\09-101tesc.dwg, 3/23/2010 9:18:26 AM, \\NUKE1\SAVIN 9050 PS

A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL) IS REQUIRED FOR ALL CONSTRUCTION PROJECTS. THE NAMED PERSON OF FIRM SHALL BE ON-SITE OR ON-CALL AT ALL TIMES. FOR THIS SITE, THE PERSON/FIRM IS _____ AND THEIR OFFICE AND CELL TELEPHONE NUMBERS ARE_____.

APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G., SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).

THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANDE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

THE CLEARING LIMIT BOUNDARIES SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.

THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT- LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE SURFACE WATER, GROUND WATER, OR DISCHARGE STANDARDS.

THE ESC FACILITIES SHOWN ON THE PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.

THE ESC FACILITIES ON ACTIVE SITES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR-- AND MAINTAINED, REPAIRED, OR AUGMENTED AS NECESSARY--TO ENSURE THEIR CONTINUED FUNCTIONING.

THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED MONTHLY, OR WITHIN 48 HOURS FOLLOWING A MAJOR STORM EVENT, BY THE APPLICANT/CONTRACTOR--AND MAINTAINED, REPAIRED, OR AUGMENTED AS NECESSARY--TO ENSURE THEIR CONTINUED FUNCTIONING.

STORM DRAIN INLETS OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT STORMWATER RUNOFF DOES NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR TREATED TO REMOVE SEDIMENT. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PROJECT COMPLETION AND ACCEPTANCE. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER OFF-SITE WITHOUT TREATMENT.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

ROADS SHALL BE CLEANED THOROUGHLY AS NEEDED TO PROTECT DOWNSTREAM WATER RESOURCES OR STORMWATER- INFRASTRUCTURE. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.

FROM OCTOBER 1 THROUGH APRIL 30, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN 2 DAYS. FROM MAY 1 TO SEPTEMBER 30, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN 7 DAYS. SOILS SHALL BE STABILIZED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. LINEAR CONSTRUCTION ACTIVITIES, SUCH AS RIGHT-OF-WAY AND EASEMENT CLEARING, ROADWAY DEVELOPMENT, PIPELINES, AND TRENCHING FOR UTILITIES, SHALL COMPLY WITH THESE REQUIREMENTS. THESE STABILIZATION REQUIREMENTS APPLY TO ALL SOILS ON SITE, WHETHER AT FINAL GRADE OR NOT. THE LOCAL PERMITTING AUTHORITY MAY ADJUST THESE TIME LIMITS IF IT CAN BE SHOWN THAT A DEVELOPMENT SITE'S EROSION OR RUNOFF POTENTIAL JUSTIFIES A DIFFERENT STANDARD.

FROM OCTOBER 1 THROUGH-APRIL 30, CLEARING, GRADING, AND OTHER SOIL-DISTURBING ACTIVITIES SHALL ONLY BE PERMITTED IF SHOWN TO THE SATISFACTION OF THE LOCAL PERMITTING AUTHORITY THAT THE TRANSPORT OF SEDIMENT FORM THE CONSTRUCTION SITE TO RECEIVING WATERS WILL BE PREVENTED.

SOIL STOCKPILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT-TRAPPING MEASURES.

ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON-SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORMWATER. WOODY DEBRIS-MAY BE CHOPPED AND SPREAD ON-SITE.

MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES AND OTHER ACTIVITIES WHICH MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO STORMWATER RUNOFF MUST BE CONDUCTED USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. REPORT ALL SPILLS TO 911.

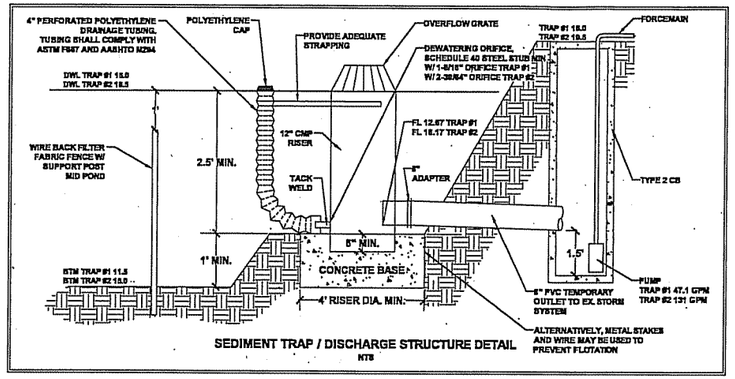
WATER FROM MOST DE-WATERING OPERATIONS SHALL BE DISCHARGED INTO A SEDIMENT TRAP OR POND. CLEAN, NON-TURBID WATER MAY BE DISCHARGED TO STATE SURFACE WATERS, PROVIDED THE DISCHARGE DOES NOT CAUSE EROSION OR FLOODING. HIGHLY TURBID OR CONTAMINATED DE-WATERING WATER FROM CONSTRUCTION EQUIPMENT OPERATION, CLAMSHELL DIGGING, CONCRETE TREMIE POUR, OR WORK INSIDE A COFFERDAM SHALL BE HANDLED SEPARATELY FROM STORMWATER AND PROPERLY DISPOSED.

GENERAL EROSION CONTROL NOTES:

1. EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO THE BEGINNING OF CONSTRUCTION. THE PROJECT ENGINEER AND THE REVIEWING AGENCY SHALL INSPECT AND APPROVE THE INSTALLATION OF EROSION CONTROL MEASURES PRIOR TO BEGINNING CONSTRUCTION.
2. EROSION CONTROL MEASURES ARE NOT LIMITED TO THE ITEMS SHOWN ON THIS PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL MEASURES. SILTATION OF EXISTING OR PROPOSED DRAINAGE FACILITIES SHALL NOT BE ALLOWED. CARE SHALL BE TAKEN TO PREVENT MIGRATION OF SILTS TO OFF SITE PROPERTIES.
3. THE CONTRACTOR SHALL MAKE DAILY SURVEILLANCE OF ALL EROSION CONTROL MEASURES AND MAKE ANY NECESSARY REPAIRS OR ADDITIONS TO THE EROSION CONTROL MEASURES AS REQUIRED. THE CONTRACTOR SHALL PROVIDE ADDITIONAL EROSION CONTROL MEASURES AS DETERMINED NECESSARY BY THE INSPECTOR OR PROJECT ENGINEER. FAILURE TO COMPLY WITH ALL LOCAL AND STATE EROSION CONTROL REQUIREMENTS MAY RESULT IN CIVIL PENALTIES BEING LEVIED AGAINST THE CONTRACTOR.
4. DURING THE WET SEASON, NOVEMBER TO MARCH INCLUSIVE, ALL DISTURBED SOILS SHALL BE STABILIZED WITHIN 48 HOURS AFTER STOP OF WORK. EROSION CONTROL MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, COVERING THE AFFECTED AREA INCLUDING SPOIL PILES WITH PLASTIC SHEETING, STRAW MATTING, JUTE MATTING, STRAW MULCH, OR WOOD CHIPS. SEEDING OF THE DISTURBED AREAS SHALL TAKE PLACE AS WEATHER PERMITS.
5. ALL EXCAVATED MATERIAL TO BE STOCKPILED INSIDE CUTOFF WALL AND COVERED.
6. TRACKING OF SOIL OFF SITE WILL NOT BE ALLOWED. IF SOIL IS TRACKED ON TO A PUBLIC STREET, IT SHALL BE REMOVED BY THE END OF THAT WORKING DAY. ANY FURTHER TRACKING OF MUD SHALL THEN BE PREVENTED BY SWEEPING OR WASHING OF THE VEHICLE'S TIRES BEFORE DRIVING ON A CITY STREET.
7. NO MORE THAN 300LF OF TRENCH SHALL BE OPENED AT ONE TIME.
8. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
9. TRENCH DEWATERING DEVICES SHALL BE DISCHARGED IN A MANNER THAT WILL NOT ADVERSELY AFFECT FLOWING STREAMS, DRAINAGE SYSTEMS, OR OFF SITE PROPERTIES.
10. ALL STORM SEWER INLETS RECEIVING RUNOFF FROM THE PROJECT DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER WILL BE FILTERED BEFORE ENTERING THE CONVEYANCE SYSTEM.
11. ALL OFF SITE CATCH BASINS IMMEDIATELY ADJACENT TO THE SITE SHALL BE PROTECTED FROM SILTATION.
12. ALL DISTURBED AREAS SHALL BE PAVED OR STABILIZED UPON COMPLETION OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT COMPLETE COVERAGE OF THE DISTURBED AREAS IS PROVIDED.

CONSTRUCTION SEQUENCE:

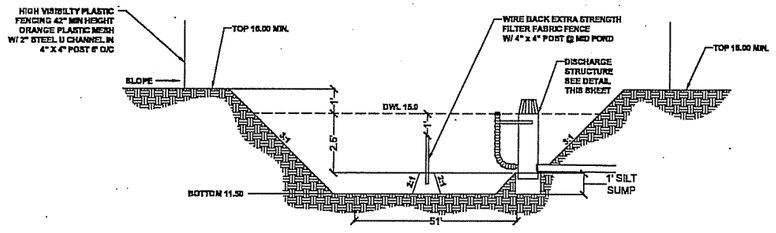
1. CONSTRUCTION ON THIS SITE SHALL BE CONDUCTED SUBSTANTIALLY IN ACCORDANCE WITH THE PHASES DESCRIBED HEREON. DEVIATIONS FROM THIS PHASING SHALL BE SUBMITTED TO THE PROJECT ENGINEER AND REVIEWING AGENCY. DEVIATIONS MUST BE APPROVED PRIOR TO ANY SITE DISTURBING ACTIVITY NOT CONTAINED WITHIN THE APPROVED PLANS.
2. FOR DEVELOPMENT OF THIS SITE, THE FOLLOWING GENERAL SEQUENCE SHALL BE OBSERVED:
   - A. INSTALL PERIMETER FILTER FABRIC FENCE AND CONSTRUCTION ENTRY AS SHOWN.
   - B. INSTALL INLET PROTECTION FOR EXISTING INLETS IN THE VICINITY OF AREAS TO BE DISTURBED.
   - F. CALL FOR INSPECTION BY THE REVIEWING AGENCY AND PROJECT ENGINEER.
   - D. CLEAR AND CONSTRUCT TEMPORARY SEDIMENTATION TRAPS, PIPING AND OUTLET.
   - G. PROVIDE PERMANENT OR TEMPORARY GRADING TO DIRECT SITE RUNOFF TOWARD THE SEDIMENT TRAP PRIOR TO DISCHARGE FROM THE SITE.
   - C. CLEARING, GRUBBING AND EXCAVATION AS NOTED ON PLANS.
   - E. GRADING AND GRAVELING TO SUBGRADE AS SPECIFIED.
   - H. INSTALLATION OF TEMPORARY PIPING, IF REQUIRED, TO DIRECT RUNOFF TOWARD THE SEDIMENT TRAP.
   - I. INSTALLATION OF STORM DRAINAGE FACILITIES (I.E., PIPING, CATCH BASINS, AND OTHER UTILITIES.)
   - J. PERMANENT EROSION CONTROL MEASURES (I.E., PAVING, FINAL GRADE, ETC.)
3. ONCE THE SITE HAS BEEN DISTURBED, CONTINUE OPERATIONS DILIGENTLY TOWARD COMPLETION AND STABILIZATION OF THE SITE.
4. MONITOR ALL EROSION CONTROL FACILITIES, REPAIR, MODIFY, AND ENHANCE AS DIRECTED OR AS REQUIRED DURING CONSTRUCTION.



SEDIMENT TRAP / DISCHARGE STRUCTURE DETAIL
NTS

VERTICAL DATUM

ESTABLISHED BY GODAT AND ASSOCIATES FOR THE PORT OF OLYMPIA,
LOTT OUTFALL & CASCADE POLE PROJECTS
POINT #CP-89 ELEVATION=22.09
REFERENCE CASCADE POLE SITE CAPPING PHASE 1-MARINE DRIVE NORTH, #287, ENGINEERING PLANS,
SIGNED MAY 12, 2004,
PREPARED BY HATTON GODAT PANTIER



SILTATION / SEDIMENT TRAP #1 SECTION A
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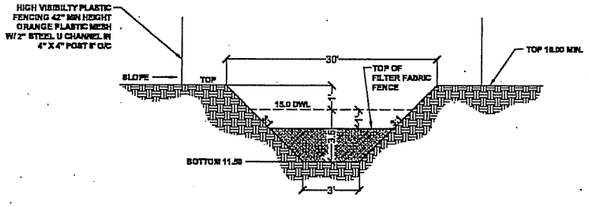

SILTATION / SEDIMENT TRAP #1 SECTION B
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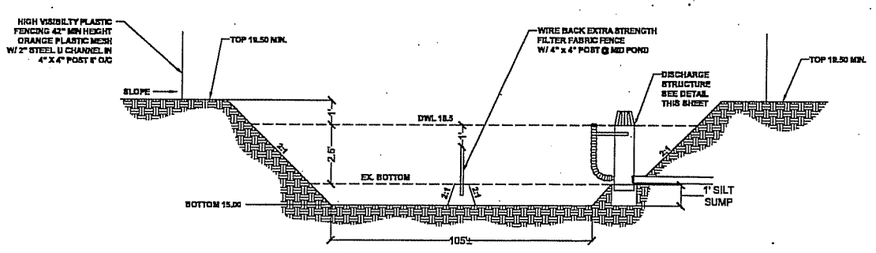

SILTATION / SEDIMENT TRAP #2 SECTION A
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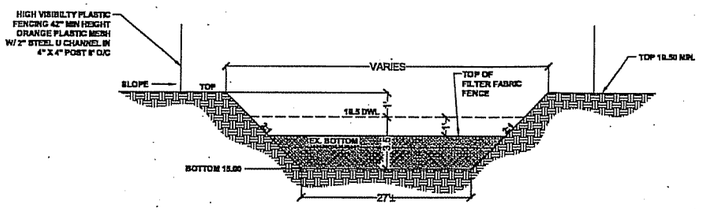

SILTATION / SEDIMENT TRAP #2 SECTION B
NTS

DESIGNED BY: CH
DRAWN BY: JSK
CHECKED BY:
DATE: JAN. 2010
SCALE: H N/A
V N/A

STEVEN D. HATTON — STATE OF WASHINGTON — 24163 — REGISTERED PROFESSIONAL ENGINEER

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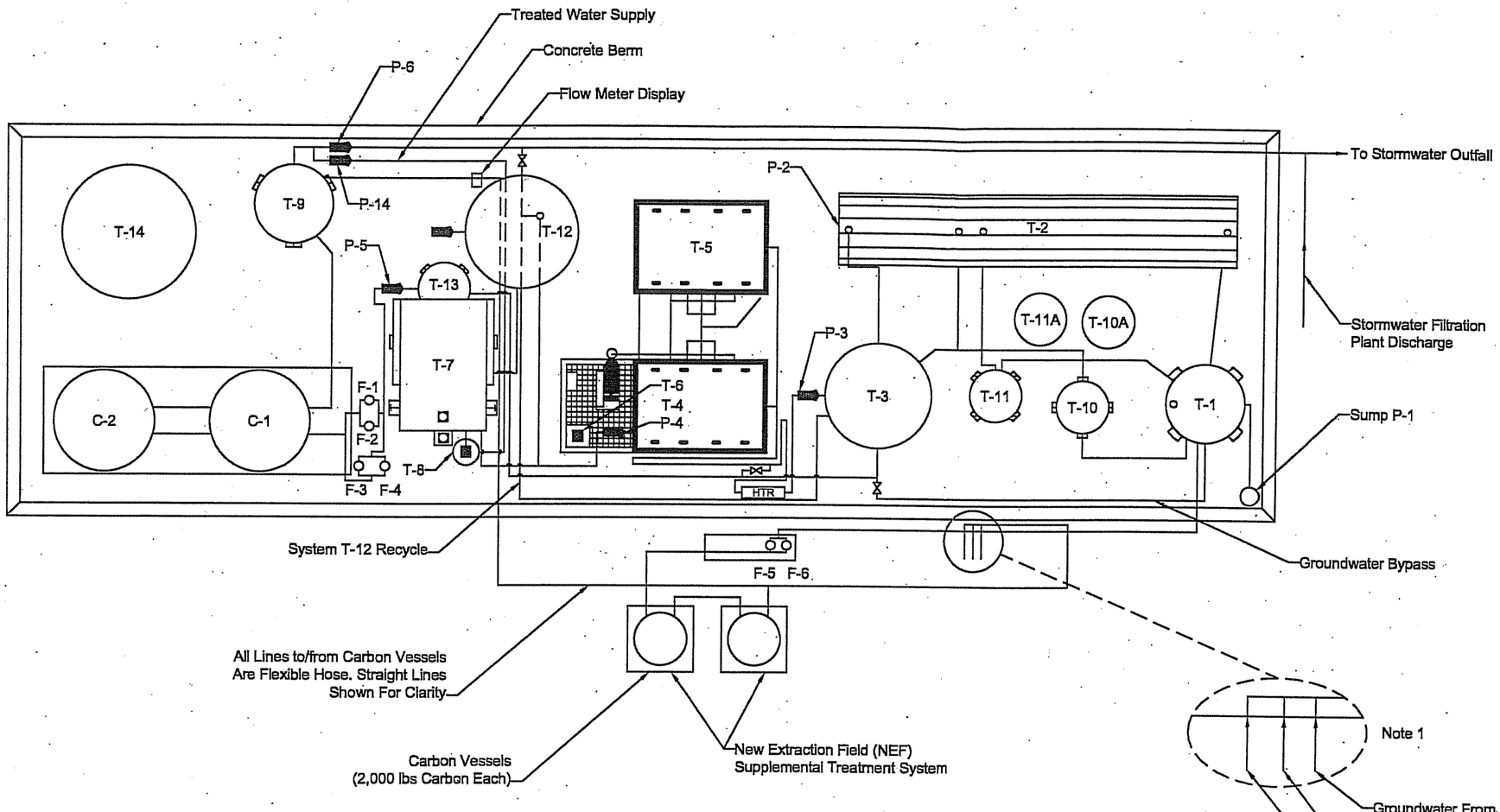
REVISIONS: DATE:

CASCADE POLE SITE PHASE III
OLYMPIA, WA
T.E.S.C. DETAILS (FIGURE 4)

AGENCY NO.
SHEET: OF
INDEX: E:/dgn/09-000/09-101 09-101tesc det.dwg
JOB: 09-101



Legend

T-1	Primary Equalization Tank
T-2	Oil Water Separator
T-3	Secondary Equalization Tank
T-4	Bioreactor
T-5	Bioreactor
T-6	Nutrient Feed Tank
T-7	Clarifier
T-8	Polymer Feed Tank
T-9	Treated Water Tank
T-10 and T-10A	LNAPL Tank
T-11 and T-11A	DNAPL Tank
T-12	Sludge Storage Tank
T-13	Equalization Tank
T-14	Spent Carbon Transfer Tank
C-1	Carbon Canister
C-2	Carbon Canister
F-1 Through F-6	Particle Filter

Note

1. Lines connecting the supplemental treatment systems are flexible hose and are re-routed by system operator as necessary based on site conditions. Lines to supplemental systems are shown for illustrative purposes only.

Adapted from: ESE, 1993

LANDAU ASSOCIATES

Cascade Pole Site Olympia, Washington	**Existing Interim Treatment System Plan View**	Figure 5

Appendix B Construction BMPs

Preserving Natural Vegetation – BMP C101
High Visibility Plastic or Metal Fence – BMP C103
Stake and Wire Fence – BMP C104
Stabilized Construction Entrance – BMP C105
Wheel Wash – BMP C106
Construction Road/Parking Area Stabilization – BMP C107
Mulching – BMP C121
Plastic Covering – BMP C123
Dust Control – BMP C140
Materials on Hand – BMP C150
Concrete Handling – BMP C151
Outlet Protection – BMP C209
Storm Drain Inlet Protection – BMP C220
Straw Bale Barrier – BMP C230
Silt Fence – BMP C233
Straw Wattles – BMP C235
Sediment Trap – BMP C240
Sediment Pond – BMP C241
Construction Stormwater Filtration – BMP C251
Early application of gravel base on areas to be paved

Source Control BMPs

All BMPs shall be designed and installed in accordance with their specifications.

BMP C101: Preserving Natural Vegetation

Purpose

The purpose of preserving natural vegetation is to reduce erosion wherever practicable. Limiting site disturbance is the single most effective method for reducing erosion. For example, conifers can hold up to about 50 percent of all rain that falls during a storm. Up to 20-30 percent of this rain may never reach the ground but is taken up by the tree or evaporates. Another benefit is that the rain held in the tree can be released slowly to the ground after the storm.

Conditions of Use

- Natural vegetation should be preserved on steep slopes, near perennial and intermittent watercourses or swales, and on building sites in wooded areas.
- As required by local governments through tree preservation ordinances.

Design and Installation Specifications

Natural vegetation can be preserved in natural clumps or as individual trees, shrubs and vines.

The preservation of individual plants is more difficult because heavy equipment is generally used to remove unwanted vegetation. The points to remember when attempting to save individual plants are:

- Consider the location, species, size, age, vigor, and the work involved. Local governments may also have ordinances to save natural vegetation and trees.
- Fence or clearly mark areas around trees that are to be saved. It is preferable to keep ground disturbance away from the trees at least as far out as the dripline.

Plants need protection from three kinds of injuries:

- *Construction Equipment* - This injury can be above or below the ground level. Damage results from scarring, cutting of roots, and compaction of the soil. Placing a fenced buffer zone around plants to be saved prior to construction can prevent construction equipment injuries.
- *Grade Changes* - Changing the natural ground level will alter grades, which affects the plant's ability to obtain the necessary air, water, and minerals. Minor fills usually do not cause problems although sensitivity between species does vary and should be checked. Trees

can tolerate fill of 6 inches or less. For shrubs and other plants, the fill should be less.

When there are major changes in grade, it may become necessary to supply air to the roots of plants. This can be done by placing a layer of gravel and a tile system over the roots before the fill is made. A tile system protects a tree from a raised grade. The tile system should be laid out on the original grade leading from a dry well around the tree trunk. The system should then be covered with small stones to allow air to circulate over the root area.

Lowering the natural ground level can seriously damage trees and shrubs. The highest percentage of the plant roots are in the upper 12 inches of the soil and cuts of only 2-3 inches can cause serious injury. To protect the roots it may be necessary to terrace the immediate area around the plants to be saved. If roots are exposed, construction of retaining walls may be needed to keep the soil in place. Plants can also be preserved by leaving them on an undisturbed, gently sloping mound. To increase the chances for survival, it is best to limit grade changes and other soil disturbances to areas outside the dripline of the plant.

- *Excavations* - Protect trees and other plants when excavating for drainfields, power, water, and sewer lines. Where possible, the trenches should be routed around trees and large shrubs. When this is not possible, it is best to tunnel under them. This can be done with hand tools or with power augers. If it is not possible to route the trench around plants to be saved, then the following should be observed:

  Cut as few roots as possible. When you have to cut, cut clean. Paint cut root ends with a wood dressing like asphalt base paint.

  Backfill the trench as soon as possible.

  Tunnel beneath root systems as close to the center of the main trunk to preserve most of the important feeder roots.

Some problems that can be encountered with a few specific trees are:

- Maple, Dogwood, Red alder, Western hemlock, Western red cedar, and Douglas fir do not readily adjust to changes in environment and special care should be taken to protect these trees.
- The windthrow hazard of Pacific silver fir and madrona is high, while that of Western hemlock is moderate. The danger of windthrow increases where dense stands have been thinned. Other species (unless they are on shallow, wet soils less than 20 inches deep) have a low windthrow hazard.

- Cottonwoods, maples, and willows have water-seeking roots. These can cause trouble in sewer lines and infiltration fields. On the other hand, they thrive in high moisture conditions that other trees would not.
- Thinning operations in pure or mixed stands of Grand fir, Pacific silver fir, Noble fir, Sitka spruce, Western red cedar, Western hemlock, Pacific dogwood, and Red alder can cause serious disease problems. Disease can become established through damaged limbs, trunks, roots, and freshly cut stumps. Diseased and weakened trees are also susceptible to insect attack.

Maintenance Standards

- Inspect flagged and/or fenced areas regularly to make sure flagging or fencing has not been removed or damaged. If the flagging or fencing has been damaged or visibility reduced, it shall be repaired or replaced immediately and visibility restored.
- If tree roots have been exposed or injured, "prune" cleanly with an appropriate pruning saw or lopers directly above the damaged roots and recover with native soils. Treatment of sap flowing trees (fir, hemlock, pine, soft maples) is not advised as sap forms a natural healing barrier.

BMP C103: High Visibility Plastic or Metal Fence

Purpose

Fencing is intended to: (1) restrict clearing to approved limits; (2) prevent disturbance of sensitive areas, their buffers, and other areas required to be left undisturbed; (3) limit construction traffic to designated construction entrances or roads; and, (4) protect areas where marking with survey tape may not provide adequate protection.

Conditions of Use

To establish clearing limits, plastic or metal fence may be used:

- At the boundary of sensitive areas, their buffers, and other areas required to be left uncleared.
- As necessary to control vehicle access to and on the site.

Design and Installation Specifications

- High visibility plastic fence shall be composed of a high-density polyethylene material and shall be at least four feet in height. Posts for the fencing shall be steel or wood and placed every 6 feet on center (maximum) or as needed to ensure rigidity. The fencing shall be fastened to the post every six inches with a polyethylene tie. On long continuous lengths of fencing, a tension wire or rope shall be used as a top stringer to prevent sagging between posts. The fence color shall be high visibility orange. The fence tensile strength shall be 360 lbs./ft. using the ASTM D4595 testing method.
- Metal fences shall be designed and installed according to the manufacturer's specifications.
- Metal fences shall be at least 3 feet high and must be highly visible.
- Fences shall not be wired or stapled to trees.

Maintenance Standards

- If the fence has been damaged or its visibility reduced, it shall be repaired or replaced immediately and visibility restored.

BMP C104: Stake and Wire Fence

Purpose

Fencing is intended to: (1) restrict clearing to approved limits; (2) prevent disturbance of sensitive areas, their buffers, and other areas required to be left undisturbed; (3) limit construction traffic to designated construction entrances or roads; and, (4) protect any areas where marking with survey tape may not provide adequate protection.

Conditions of Use

To establish clearing limits, stake or wire fence may be used:

- At the boundary of sensitive areas, their buffers, and other areas required to be left uncleared.
- As necessary, to control vehicle access to and on the site.

Design and Installation Specifications

- See Figure 4.1 for details.
- More substantial fencing shall be used if the fence does not prevent encroachment into those areas that are not to be disturbed.

Maintenance Standards

- If the fence has been damaged or its visibility reduced, it shall be repaired or replaced immediately and visibility restored.

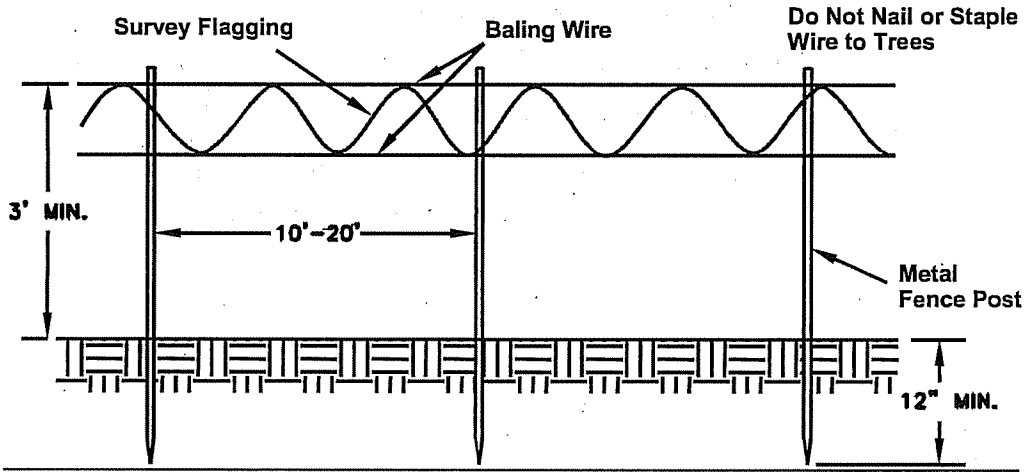


Figure 4.1 – Stake and Wire Fence

BMP C105: Stabilized Construction Entrance

Purpose

Construction entrances are stabilized to reduce the amount of sediment transported onto paved roads by vehicles or equipment by constructing a stabilized pad of quarry spalls at entrances to construction sites.

Conditions of Use

Construction entrances shall be stabilized wherever traffic will be leaving a construction site and traveling on paved roads or other paved areas within 1,000 feet of the site.

On large commercial, highway, and road projects, the designer shall include enough extra materials (such as through a force account) in the contract to allow for additional stabilized entrances not shown in the initial Construction SWPPP. It is difficult to determine exactly where access to these projects will take place; additional materials will enable the contractor to install them where needed.

Design and Installation Specifications

- See Figure 4.2 for details. Note that the minimum 100-foot length shall be reduced to "as long as practicable" where the site geometry does not enable the minimum length.
- A separation geotextile shall be placed under the spalls to prevent fine sediment from pumping up into the rock pad. The geotextile shall meet the following standards:

Grab Tensile Strength (ASTM D4751)	200 psi min.
Grab Tensile Elongation (ASTM D4632)	30% max.
Mullen Burst Strength (ASTM D3786-80a)	400 psi min.
AOS (ASTM D4751)	20-45 (U.S. standard sieve size)

- Consider early installation of the first lift of asphalt in areas that will paved; this can be used as a stabilized entrance. Also consider the installation of excess concrete as a stabilized entrance. During large concrete pours, excess concrete is often available for this purpose.
- Fencing (see BMPs C103 and C104) shall be installed as necessary to restrict traffic to the construction entrance.
- Whenever possible, the entrance shall be constructed on a firm, compacted subgrade. This can substantially increase the effectiveness of the pad and reduce the need for maintenance.

Maintenance Standards

- Quarry spalls shall be added if the pad is no longer in accordance with the specifications.
- If the entrance is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This may include street sweeping, an increase in the dimensions of the entrance, or the installation of a wheel wash.
- Any sediment that is tracked onto pavement shall be removed by shoveling or street sweeping. The sediment collected by sweeping

shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump shall be considered. The sediment would then be washed into the sump where it can be controlled.

- Any quarry spalls that are loosened from the pad, which end up on the roadway shall be removed immediately.
- If vehicles are entering or exiting the site at points other than the construction entrance(s), fencing (see BMPs C103 and C104) shall be installed to control traffic.
- Upon project completion and site stabilization, all construction accesses intended as permanent access for maintenance shall be permanently stabilized.

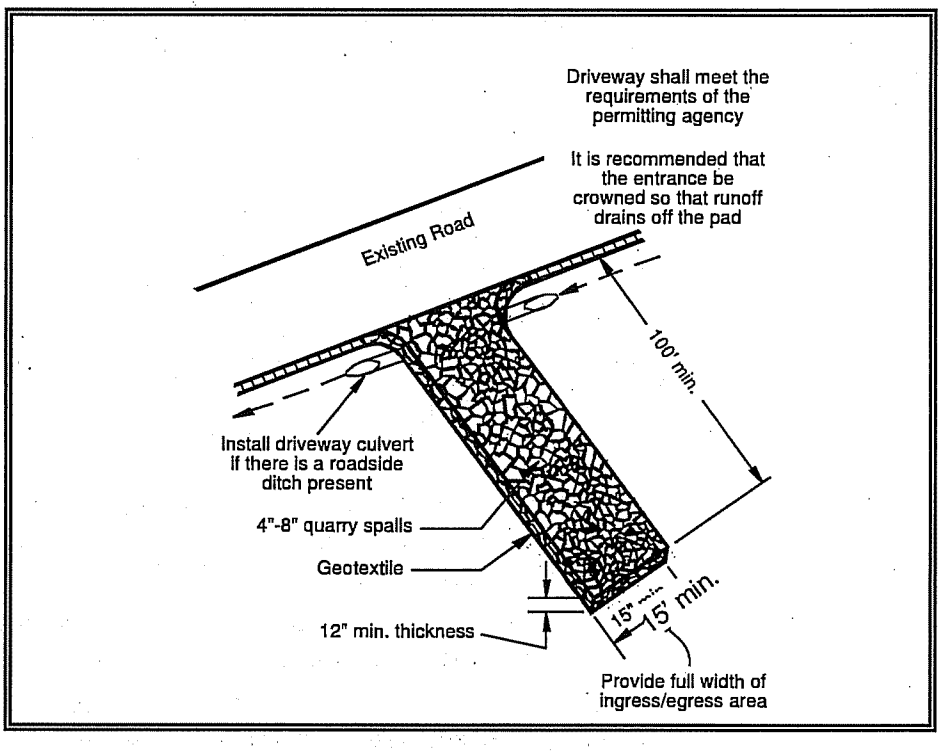


Figure 4.2 - Stabilized Construction Entrance

BMP C106: Wheel Wash

Purpose

Wheel washes reduce the amount of sediment transported onto paved roads by motor vehicles.

Conditions of Use

When a stabilized construction entrance (see BMP C105) is not preventing sediment from being tracked onto pavement.

- Wheel washing is generally an effective BMP when installed with careful attention to topography. For example, a wheel wash can be detrimental if installed at the top of a slope abutting a right-of-way where the water from the dripping truck can run unimpeded into the street.
- Pressure washing combined with an adequately sized and surfaced pad with direct drainage to a large 10-foot x 10-foot sump can be very effective.

Design and Installation Specifications

- Suggested details are shown in Figure 4.3. The Local Permitting Authority may allow other designs. A minimum of 6 inches of asphalt treated base (ATB) over crushed base material or 8 inches over a good subgrade is recommended to pave the wheel wash.
- Use a low clearance truck to test the wheel wash before paving. Either a belly dump or lowboy will work well to test clearance.
- Keep the water level from 12 to 14 inches deep to avoid damage to truck hubs and filling the truck tongues with water.
- Midpoint spray nozzles are only needed in extremely muddy conditions.
- Wheel wash systems should be designed with a small grade change, 6 to 12 inches for a 10-foot-wide pond, to allow sediment to flow to the low side of pond to help prevent re-suspension of sediment. A drainpipe with a 2- to 3-foot riser should be installed on the low side of the pond to allow for easy cleaning and refilling. Polymers may be used to promote coagulation and flocculation in a closed-loop system. Polyacrylamide (PAM) added to the wheel wash water at a rate of 0.25 - 0.5 pounds per 1,000 gallons of water increases effectiveness and reduces cleanup time. If PAM is already being used for dust or erosion control and is being applied by a water truck, the same truck can be used to change the wash water.

Maintenance Standards

- The wheel wash should start out the day with fresh water.
- The wash water should be changed a minimum of once per day. On large earthwork jobs where more than 10-20 trucks per hour are

expected, the wash water will need to be changed more often.

- Wheel wash or tire bath wastewater shall be discharged to a separate on-site treatment system, such as closed-loop recirculation or land application, or to sanitary sewer with local sewer district approval.

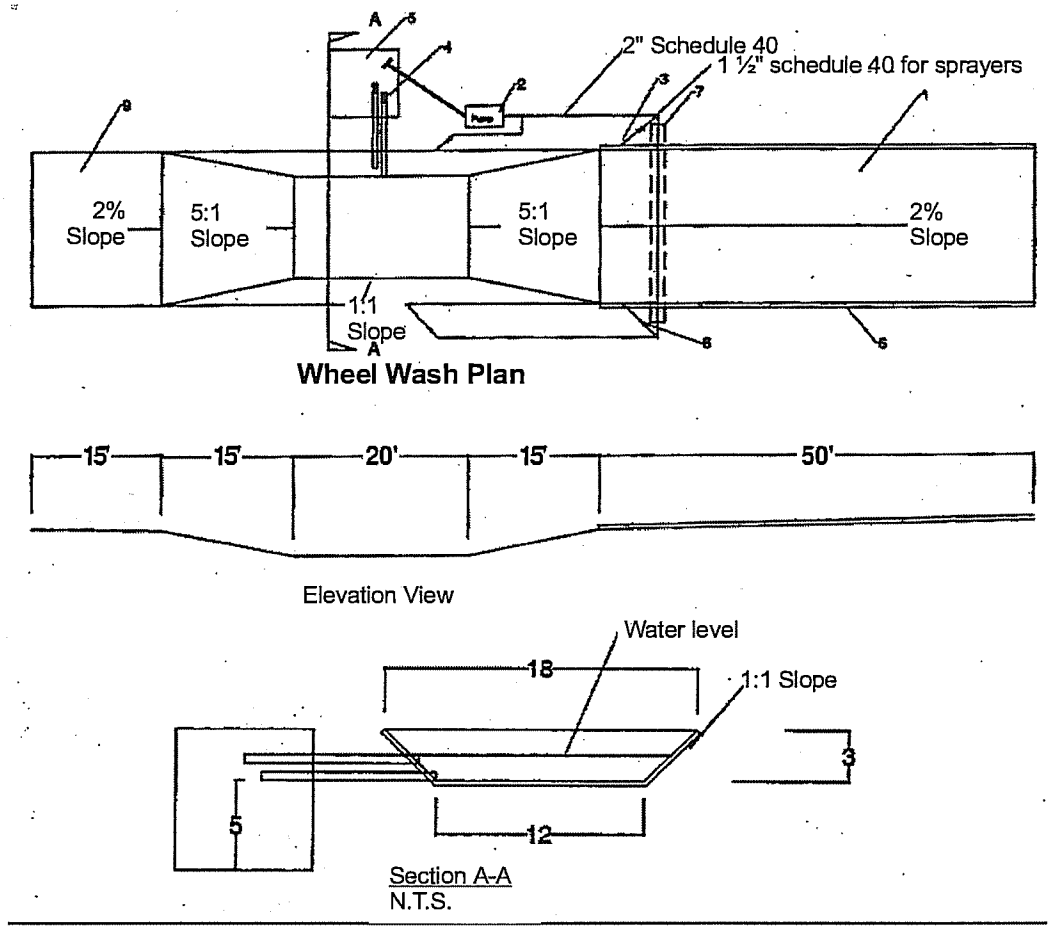


Figure 4.3 – Wheel Wash

Notes:

1. Asphalt construction entrance 6 in. asphalt treated base (ATB).
2. 3-inch trash pump with floats on the suction hose.
3. Midpoint spray nozzles, if needed.
4. 6-inch sewer pipe with butterfly valves. Bottom one is a drain. Locate top pipe's invert 1 foot above bottom of wheel wash.
5. 8 foot x 8 foot sump with 5 feet of catch. Build so can be cleaned with trackhoe.
6. Asphalt curb on the low road side to direct water back to pond.
7. 6-inch sleeve under road.
8. Ball valves.
9. 15 foot. ATB apron to protect ground from splashing water.

BMP C107: Construction Road/Parking Area Stabilization

Purpose

Stabilizing subdivision roads, parking areas, and other onsite vehicle transportation routes immediately after grading reduces erosion caused by construction traffic or runoff.

Conditions of Use

- Roads or parking areas shall be stabilized wherever they are constructed, whether permanent or temporary, for use by construction traffic.
- Fencing (see BMPs C103 and C104) shall be installed, if necessary, to limit the access of vehicles to only those roads and parking areas that are stabilized.

Design and Installation Specifications

- On areas that will receive asphalt as part of the project, install the first lift as soon as possible.
- A 6-inch depth of 2- to 4-inch crushed rock, gravel base, or crushed surfacing base course shall be applied immediately after grading or utility installation. A 4-inch course of asphalt treated base (ATB) may also be used, or the road/parking area may be paved. It may also be possible to use cement or calcium chloride for soil stabilization. If cement or cement kiln dust is used for roadbase stabilization, pH monitoring and BMPs are necessary to evaluate and minimize the effects on stormwater. If the area will not be used for permanent roads, parking areas, or structures, a 6-inch depth of hog fuel may also be used, but this is likely to require more maintenance. Whenever possible, construction roads and parking areas shall be placed on a firm, compacted subgrade.
- Temporary road gradients shall not exceed 15 percent. Roadways shall be carefully graded to drain. Drainage ditches shall be provided on each side of the roadway in the case of a crowned section, or on one side in the case of a super-elevated section. Drainage ditches shall be directed to a sediment control BMP.
- Rather than relying on ditches, it may also be possible to grade the road so that runoff sheet-flows into a heavily vegetated area with a well-developed topsoil. Landscaped areas are not adequate. If this area has at least 50 feet of vegetation, then it is generally preferable to use the vegetation to treat runoff, rather than a sediment pond or trap. The 50 feet shall not include wetlands. If runoff is allowed to sheetflow through adjacent vegetated areas, it is vital to design the roadways and parking areas so that no concentrated runoff is created.
- Storm drain inlets shall be protected to prevent sediment-laden water from entering the storm drain system (see BMP C220).

Maintenance Standards

- Inspect stabilized areas regularly, especially after large storm events.
- Crushed rock, gravel base, hog fuel, etc. shall be added as required to maintain a stable driving surface and to stabilize any areas that have

eroded.

- Following construction, these areas shall be restored to pre-construction condition or better to prevent future erosion.

BMP C121: Mulching

Purpose

The purpose of mulching soils is to provide immediate temporary protection from erosion. Mulch also enhances plant establishment by conserving moisture, holding fertilizer, seed, and topsoil in place, and moderating soil temperatures. There is an enormous variety of mulches that can be used. Only the most common types are discussed in this section.

Conditions of Use

As a temporary cover measure, mulch should be used:

- On disturbed areas that require cover measures for less than 30 days.
- As a cover for seed during the wet season and during the hot summer months.
- During the wet season on slopes steeper than 3H:1V with more than 10 feet of vertical relief.
- Mulch may be applied at any time of the year and must be refreshed periodically.

Design and Installation Specifications

For mulch materials, application rates, and specifications, see Table 4.7. Note: Thicknesses may be increased for disturbed areas in or near sensitive areas or other areas highly susceptible to erosion.

Mulch used within the ordinary high-water mark of surface waters should be selected to minimize potential flotation of organic matter. Composted organic materials have higher specific gravities (densities) than straw, wood, or chipped material.

Maintenance Standards

- The thickness of the cover must be maintained.
- Any areas that experience erosion shall be remulched and/or protected with a net or blanket. If the erosion problem is drainage related, then the problem shall be fixed and the eroded area remulched.

Table 4.7
Mulch Standards and Guidelines

Mulch Material	Quality Standards	Application Rates	Remarks
Straw	Air-dried; free from undesirable seed and coarse material.	2"-3" thick; 5 bales per 1000 sf or 2-3 tons per acre	Cost-effective protection when applied with adequate thickness. Hand-application generally requires greater thickness than blown straw. The thickness of straw may be reduced by half when used in conjunction with seeding. In windy areas straw must be held in place by crimping, using a tackifier, or covering with netting. Blown straw always has to be held in place with a tackifier as even light winds will blow it away. Straw, however, has several deficiencies that should be considered when selecting mulch materials. It often introduces and/or encourages the propagation of weed species and it has no significant long-term benefits. Straw should be used only if mulches with long-term benefits are unavailable locally. It should also not be used within the ordinary high-water elevation of surface waters (due to flotation).
Hydromulch	No growth inhibiting factors.	Approx. 25-30 lbs per 1000 sf or 1500 - 2000 lbs per acre	Shall be applied with hydromulcher. Shall not be used without seed and tackifier unless the application rate is at least doubled. Fibers longer than about ¾-1 inch clog hydromulch equipment. Fibers should be kept to less than ¾ inch.
Composted Mulch and Compost	No visible water or dust during handling. Must be purchased from supplier with Solid Waste Handling Permit (unless exempt).	2" thick min.; approx. 100 tons per acre (approx. 800 lbs per yard)	More effective control can be obtained by increasing thickness to 3". Excellent mulch for protecting final grades until landscaping because it can be directly seeded or tilled into soil as an amendment. Composted mulch has a coarser size gradation than compost. It is more stable and practical to use in wet areas and during rainy weather conditions.
Chipped Site Vegetation	Average size shall be several inches. Gradations from fines to 6 inches in length for texture, variation, and interlocking properties.	2" minimum thickness	This is a cost-effective way to dispose of debris from clearing and grubbing, and it eliminates the problems associated with burning. Generally, it should not be used on slopes above approx. 10% because of its tendency to be transported by runoff. It is not recommended within 200 feet of surface waters. If seeding is expected shortly after mulch, the decomposition of the chipped vegetation may tie up nutrients important to grass establishment.
Wood-based Mulch	No visible water or dust during handling. Must be purchased from a supplier with a Solid Waste Handling Permit or one exempt from solid waste regulations.	2" thick; approx. 100 tons per acre (approx. 800 lbs. per cubic yard)	This material is often called "hog or hogged fuel." It is usable as a material for Stabilized Construction Entrances (BMP C105) and as a mulch. The use of mulch ultimately improves the organic matter in the soil. Special caution is advised regarding the source and composition of wood-based mulches. Its preparation typically does not provide any weed seed control, so evidence of residual vegetation in its composition or known inclusion of weed plants or seeds should be monitored and prevented (or minimized).

BMP C123: Plastic Covering

Purpose

Plastic covering provides immediate, short-term erosion protection to slopes and disturbed areas.

Conditions of Use

- Plastic covering may be used on disturbed areas that require cover measures for less than 30 days, except as stated below.
- Plastic is particularly useful for protecting cut and fill slopes and stockpiles. Note: The relatively rapid breakdown of most polyethylene sheeting makes it unsuitable for long-term (greater than six months) applications.
- Clear plastic sheeting can be used over newly-seeded areas to create a greenhouse effect and encourage grass growth if the hydroseed was installed too late in the season to establish 75 percent grass cover, or if the wet season started earlier than normal. Clear plastic should not be used for this purpose during the summer months because the resulting high temperatures can kill the grass.
- Due to rapid runoff caused by plastic sheeting, this method shall not be used upslope of areas that might be adversely impacted by concentrated runoff. Such areas include steep and/or unstable slopes.
- Whenever plastic is used to protect slopes, water collection measures must be installed at the base of the slope. These measures include plastic-covered berms, channels, and pipes used to convey clean rainwater away from bare soil and disturbed areas. At no time is clean runoff from a plastic covered slope to be mixed with dirty runoff from a project.
- Other uses for plastic include:
  1. Temporary ditch liner;
  2. Pond liner in temporary sediment pond;
  3. Liner for bermed temporary fuel storage area if plastic is not reactive to the type of fuel being stored;
  4. Emergency slope protection during heavy rains; and,
  5. Temporary drainpipe ("elephant trunk") used to direct water.

Design and Installation Specifications

- Plastic slope cover must be installed as follows:
  1. Run plastic up and down slope, not across slope;
  2. Plastic may be installed perpendicular to a slope if the slope length is less than 10 feet;
  3. Minimum of 8-inch overlap at seams;
  4. On long or wide slopes, or slopes subject to wind, all seams should be taped;
  5. Place plastic into a small (12-inch wide by 6-inch deep) slot trench at the top of the slope and backfill with soil to keep water from flowing underneath;
  6. Place sand filled burlap or geotextile bags every 3 to 6 feet along seams and pound a wooden stake through each to hold them in place;
  7. Inspect plastic for rips, tears, and open seams regularly and repair immediately. This prevents high velocity runoff from contacting bare soil which causes extreme erosion;
  8. Sandbags may be lowered into place tied to ropes. However, all sandbags must be staked in place.
- Plastic sheeting shall have a minimum thickness of 0.06 millimeters.
- If erosion at the toe of a slope is likely, a gravel berm, riprap, or other suitable protection shall be installed at the toe of the slope in order to reduce the velocity of runoff.

Maintenance Standards

- Torn sheets must be replaced and open seams repaired.
- If the plastic begins to deteriorate due to ultraviolet radiation, it must be completely removed and replaced.
- When the plastic is no longer needed, it shall be completely removed.
- Dispose of old tires appropriately.

BMP C140: Dust Control

Purpose

Dust control prevents wind transport of dust from disturbed soil surfaces onto roadways, drainage ways, and surface waters.

Conditions of Use

- In areas (including roadways) subject to surface and air movement of dust where on-site and off-site impacts to roadways, drainage ways, or surface waters are likely.

Design and Installation Specifications

- Vegetate or mulch areas that will not receive vehicle traffic. In areas where planting, mulching, or paving is impractical, apply gravel or landscaping rock.
- Limit dust generation by clearing only those areas where immediate activity will take place, leaving the remaining area(s) in the original condition, if stable. Maintain the original ground cover as long as practical.
- Construct natural or artificial windbreaks or windscreens. These may be designed as enclosures for small dust sources.
- Sprinkle the site with water until surface is wet. Repeat as needed. To prevent carryout of mud onto street, refer to Stabilized Construction Entrance (BMP C105).
- Irrigation water can be used for dust control. Irrigation systems should be installed as a first step on sites where dust control is a concern.
- Spray exposed soil areas with a dust palliative, following the manufacturer's instructions and cautions regarding handling and application. Used oil is prohibited from use as a dust suppressant. Local governments may approve other dust palliatives such as calcium chloride or PAM.
- PAM (BMP C126) added to water at a rate of 0.5 lbs. per 1,000 gallons of water per acre and applied from a water truck is more effective than water alone. This is due to the increased infiltration of water into the soil and reduced evaporation. In addition, small soil particles are bonded together and are not as easily transported by wind. Adding PAM may actually reduce the quantity of water needed for dust control, especially in eastern Washington. Since the wholesale cost of PAM is about $ 4.00 per pound, this is an extremely cost-effective dust control method.

Techniques that can be used for unpaved roads and lots include:

- Lower speed limits. High vehicle speed increases the amount of dust stirred up from unpaved roads and lots.
- Upgrade the road surface strength by improving particle size, shape, and mineral types that make up the surface and base materials.

- Add surface gravel to reduce the source of dust emission. Limit the amount of fine particles (those smaller than .075 mm) to 10 to 20 percent.
- Use geotextile fabrics to increase the strength of new roads or roads undergoing reconstruction.
- Encourage the use of alternate, paved routes, if available.
- Restrict use by tracked vehicles and heavy trucks to prevent damage to road surface and base.
- Apply chemical dust suppressants using the admix method, blending the product with the top few inches of surface material. Suppressants may also be applied as surface treatments.
- Pave unpaved permanent roads and other trafficked areas.
- Use vacuum street sweepers.
- Remove mud and other dirt promptly so it does not dry and then turn into dust.
- Limit dust-causing work on windy days.
- Contact your local Air Pollution Control Authority for guidance and training on other dust control measures. Compliance with the local Air Pollution Control Authority constitutes compliance with this BMP.

Maintenance Standards

Respray area as necessary to keep dust to a minimum.

BMP C150: Materials On Hand

Purpose

Quantities of erosion prevention and sediment control materials can be kept on the project site at all times to be used for emergency situations such as unexpected heavy summer rains. Having these materials on-site reduces the time needed to implement BMPs when inspections indicate that existing BMPs are not meeting the Construction SWPPP requirements. In addition, contractors can save money by buying some materials in bulk and storing them at their office or yard.

Conditions of Use

- Construction projects of any size or type can benefit from having materials on hand. A small commercial development project could have a roll of plastic and some gravel available for immediate protection of bare soil and temporary berm construction. A large earthwork project, such as highway construction, might have several tons of straw, several rolls of plastic, flexible pipe, sandbags, geotextile fabric and steel "T" posts.
- Materials are stockpiled and readily available before any site clearing, grubbing, or earthwork begins. A large contractor or developer could keep a stockpile of materials that are available to be used on several projects.
- If storage space at the project site is at a premium, the contractor could maintain the materials at their office or yard. The office or yard must be less than an hour from the project site.

Design and Installation Specifications

Depending on project type, size, complexity, and length, materials and quantities will vary. A good minimum that will cover numerous situations includes:

Material	Measure	Quantity
Clear Plastic, 6 mil	100 foot roll	1-2
Drainpipe, 6 or 8 inch diameter	25 foot section	4-6
Sandbags, filled	each	25-50
Straw Bales for mulching,	approx. 50# each	10-20
Quarry Spalls	ton	2-4
Washed Gravel	cubic yard	2-4
Geotextile Fabric	100 foot roll	1-2
Catch Basin Inserts	each	2-4
Steel "T" Posts	each	12-24

Maintenance Standards

- All materials with the exception of the quarry spalls, steel "T" posts, and gravel should be kept covered and out of both sun and rain.
- Re-stock materials used as needed.

BMP C151: Concrete Handling

Purpose

Concrete work can generate process water and slurry that contain fine particles and high pH, both of which can violate water quality standards in the receiving water. This BMP is intended to minimize and eliminate concrete process water and slurry from entering waters of the state.

Conditions of Use

Any time concrete is used, these management practices shall be utilized. Concrete construction projects include, but are not limited to, the following:

- Curbs
- Sidewalks
- Roads
- Bridges
- Foundations
- Floors
- Runways

Design and Installation Specifications

- Concrete truck chutes, pumps, and internals shall be washed out only into formed areas awaiting installation of concrete or asphalt.
- Unused concrete remaining in the truck and pump shall be returned to the originating batch plant for recycling.
- Hand tools including, but not limited to, screeds, shovels, rakes, floats, and trowels shall be washed off only into formed areas awaiting installation of concrete or asphalt.
- Equipment that cannot be easily moved, such as concrete pavers, shall only be washed in areas that do not directly drain to natural or constructed stormwater conveyances.
- Washdown from areas such as concrete aggregate driveways shall not drain directly to natural or constructed stormwater conveyances.
- When no formed areas are available, washwater and leftover product shall be contained in a lined container. Contained concrete shall be disposed of in a manner that does not violate groundwater or surface water quality standards.

Maintenance Standards

Containers shall be checked for holes in the liner daily during concrete pours and repaired the same day.

BMP C209: Outlet Protection

Purpose

Outlet protection prevents scour at conveyance outlets and minimizes the potential for downstream erosion by reducing the velocity of concentrated stormwater flows.

Conditions of use

Outlet protection is required at the outlets of all ponds, pipes, ditches, or other conveyances, and where runoff is conveyed to a natural or manmade drainage feature such as a stream, wetland, lake, or ditch.

Design and Installation Specifications

- The receiving channel at the outlet of a culvert shall be protected from erosion by rock lining a minimum of 6 feet downstream and extending up the channel sides a minimum of 1–foot above the maximum tailwater elevation or 1-foot above the crown, whichever is higher. For large pipes (more than 18 inches in diameter), the outlet protection lining of the channel is lengthened to four times the diameter of the culvert.
- Standard wingwalls, and tapered outlets and paved channels should also be considered when appropriate for permanent culvert outlet protection. (See WSDOT Hydraulic Manual, available through WSDOT Engineering Publications).
- Organic or synthetic erosion blankets, with or without vegetation, are usually more effective than rock, cheaper, and easier to install. Materials can be chosen using manufacturer product specifications. ASTM test results are available for most products and the designer can choose the correct material for the expected flow.
- With low flows, vegetation (including sod) can be effective.
- The following guidelines shall be used for riprap outlet protection:
    1. If the discharge velocity at the outlet is less than 5 fps (pipe slope less than 1 percent), use 2-inch to 8-inch riprap. Minimum thickness is 1-foot.
    2. For 5 to 10 fps discharge velocity at the outlet (pipe slope less than 3 percent), use 24-inch to 4-foot riprap. Minimum thickness is 2 feet.
    3. For outlets at the base of steep slope pipes (pipe slope greater than 10 percent), an engineered energy dissipater shall be used.
- Filter fabric or erosion control blankets should always be used under riprap to prevent scour and channel erosion.
- New pipe outfalls can provide an opportunity for low-cost fish habitat improvements. For example, an alcove of low-velocity water can be created by constructing the pipe outfall and associated energy dissipater back from the stream edge and digging a channel, over-widened to the upstream side, from the outfall. Overwintering juvenile

and migrating adult salmonids may use the alcove as shelter during high flows. Bank stabilization, bioengineering, and habitat features may be required for disturbed areas. See Volume V for more information on outfall system design.

Maintenance Standards

- Inspect and repair as needed.
- Add rock as needed to maintain the intended function.
- Clean energy dissipater if sediment builds up.

BMP C220: Storm Drain Inlet Protection using Catch Basin Filters

Purpose

To prevent coarse sediment from entering drainage systems prior to permanent stabilization of the disturbed area.

Conditions of Use

Where storm drain inlets are to be made operational before permanent stabilization of the disturbed drainage area. Protection should be provided for all storm drain inlets downslope and within 500 feet of a disturbed or construction area, unless the runoff that enters the catch basin will be conveyed to a sediment pond or trap. Inlet protection may be used anywhere to protect the drainage system. It is likely that the drainage system will still require cleaning.

Drainage areas should be limited to 1 acre or less. Emergency overflows may be required where stormwater ponding would cause a hazard. If an emergency overflow is provided, additional end-of-pipe controls may be needed.

Note: Wrapping or placing a filter fabric strip over or under a catch basin grate is not an acceptable BMP.

- *Catch basin Filters* - Inserts should be designed by the manufacturer for use at construction sites. The limited sediment storage capacity increases the amount of inspection and maintenance required, which may be daily for heavy sediment loads. This type of inlet protection provides flow bypass without overflow and therefore is a better method for inlets located along active rights-of-way. The catch basin filter is inserted in the catch basin just below the grating. It should include:
- At least 5 cubic feet of sediment storage.
- Dewatering provisions.
- High-flow bypass that will not clog under normal use at a construction site.
- Submit manufacturer specifications for permitting agency approval.

Maintenance Standards

- Catch basin filters should be inspected frequently, especially after storm events. If the insert becomes clogged, it should be cleaned or replaced.
- Do not wash sediment into storm drains while cleaning. Spread all excavated material evenly over the surrounding land area and stockpile and stabilize as appropriate.

BMP C233: Silt Fence

Purpose

Use of a silt fence reduces the transport of coarse sediment from a construction site by providing a temporary physical barrier to sediment and reducing the runoff velocities of overland flow. See Figure 4.15a15a for details on silt fence construction.

Conditions of Use

Silt fence may be used downslope of all disturbed areas.

- Silt fence is not intended to treat concentrated flows, nor is it intended to treat substantial amounts of overland flow. Any concentrated flows must be conveyed through the drainage system to a sediment pond. The only circumstance in which overland flow can be treated solely by a silt fence, rather than by a sediment pond, is when the area draining to the fence is one acre or less and flow rates are less than 0.5 cfs.
- Silt fences should not be constructed in streams or used in V-shaped ditches. They are not an adequate method of silt control for anything deeper than sheet or overland flow.

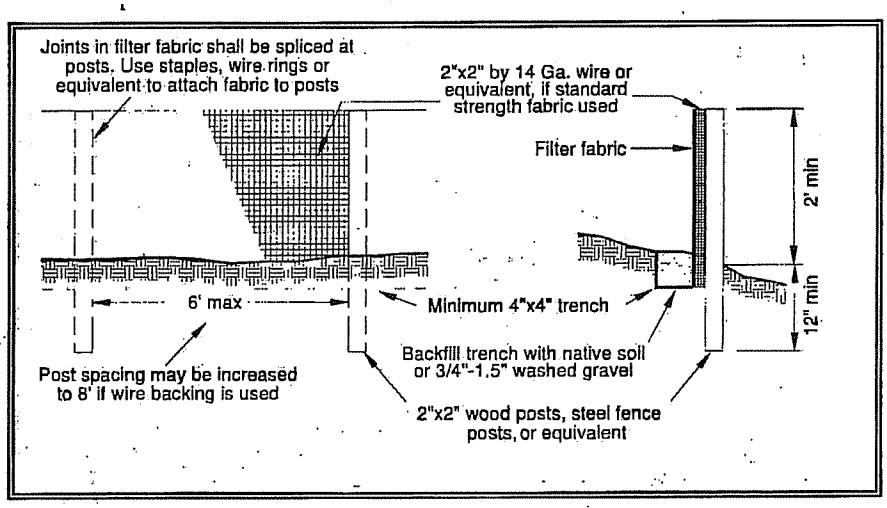


Figure 4.15a – Silt Fence

Design and Installation Specifications

Drainage area of 1 acre or less or in combination with sediment basin in a larger site.

Maximum slope steepness (normal (perpendicular) to fence line) 1:1.

- Maximum sheet or overland flow path length to the fence of 100 feet.
- No flows greater than 0.5 cfs.
- The geotextile used shall meet the following standards. All geotextile properties listed below are minimum average roll values (i.e., the test

result for any sampled roll in a lot shall meet or exceed the values shown in Table 4.10):

Table 4.10
Geotextile Standards

Polymeric Mesh AOS (ASTM D4751)	0.60 mm maximum for slit film wovens (#30 sieve). 0.30 mm maximum for all other geotextile types (#50 sieve). 0.15 mm minimum for all fabric types (#100 sieve).
Water Permittivity (ASTM D4491)	0.02 sec^{-1} minimum
Grab Tensile Strength (ASTM D4632)	180 lbs. Minimum for extra strength fabric. 100 lbs minimum for standard strength fabric.
Grab Tensile Strength (ASTM D4632)	30% maximum
Ultraviolet Resistance (ASTM D4355)	70% minimum

- Standard strength fabrics shall be supported with wire mesh, chicken wire, 2-inch x 2-inch wire, safety fence, or jute mesh to increase the strength of the fabric. Silt fence materials are available that have synthetic mesh backing attached.
- Filter fabric material shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0°F. to 120°F.
- 100 percent biodegradable silt fence is available that is strong, long lasting, and can be left in place after the project is completed, if permitted by local regulations.
- Standard Notes for construction plans and specifications follow. Refer to Figure 4.15a for standard silt fence details.

  The contractor shall install and maintain temporary silt fences at the locations shown in the Plans. The silt fences shall be constructed in the areas of clearing, grading, or drainage prior to starting those activities. A silt fence shall not be considered temporary if the silt fence must function beyond the life of the contract. The silt fence shall prevent soil carried by runoff water from going beneath, through, around, or over the top of the silt fence, but shall allow the water to pass through the fence.

  The minimum height of the top of silt fence shall be 2 feet above the adjacent uphill ground surface.

  The geotextile shall be sewn together at the point of manufacture, or at an approved location as determined by the Engineer, to form geotextile lengths as required. All sewn seams shall be located at a support post. Alternatively, two sections of silt fence can be overlapped, provided the Contractor can demonstrate, to the satisfaction of the Engineer, that

the overlap is long enough and that the adjacent fence sections are close enough together to prevent silt laden water from escaping through the fence at the overlap.

The geotextile shall be attached on the up-slope side of the posts and support system with staples, wire, or in accordance with the manufacturer's recommendations. The geotextile shall be attached to the posts in a manner that reduces the potential for geotextile tearing at the staples, wire, or other connection device. Silt fence back-up support for the geotextile in the form of a wire or plastic mesh is dependent on the properties of the geotextile selected for use. If wire or plastic back-up mesh is used, the mesh shall be fastened securely to the up-slope of the posts with the geotextile being up-slope of the mesh back-up support.

The geotextile at the bottom of the fence shall be buried in a trench to a minimum depth of 4 inches below the ground surface. The trench shall be backfilled and the soil tamped in place over the buried portion of the geotextile, such that no flow can pass beneath the fence and scouring can not occur. When wire or polymeric back-up support mesh is used, the wire or polymeric mesh shall extend into the trench a minimum of 3 inches.

The fence posts shall be placed or driven a minimum of 18 inches. A minimum depth of 12 inches is allowed if topsoil or other soft subgrade soil is not present and a minimum depth of 18 inches cannot be reached. Fence post depths shall be increased by 6 inches if the fence is located on slopes of 3:1 or steeper and the slope is perpendicular to the fence. If required post depths cannot be obtained, the posts shall be adequately secured by bracing or guying to prevent overturning of the fence due to sediment loading.

Silt fences shall be located on contour (same elevation at all points of the fence), except at the ends of the fence, where the fence shall be turned uphill such that the silt fence captures the runoff water and prevents water from flowing around the end of the fence. The local permitting authority may require the contractor to verify fence elevation.

If the fence must cross contours, with the exception of the ends of the fence, gravel check dams placed perpendicular to the back of the fence shall be used to minimize concentrated flow and erosion along the back of the fence. The gravel check dams shall be approximately 1-foot deep at the back of the fence. It shall be continued perpendicular to the fence at the same elevation until the top of the check dam intercepts the ground surface behind the fence. The gravel check dams shall consist of crushed surfacing base course, gravel backfill for walls, or shoulder ballast. The gravel check dams shall be located every 10 feet along the fence where the fence must cross contours.

The slope of the fence line where contours must be crossed shall not be steeper than 3:1.

Wood, steel or equivalent posts shall be used. Wood posts shall have minimum dimensions of 2 inches by 2 inches by 3 feet minimum length, and shall be free of defects such as knots, splits, or gouges. Steel posts shall consist of either size No. 6 rebar or larger, ASTM A 120 steel pipe with a minimum diameter of 1-inch, U, T, L, or C shape steel posts with a minimum weight of 1.35 lbs./ft. or other steel posts having equivalent strength and bending resistance to the post sizes listed. The spacing of the support posts shall be a maximum of 6 feet.

Fence back-up support, if used, shall consist of steel wire with a maximum mesh spacing of 2 inches, or a prefabricated polymeric mesh. The strength of the wire or polymeric mesh shall be equivalent to or greater than 180 lbs. grab tensile strength. The polymeric mesh must be as resistant to ultraviolet radiation as the geotextile it supports.

- Silt fence installation using the slicing method specification details follow. Refer to Figure 4.15b for slicing method details.

  The base of both end posts must be at least 2 to 4 inches above the top of the silt fence fabric on the middle posts for ditch checks to drain properly. Use a hand level or string level, if necessary, to mark base points before installation.

  Install posts 3 to 4 feet apart in critical retention areas and 6 to 7 feet apart in standard applications.

  Install posts 24 inches deep on the downstream side of the silt fence, and as close as possible to the fabric, enabling posts to support the fabric from upstream water pressure.

  Install posts with the nipples facing away from the silt fence fabric.

  Attach the fabric to each post with three ties, all spaced within the top 8 inches of the fabric. Attach each tie diagonally 45 degrees through the fabric, with each puncture at least 1 inch vertically apart. In addition, each tie should be positioned to hang on a post nipple when tightening to prevent sagging.

  Wrap approximately 6 inches of fabric around the end posts and secure with 3 ties.

  No more than 24 inches of a 36-inch fabric is allowed above ground level.

  The rope lock system must be used in all ditch check applications.

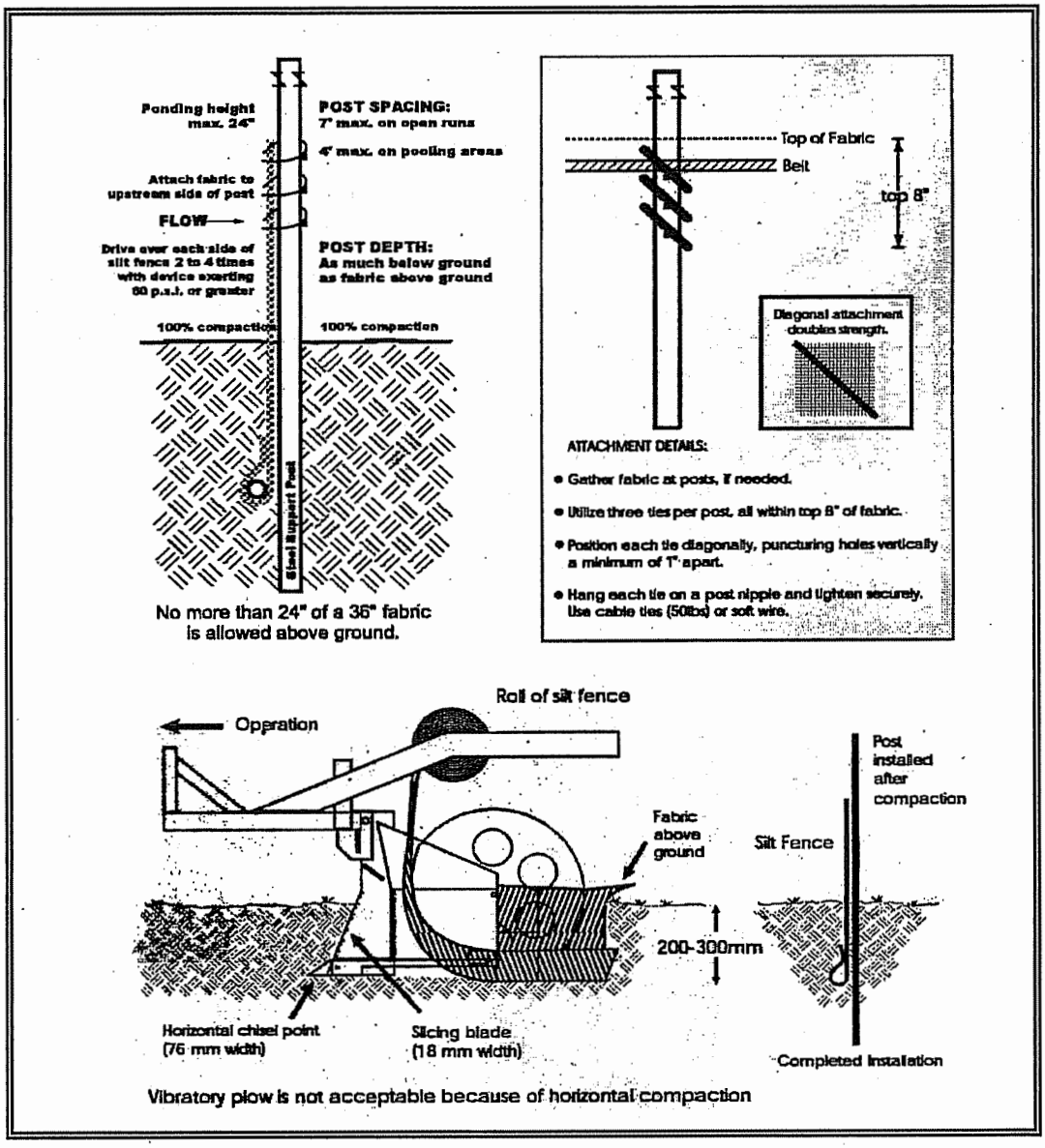
  The installation should be checked and corrected for any deviation before compaction. Use a flat-bladed shovel to tuck fabric deeper into the ground if necessary.

Compaction is vitally important for effective results. Compact the soil immediately next to the silt fence fabric with the front wheel of the tractor, skid steer, or roller exerting at least 60 pounds per square inch. Compact the upstream side first and then each side twice for a total of four trips.

Maintenance Standards

- Any damage shall be repaired immediately.
- If concentrated flows are evident uphill of the fence, they must be intercepted and conveyed to a sediment trap or pond.
- It is important to check the uphill side of the fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. If this occurs, replace the fence or remove the trapped sediment.
- Sediment deposits shall either be removed when the deposit reaches approximately one-third the height of the silt fence, or a second silt fence shall be installed.
- If the filter fabric (geotextile) has deteriorated due to ultraviolet breakdown, it shall be replaced.

Figure 4.15b – Silt Fence Installation by Slicing Method



BMP C235: Straw Wattles

Purpose

Straw wattles are temporary erosion and sediment control barriers consisting of straw that is wrapped in biodegradable tubular plastic or similar encasing material. They reduce the velocity and can spread the flow of rill and sheet runoff, and can capture and retain sediment. Straw wattles are typically 8 to 10 inches in diameter and 25 to 30 feet in length. The wattles are placed in shallow trenches and staked along the contour of disturbed or newly constructed slopes. See Figure 4.16 for typical construction details.

Conditions of Use

- Disturbed areas that require immediate erosion protection.
- Exposed soils during the period of short construction delays, or over winter months.
- On slopes requiring stabilization until permanent vegetation can be established.
- Straw wattles are effective for three to six months.
- If conditions are appropriate, wattles can be staked to the ground using willow cuttings for added revegetation.
- Rilling can occur beneath wattles if not properly entrenched and water can pass between wattles if not tightly abutted together.

Design Criteria

- It is critical that wattles are installed perpendicular to the flow direction and parallel to the slope contour.
- Narrow trenches should be dug across the slope on contour to a depth of 3 to 5 inches on clay soils and soils with gradual slopes. On loose soils, steep slopes, and areas with high rainfall, the trenches should be dug to a depth of 5 to 7 inches, or 1/2 to 2/3 of the thickness of the wattle.
- Start building trenches and installing wattles from the base of the slope and work up. Excavated material should be spread evenly along the uphill slope and compacted using hand tamping or other methods.
- Construct trenches at contour intervals of 3 to 30 feet apart depending on the steepness of the slope, soil type, and rainfall. The steeper the slope the closer together the trenches.
- Install the wattles snugly into the trenches and abut tightly end to end. Do not overlap the ends.
- Install stakes at each end of the wattle, and at 4-foot centers along entire length of wattle.
- If required, install pilot holes for the stakes using a straight bar to drive holes through the wattle and into the soil.
- At a minimum, wooden stakes should be approximately 3/4 x 3/4 x 24 inches. Willow cuttings or 3/8-inch rebar can also be used for stakes.

- Stakes should be driven through the middle of the wattle, leaving 2 to 3 inches of the stake protruding above the wattle.

Maintenance Standards

- Wattles may require maintenance to ensure they are in contact with soil and thoroughly entrenched, especially after significant rainfall on steep sandy soils.
- Inspect the slope after significant storms and repair any areas where wattles are not tightly abutted or water has scoured beneath the wattles.

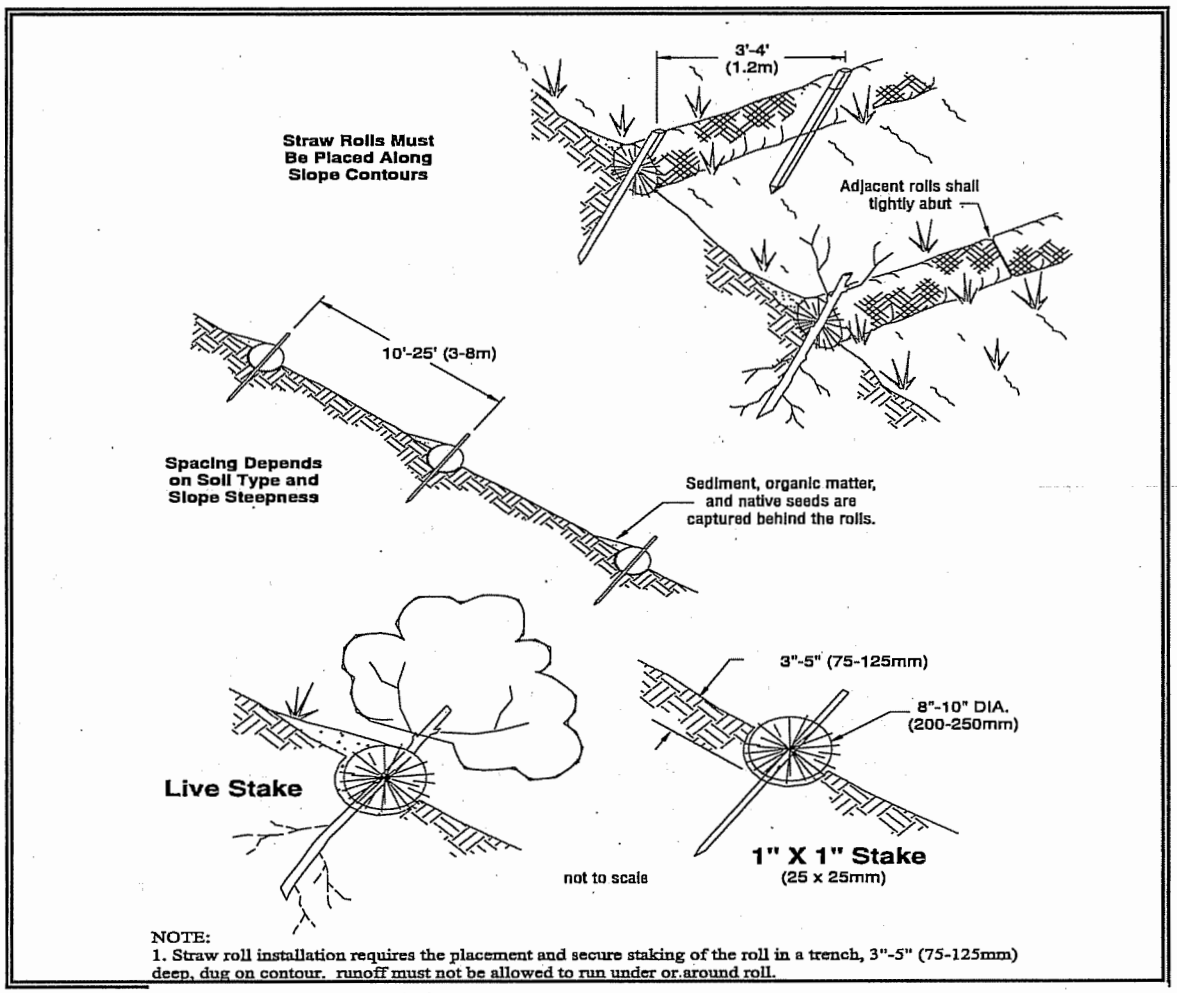


Figure 4.16 – Straw Wattles

NOTE:
1. Straw roll installation requires the placement and secure staking of the roll in a trench, 3"x5" (75-125mm) deep, dug on contour. Runoff must not be allowed to run under or around roll.

BMP C240: Sediment Trap

Purpose

A sediment trap is a small temporary ponding area with a gravel outlet used to collect and store sediment from sites cleared and/or graded during construction. Sediment traps, along with other perimeter controls, shall be installed before any land disturbance takes place in the drainage area.

Conditions of Use:

- Prior to leaving a construction site, stormwater runoff must pass through a sediment pond or trap or other appropriate sediment removal best management practice. Non-engineered sediment traps may be used on-site prior to an engineered sediment trap or sediment pond to provide additional sediment removal capacity.
- It is intended for use on sites where the tributary drainage area is less than 3 acres, with no unusual drainage features, and a projected build-out time of six months or less. The sediment trap is a temporary measure (with a design life of approximately 6 months) and shall be maintained until the site area is permanently protected against erosion by vegetation and/or structures.
- Sediment traps and ponds are only effective in removing sediment down to about the medium silt size fraction. Runoff with sediment of finer grades (fine silt and clay) will pass through untreated, emphasizing the need to control erosion to the maximum extent first.
- Whenever possible, sediment-laden water shall be discharged into onsite, relatively level, vegetated areas (see BMP C234 – Vegetated Strip). This is the only way to effectively remove fine particles from runoff unless chemical treatment or filtration is used. This can be particularly useful after initial treatment in a sediment trap or pond. The areas of release must be evaluated on a site-by-site basis in order to determine appropriate locations for and methods of releasing runoff. Vegetated wetlands shall not be used for this purpose. Frequently, it may be possible to pump water from the collection point at the downhill end of the site to an upslope vegetated area. Pumping shall only augment the treatment system, not replace it, because of the possibility of pump failure or runoff volume in excess of pump capacity.
- All projects that are constructing permanent facilities for runoff quantity control should use the rough-graded or final-graded permanent facilities for traps and ponds. This includes combined facilities and infiltration facilities. When permanent facilities are used as temporary sedimentation facilities, the surface area requirement of a sediment trap or pond must be met. If the surface area requirements are larger than the surface area of the permanent facility, then the trap

or pond shall be enlarged to comply with the surface area requirement. The permanent pond shall also be divided into two cells as required for sediment ponds.

- Either a permanent control structure or the temporary control structure (described in BMP C241, Temporary Sediment Pond) can be used. If a permanent control structure is used, it may be advisable to partially restrict the lower orifice with gravel to increase residence time while still allowing dewatering of the pond. A shut-off valve may be added to the control structure to allow complete retention of stormwater in emergency situations. In this case, an emergency overflow weir must be added.

- A skimmer may be used for the sediment trap outlet if approved by the Local Permitting Authority.

Design and Installation Specifications

- See Figures 4.17 and 4.18 for details.
- If permanent runoff control facilities are part of the project, they should be used for sediment retention.
- To determine the sediment trap geometry, first calculate the design surface area (*SA*) of the trap, measured at the invert of the weir. Use the following equation:

  $SA = FS(Q_2/V_S)$

  where

  Q_2 = Design inflow based on the peak discharge from the developed 2-year runoff event from the contributing drainage area as computed in the hydrologic analysis. The 10-year peak flow shall be used if the project size, expected timing and duration of construction, or downstream conditions warrant a higher level of protection. If no hydrologic analysis is required, the Rational Method may be used.

  V_S = The settling velocity of the soil particle of interest. The 0.02 mm (medium silt) particle with an assumed density of 2.65 g/cm^3 has been selected as the particle of interest and has a settling velocity (V_S) of 0.00096 ft/sec.

  FS = A safety factor of 2 to account for non-ideal settling.

  Therefore, the equation for computing surface area becomes:

  SA = 2 x Q_2/0.00096 or 2080 square feet per cfs of inflow

Note: Even if permanent facilities are used, they must still have a surface area that is at least as large as that derived from the above formula. If they do not, the pond must be enlarged.

- To aid in determining sediment depth, all sediment traps shall have a staff gauge with a prominent mark 1-foot above the bottom of the trap.
- Sediment traps may not be feasible on utility projects due to the limited work space or the short-term nature of the work. Portable tanks may be used in place of sediment traps for utility projects.

Maintenance Standards

- Sediment shall be removed from the trap when it reaches 1-foot in depth.
- Any damage to the pond embankments or slopes shall be repaired.

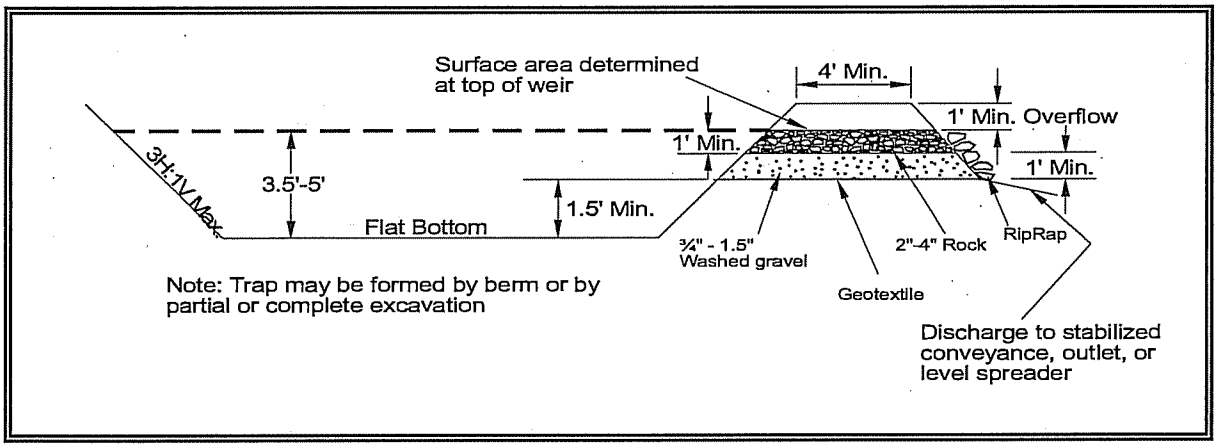
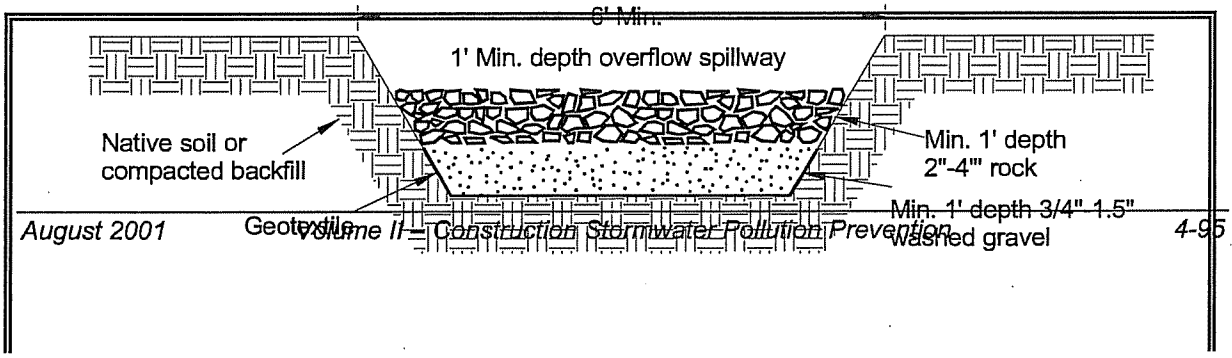


Figure 4.17 Cross Section of Sediment Trap



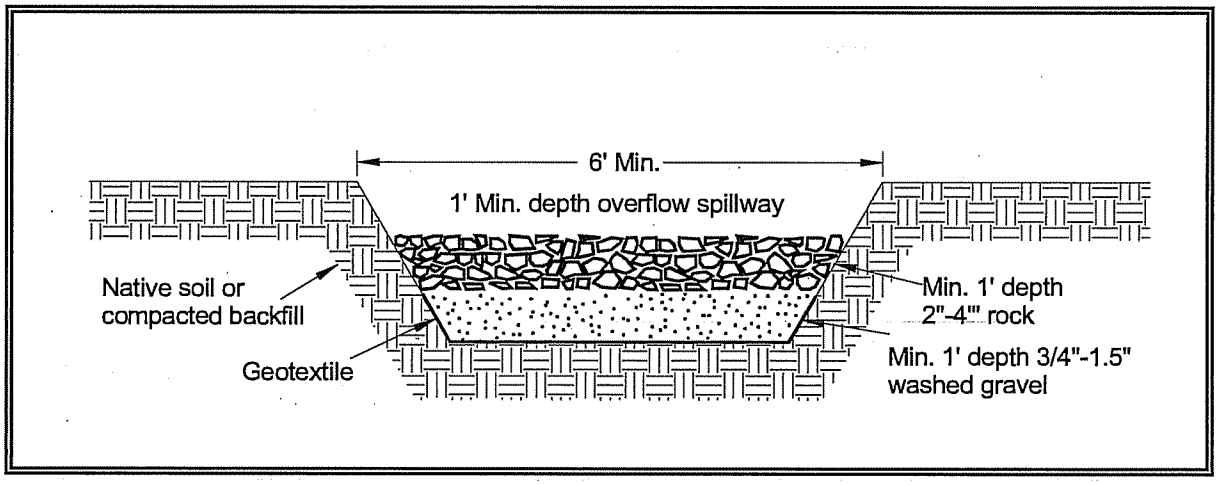


Figure 4.18 Sediment Trap Outlet

cause a change in the pH of the receiving water of more than 0.2 standard units. It is often possible to discharge treated stormwater that has a lower turbidity than the receiving water and that matches the pH.

Treated stormwater samples and measurements shall be taken from the discharge pipe or another location representative of the nature of the treated stormwater discharge. Samples used for determining compliance with the water quality standards in the receiving water shall not be taken from the treatment pond prior to decanting. Compliance with the water quality standards is determined in the receiving water.

Operator Training: Facility operators shall demonstrate proficiency to the satisfaction of the local permitting authority.

Standard BMPs: Chemical treatment shall not be used alone or in lieu of appropriate erosion prevention practices.

Sediment Removal And Disposal:

- Sediment shall be removed from the storage or treatment cells as necessary. Typically, sediment removal is required at least once during a wet season and at the decommissioning of the cells. Sediment remaining in the cells between batches may enhance the settling process and reduce the required chemical dosage.
- Sediment may be incorporated into the site away from drainages.

BMP C241: Temporary Sediment Pond

Purpose

Sediment ponds remove sediment from runoff originating from disturbed areas of the site. Sediment ponds are typically designed to remove sediment no smaller than medium silt (0.02 mm). Consequently, they usually reduce turbidity only slightly.

Conditions of Use

Prior to leaving a construction site, stormwater runoff must pass through a sediment pond or other appropriate sediment removal best management practice.

A sediment pond shall be used where the contributing drainage area is 3 acres or more. Ponds must be used in conjunction with erosion control practices to reduce the amount of sediment flowing into the basin.

Design and Installation Specifications

- Sediment basins must be installed only on sites where failure of the structure would not result in loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities. Also, sediment traps and ponds are attractive to children and can be very dangerous. Compliance with local ordinances regarding health and safety must be addressed. If fencing of the pond is required, the type of fence and its location shall be shown on the ESC plan.
- Structures having a maximum storage capacity at the top of the dam of 10 acre-ft (435,600 ft^3) or more are subject to the Washington Dam Safety Regulations (Chapter 173-175 WAC).
- See Figure 4.24, Figure 4.25, and Figure 4.26 for details.
- If permanent runoff control facilities are part of the project, they should be used for sediment retention. The surface area requirements of the sediment basin must be met. This may require enlarging the permanent basin to comply with the surface area requirements. If a permanent control structure is used, it may be advisable to partially restrict the lower orifice with gravel to increase residence time while still allowing dewatering of the basin.
- Use of infiltration facilities for sedimentation basins during construction tends to clog the soils and reduce their capacity to infiltrate. If infiltration facilities are to be used, the sides and bottom of the facility must only be rough excavated to a minimum of 2 feet above final grade. Final grading of the infiltration facility shall occur only when all contributing drainage areas are fully stabilized. The infiltration pretreatment facility should be fully constructed and used with the sedimentation basin to help prevent clogging.
- Determining Pond Geometry

  Obtain the discharge from the hydrologic calculations of the peak flow for the 2-year runoff event (Q_2). The 10-year peak flow shall be used if the project size, expected timing and duration of construction, or downstream conditions warrant a higher level of protection. If no hydrologic analysis is required, the Rational Method may be used.

Determine the required surface area at the top of the riser pipe with the equation:

$SA = 2 \times Q_2/0.00096$ or
2080 square feet per cfs of inflow

See BMP C240 for more information on the derivation of the surface area calculation.

The basic geometry of the pond can now be determined using the following design criteria:

- Required surface area SA (from Step 2 above) at top of riser.
- Minimum 3.5-foot depth from top of riser to bottom of pond.
- Maximum 3:1 interior side slopes and maximum 2:1 exterior slopes. The interior slopes can be increased to a maximum of 2:1 if fencing is provided at or above the maximum water surface.
- One foot of freeboard between the top of the riser and the crest of the emergency spillway.
- Flat bottom.
- Minimum 1-foot deep spillway.
- Length-to-width ratio between 3:1 and 6:1.
- Sizing of Discharge Mechanisms.

The outlet for the basin consists of a combination of principal and emergency spillways. These outlets must pass the peak runoff expected from the contributing drainage area for a 100-year storm. If, due to site conditions and basin geometry, a separate emergency spill-way is not feasible, the principal spillway must pass the entire peak runoff expected from the 100-year storm. However, an attempt to provide a separate emergency spillway should always be made. The runoff calculations should be based on the site conditions during construction. The flow through the dewatering orifice cannot be utilized when calculating the 100-year storm elevation because of its potential to become clogged; therefore, available spillway storage must begin at the principal spillway riser crest.

The principal spillway designed by the procedures contained in this standard will result in some reduction in the peak rate of runoff. However, the riser outlet design will not adequately control the basin discharge to the predevelopment discharge limitations as stated in Minimum Requirement #7: Flow Control. However, if the basin for a permanent stormwater detention pond is used for a temporary sedimentation basin, the control structure for the permanent pond can be used to maintain predevelopment discharge limitations. The size of the basin, the expected life of the construction project, the anticipated downstream effects and the anticipated weather conditions during construction, should be considered to determine the need of additional discharge control. See Figure 4.28 for riser inflow curves.

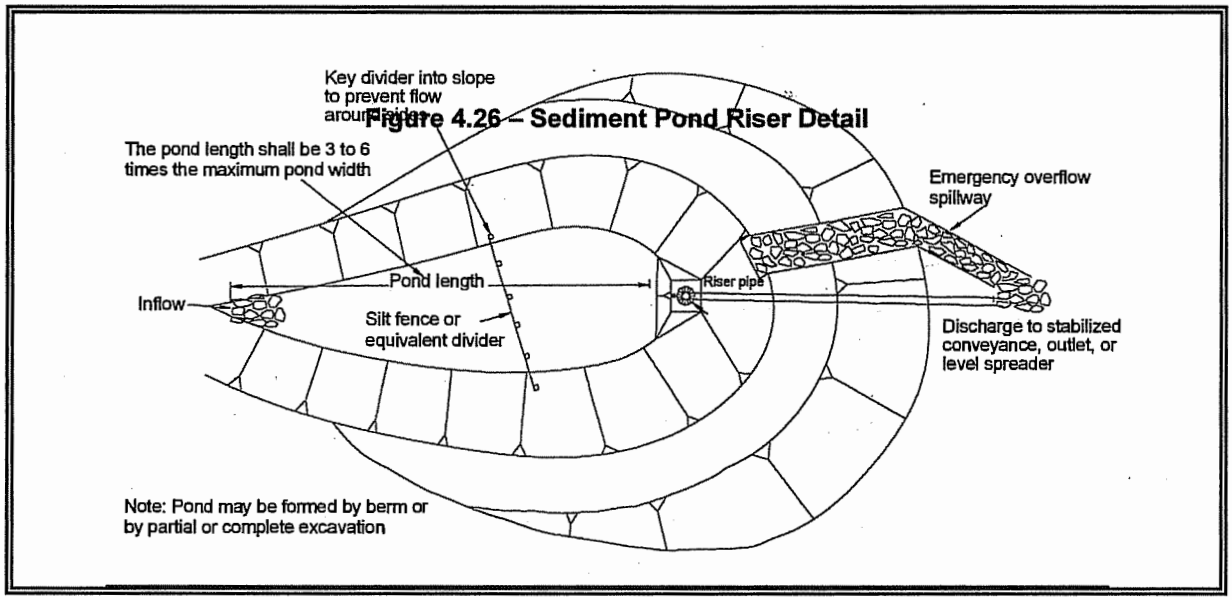


Figure 4.26 – Sediment Pond Riser Detail

Figure 4.24 – Sediment Pond Plan View

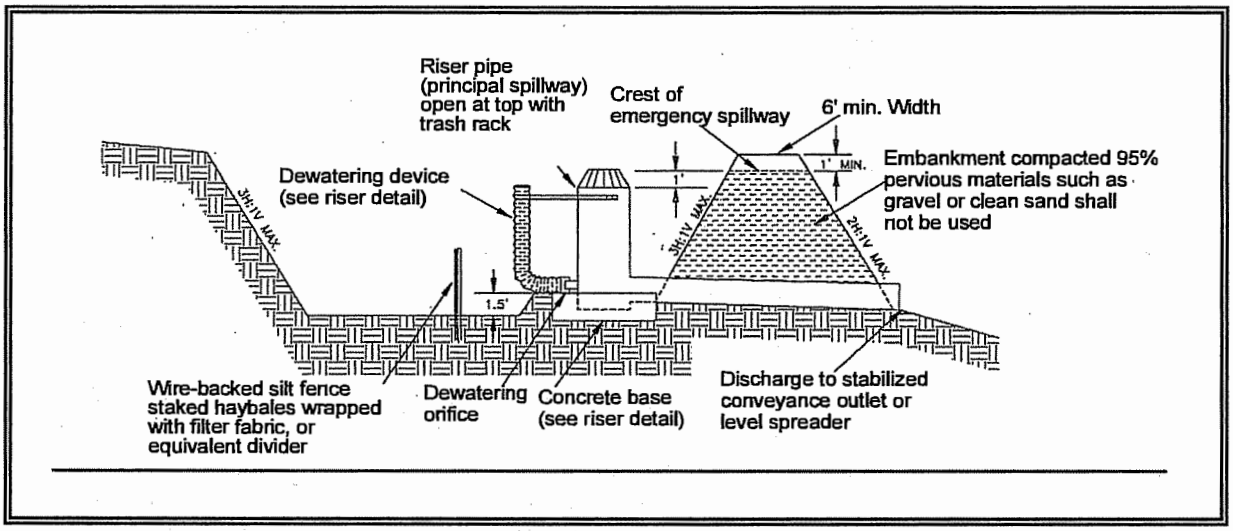


Figure 4.25 – Sediment Pond Cross Section

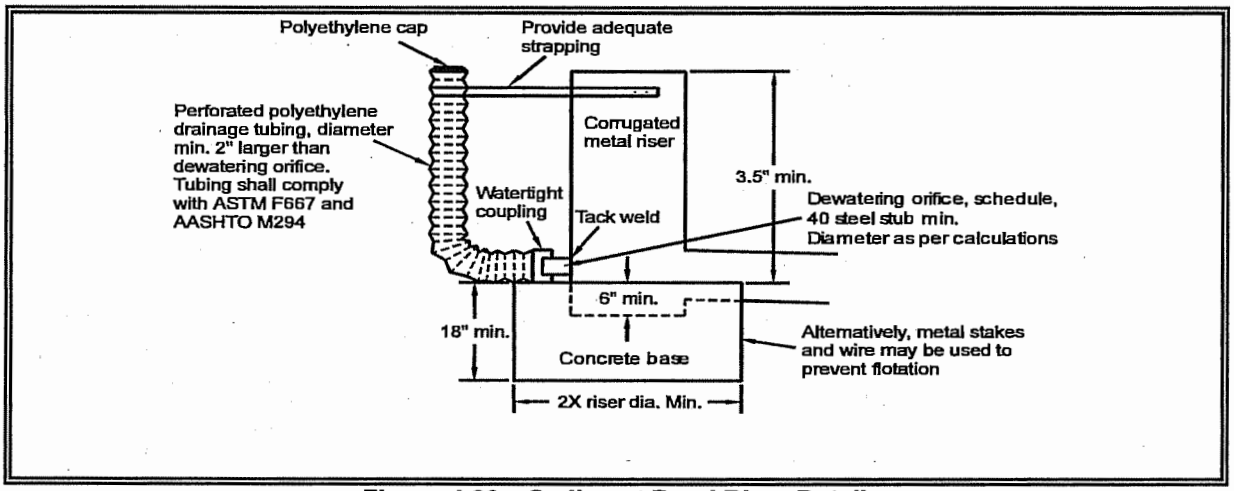


Figure 4.26 – Sediment Pond Riser Detail

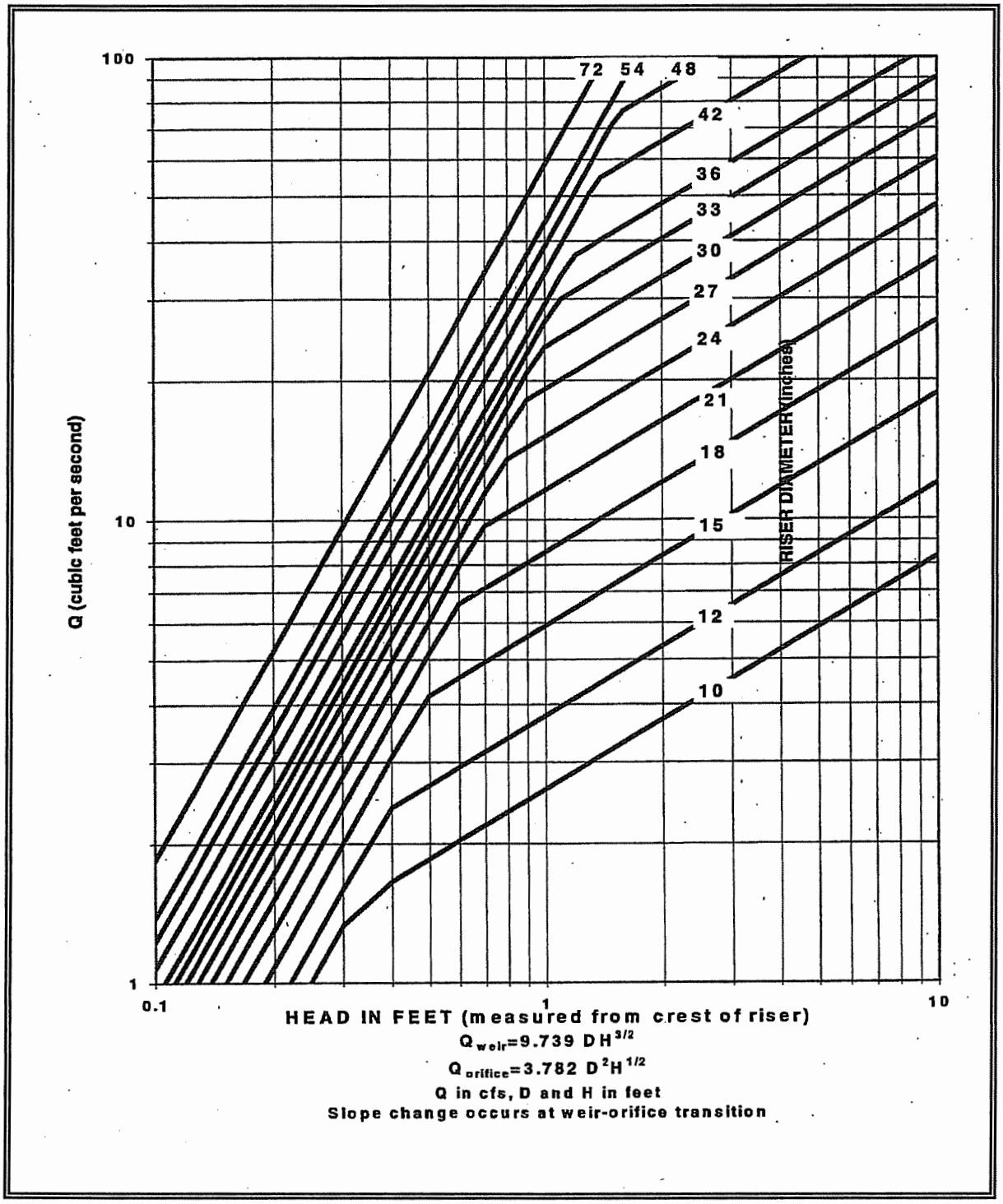


Figure 4.27 – Riser Inflow Curves

Principal Spillway: Determine the required diameter for the principal spillway (riser pipe). The diameter shall be the minimum necessary to pass the pre-developed 10-year peak flow (Q_{10}). Use Figure 4.28 to determine this diameter (h = 1-foot). *Note: A permanent control structure may be used instead of a temporary riser.*

Emergency Overflow Spillway: Determine the required size and design of the emergency overflow spillway for the developed 100-year peak flow using the method contained in Volume III.

Dewatering Orifice: Determine the size of the dewatering orifice(s) (minimum 1-inch diameter) using a modified version of the discharge equation for a vertical orifice and a basic equation for the area of a circular orifice. Determine the required area of the orifice with the following equation:

$$A_o = \frac{A_s (2h)^{0.5}}{0.6\text{x}3600Tg^{0.5}}$$

where A_O = orifice area (square feet)
A_S = pond surface area (square feet)
h = head of water above orifice (height of riser in feet)
T = dewatering time (24 hours)
g = acceleration of gravity (32.2 feet/second^2)

Convert the required surface area to the required diameter D of the orifice:

$$D = 24\text{x}\sqrt{\frac{A_o}{\pi}} = 13.54\text{x}\sqrt{A_o}$$

The vertical, perforated tubing connected to the dewatering orifice must be at least 2 inches larger in diameter than the orifice to improve flow characteristics. The size and number of perforations in the tubing should be large enough so that the tubing does not restrict flow. The orifice should control the flow rate.

- Additional Design Specifications

  The **pond shall be divided** into two roughly equal volume cells by a permeable divider that will reduce turbulence while allowing movement of water between cells. The divider shall be at least one-half the height of the riser and a minimum of one foot below the top of the riser. Wire-backed, 2- to 3-foot high, extra strength filter fabric supported by treated 4"x4"s can be used as a divider. Alternatively, staked straw bales wrapped with filter fabric (geotextile) may be used. If the pond is more than 6 feet deep, a different mechanism must be proposed. A riprap embankment is one acceptable method of separation for deeper ponds. Other designs that satisfy the intent of

this provision are allowed as long as the divider is permeable, structurally sound, and designed to prevent erosion under or around the barrier.

To aid in determining sediment depth, **one-foot intervals** shall be prominently marked on the riser.

If an **embankment** of more than 6 feet is proposed, the pond must comply with the criteria contained in Volume III regarding dam safety for detention BMPs.

- The most common structural failure of sedimentation basins is caused by piping. Piping refers to two phenomena: (1) water seeping through fine-grained soil, eroding the soil grain by grain and forming pipes or tunnels; and, (2) water under pressure flowing upward through a granular soil with a head of sufficient magnitude to cause soil grains to lose contact and capability for support.

  The most critical construction sequences to prevent piping will be:

  1. Tight connections between riser and barrel and other pipe connections.
  2. Adequate anchoring of riser.
  3. Proper soil compaction of the embankment and riser footing.
  4. Proper construction of anti-seep devices.

Maintenance Standards

- Sediment shall be removed from the pond when it reaches 1–foot in depth.
- Any damage to the pond embankments or slopes shall be repaired.

BMP C251: Construction Stormwater Filtration

Purpose

Filtration removes sediment from runoff originating from disturbed areas of the site.

Conditions of Use

- Traditional BMPs used to control soil erosion and sediment loss from sites under development may not be adequate to ensure compliance with the water quality standard for turbidity in the receiving water. Filtration may be used in conjunction with gravity settling to remove sediment as small as fine silt (0.5 µm). The reduction in turbidity will be dependent on the particle size distribution of the sediment in the stormwater. In some circumstances, sedimentation and filtration may achieve compliance with the water quality standard for turbidity.

- Unlike chemical treatment, the use of construction stormwater filtration does not require approval from Ecology.

- Filtration may also be used in conjunction with polymer treatment in a portable system to assure capture of the flocculated solids.

Design and Installation Specifications

Background Information

- Filtration with sand media has been used for over a century to treat water and wastewater. The use of sand filtration for treatment of stormwater has developed recently, generally to treat runoff from streets, parking lots, and residential areas. The application of filtration to construction stormwater treatment is currently under development.

Two types of filtration systems may be applied to construction stormwater treatment: rapid and slow. Rapid sand filters are the typical system used for water and wastewater treatment. They can achieve relatively high hydraulic flow rates, on the order of 2 to 20 gpm/sf, because they have automatic backwash systems to remove accumulated solids. In contrast, slow sand filters have very low hydraulic rates, on the order of 0.02 gpm/sf, because they do not have backwash systems. To date, slow sand filtration has generally been used to treat stormwater. Slow sand filtration is mechanically simple in comparison to rapid sand filtration but requires a much larger filter area.

Filtration Equipment. Sand media filters are available with automatic backwashing features that can filter to 50 µm particle size. Screen or bag filters can filter down to 5 µm. Fiber wound filters can remove particles down to 0.5 µm. Filters should be sequenced from the largest to the smallest pore opening. Sediment removal efficiency will be related to particle size distribution in the stormwater.

Treatment Process Description. Stormwater is collected at interception point(s) on the site and is diverted to a sediment pond or tank for removal of large sediment and storage of the stormwater before it is treated by the filtration system. The stormwater is pumped from the trap, pond, or tank through the filtration system in a rapid sand filtration system. Slow sand filtration systems are designed as flow through systems using gravity.

If large volumes of concrete are being poured, pH adjustment may be necessary.

Maintenance Standards

- Rapid sand filters typically have automatic backwash systems that are triggered by a pre-set pressure drop across the filter. If the backwash water volume is not large or substantially more turbid than the stormwater stored in the holding pond or tank, backwash return to the pond or tank may be appropriate. However, land application or another means of treatment and disposal may be necessary.
- Screen, bag, and fiber filters must be cleaned and/or replaced when they become clogged.
- Sediment shall be removed from the storage and/or treatment ponds as necessary. Typically, sediment removal is required once or twice during a wet season and at the decommissioning of the ponds.

Appendix C Alternative Construction BMP List

The following includes a list of possible alternative BMPs for each of the 12 elements not described in the main SWPPP text. This list can be referenced in the event a BMP for a specific element is not functioning as designed and an alternative BMP needs to be implemented.

Element #3 – Control Flow Rates

Construct Temporary Infiltration Trench

Element #4 – Sediment Control

Infiltration Trench

Appendix D Site Inspection Forms (and Site Log)

The results of each inspection shall be summarized in an inspection report or checklist that is entered into or attached to the site log book. It is suggested that the inspection report or checklist be included in this appendix to keep monitoring and inspection information in one document, but this is optional. However, it is **mandatory** that this SWPPP and the site inspection forms be kept on-site at all times during construction, and that inspections be performed and documented as outlined below.

At a minimum, each inspection report or checklist shall include:

- Inspection dates and times
- Weather information: general conditions during construction, approximate amount of precipitation since the last inspection, and approximate amount of precipitation within the last 24 hours.
- A summary or list of all BMPs that have been implemented, including observations of all erosion/sediment control structures or practices.
- The following shall be noted:
  - Locations of BMPs inspected
  - Locations of BMPs that need maintenance
  - The reason maintenance is needed
  - Locations of BMPs that failed to operate as designed or intended
  - Locations where additional or different BMPs are needed and the reason(s) why.
- A description of stormwater discharged from the site. The presence of suspended sediment, turbid water, discoloration, and/or oil sheen shall be noted, as applicable.
- A description of any water quality monitoring performed during inspection, and the results of that monitoring.
- General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.
- A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP and the NPDES permit. If the site inspection report indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation.
- Name, title, and signature of person conducting the site inspection and the following statement: "I certify under penalty of law that this report is true, accurate, and complete, to the best of my knowledge and belief."

When the site inspection indicates that the site is not in compliance with any terms and conditions of the NPDES permit, the Permittee shall take immediate action(s) to: stop, contain, and clean up the unauthorized discharges, or otherwise stop the noncompliance; correct the problem(s); implement appropriate Best Management Practices (BMPs) and/or conduct maintenance of existing BMPs; and achieve compliance with all applicable standards and permit conditions. In addition, if the noncompliance causes a threat to human health or the environment, the Permittee shall comply with the Noncompliance Notification requirements in Special Condition S5.F of the permit.

Construction Stormwater
SITE INSPECTION CHECKLIST

Project_____ Permit No._____ Inspector_____ Date_____ Time_____

Will existing BMPs need to be modified or removed, or other BMPs installed? YES NO
IF YES, list the action items to be completed on the following table:

Actions to be Completed	Date Completed/ Initials
1.	
2.	
3.	
4.	
5.	
6.	

Describe current weather conditions

Approximate amount of precipitation since last inspection: _____ inches
and precipitation in the past 24 hours*: _____inches
**based on an on-site rain gauge or local weather data.*

Describe discharging stormwater, if present. Note the presence of suspended sediment, "cloudiness", discoloration, or oil sheen.

Was water quality sampling part of this inspection? YES NO
If yes, record results below (attach separate sheet, if necessary):

Parameter:	Method (circle one)	Result	Units
Turbidity	tube, meter, laboratory		NTU (cm, if tube used)
pH	paper, kit, meter		pH standard units

Is the site in compliance with the SWPPP and the permit requirements? YES NO
If no, indicate tasks necessary to bring site into compliance on the "Actions to be Completed" table above, and include dates each job WILL BE COMPLETED.
If no, has the non-compliance been reported to Dept. of Ecology? YES NO
If no, should the SWPPP be modified: YES NO

Sign the following certification:
"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

Inspection completed on:_____ by: (print+signature)_____

Title/Qualification of Inspector:_____

Excerpt from *How to do Stormwater Monitoring,* Publication # 06-10-020

Construction Stormwater
SITE INSPECTION CHECKLIST

Project_____ Permit No._____ Inspector_____ Date_____ Time_____

Site BMPs	Overall Condition	Need Repair?	Comments/Observations
Clearing Limits			
• *Buffer Zones around sensitive areas*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Construction Access/Roads			
• *Stabilized site entrance*	G F P	Y N	
• *Stabilized roads/parking area*	G F P	Y N	
•	G F P	Y N	
Control Flow Rates			
• *Swale*	G F P	Y N	
• *Dike*	G F P	Y N	
• *Sediment pond*	G F P	Y N	
• *Sediment trap*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Install Sediment Controls			
• *Sediment pond/trap*	G F P	Y N	
• *Silt fence*	G F P	Y N	
• *Straw bale barriers*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Preserve Vegetation/Stabilize Soils			
• *Nets and blankets*	G F P	Y N	
• *Mulch*	G F P	Y N	
• *Seeding*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Protect Slopes			
• *Terrace*	G F P	Y N	
• *Pipe slope drains*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Protect Drain Inlets			
• *Inserts*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Stabilize Channels and Outlets			
• *Conveyance channels*	G F P	Y N	
• *Energy dissipators*	G F P	Y N	
•	G F P	Y N	
Control Pollutants			
• *Chemical Storage Area covered*	G F P	Y N	
• *Concrete handling*	G F P	Y N	
•	G F P	Y N	
Control De-watering			
•	G F P	Y N	

G=Good F=Fair P=Poor Y=Yes N=No

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Construction Stormwater
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Construction Access/Roads			
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•	G F P	Y N	
Control Flow Rates			
•*Swale*	G F P	Y N	
•*Dike*	G F P	Y N	
•*Sediment pond*	G F P	Y N	
•*Sediment trap*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Install Sediment Controls			
•*Sediment pond/trap*	G F P	Y N	
•*Silt fence*	G F P	Y N	
•*Straw bale barriers*	G F P	Y N	
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•	G F P	Y N	
•	G F P	Y N	
Preserve Vegetation/Stabilize Soils			
•*Nets and blankets*	G F P	Y N	
•*Mulch*	G F P	Y N	
•*Seeding*	G F P	Y N	
•	G F P	Y N	
•	G F P	Y N	
Protect Slopes			
•*Terrace*	G F P	Y N	
•*Pipe slope drains*	G F P	Y N	
•	G F P	Y N	
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Protect Drain Inlets			
•*Inserts*	G F P	Y N	
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Stabilize Channels and Outlets			
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Control Pollutants			
•*Chemical Storage Area covered*	G F P	Y N	
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Appendix E Engineering Calculations

Sediment Trap #1 Sizing
Outside Cutoff Wall

SA = Surface Area
Q_2 = 2-yr Peak Developed

SA = 2,080 x Q_2 (BMP C-240) Appendix B
SA = 2,080 x 0.338 = 703 sf (Required)
Water Depth 3.5'
Sides 3:1
Bottom Area 3' x 51'
SA = 24' x 72' 1,728 sf > 703 sf (Provided)

Orifice Sizing (BMP C241) Appendix B

$$A_0 = \frac{As(2h)^{0.5}}{0.6x3x3{,}600Tg^{0.5}}$$

$$A_0 = \frac{1{,}728(2x2.5)^{0.5}}{0.6x3{,}600x24x32.2^{0.5}}$$

$$A_0 = \frac{3{,}863.9}{294{,}166.3}$$

A_0 = 0.01314 sf

A_0 = Area of orifice in sf
A_s = Water surface area
h = Hydraulic head in ft
T = Time in hours
g = Acceleration of gravity 32.2 ft/sec^2

$$D = 13.54\sqrt{A_0}$$

$$D = 13.54\sqrt{.01314}$$

D = 1.5674 = 1 9/16"

Q = CA $(2gh)^{0.5}$
Q = 0.62 x 0.0134 $(2 \times 32 \times 2.5)^{0.5}$
Q = .00831 x 12.6886
Q = 0.105 cfs = 47.1 gpm

A = Area of orifice in sf
C = 0.62 Coeffecient of discharge
h = hydraulic head in ft
g = acceleration of gravity 32.2 ft/sec^2

Sediment Trap #2 Sizing (Existing Pond) Appendix B
Inside cutoff wall
SA = 2,080 x Q_2 (BMP C-240)

SA = 2,080 x 0.324
SA = 674 sf
Water Depth 3.5'
Sides 2:1

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

Project Name: 09-101
Site Address: Port of Olympia
City : Olympia
Report Date : 02/16/2010
Gage : Olympia
Data Start : 1955
Data End : 1999
Precip Scale: 1.11

PREDEVELOPED LAND USE

Basin : inside wall
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
TILL FOREST:	0.92

DEVELOPED LAND USE
Basin : inside wall
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
IMPERVIOUS:	0.92

RCHRES (POND) INFORMATION

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	0.05
5 year	0.075154
10 year	0.092571
25 year	0.115216
50 year	0.132462
100 year	0.149982

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	0.32394
5 year	0.393161
10 year	0.435985
25 year	0.487602
50 year	0.524625
100 year	0.560664

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	0.32394
5 year	0.393161
10 year	0.435985
25 year	0.487602
50 year	0.524625

100 year	0.560664

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed
1956	0.061	0.288
[illegible]7	0.120	0.490
1[illegible]8	0.034	0.284
1959	0.047	0.334
1960	0.076	0.372
1961	0.048	0.238
1962	0.018	0.270
1963	0.111	0.507
1964	0.049	0.381
1965	0.056	0.347
1966	0.028	0.257
1967	0.053	0.290
1968	0.042	0.238
1969	0.025	0.247
1970	0.042	0.239
1971	0.057	0.294
1972	0.085	0.318
1973	0.049	0.279
1974	0.043	0.347
1975	0.034	0.292
1976	0.073	0.321
1977	0.020	0.429
1978	0.049	0.356
1979	0.044	0.426
1980	0.047	0.314
1981	0.078	0.370
1982	0.043	0.418
1983	0.090	0.494
1984	0.050	0.282
1985	0.022	0.312
[illegible]6	0.087	0.338
[illegible]7	0.074	0.339
1988	0.034	0.209
1989	0.037	0.247
1990	0.096	0.480
1991	0.125	0.434
1992	0.038	0.302
1993	0.022	0.229
1994	0.021	0.247
1995	0.055	0.357
1996	0.089	0.362
1997	0.047	0.312
1998	0.064	0.416
1999	0.061	0.370

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	Predeveloped	Developed
1	0.1202	0.4943
2	0.1110	0.4896
3	0.0963	0.4804
4	0.0902	0.4339
5	0.0891	0.4289
6	0.0870	0.4264
7	0.0846	0.4178
8	0.0780	0.4156
9	0.0756	0.3806
10	0.0744	0.3721
11	0.0733	0.3703
[illegible]	0.0640	0.3703
[illegible]	0.0610	0.3621
14	0.0605	0.3570
15	0.0567	0.3559
16	0.0560	0.3472
17	0.0554	0.3470
18	0.0533	0.3387
19	0.0504	0.3381
20	0.0489	0.3339

21	0.0486	0.3213
22	0.0485	0.3176
23	0.0479	0.3136
24	0.0474	0.3122
25	0.0467	0.3117
26	0.0467	0.3023
27	0.0443	0.2939
28	0.0434	0.2922
29	0.0432	0.2901
30	0.0424	0.2884
31	0.0423	0.2845
32	0.0376	0.2820
33	0.0369	0.2790
34	0.0342	0.2700
35	0.0340	0.2574
36	0.0339	0.2471
37	0.0279	0.2468
38	0.0248	0.2468
39	0.0219	0.2385
40	0.0216	0.2376
41	0.0211	0.2376
42	0.0199	0.2287
43	0.0182	0.2089

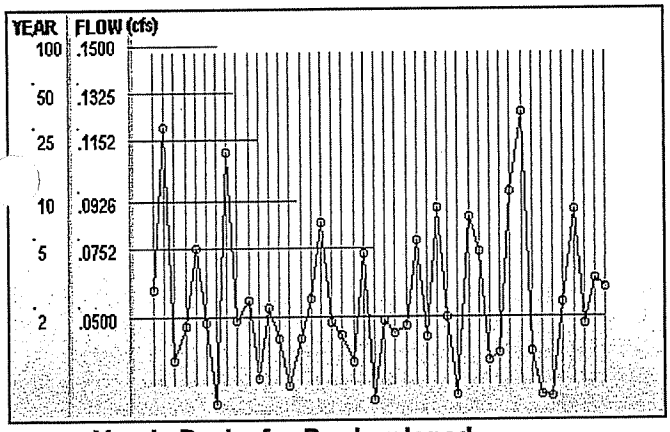
1/2 2 year to 50 year

Flow(CFS)	Predev	Final	Percentage	Pass/Fail
0.0250	3823	23246	608.0	Fail
0.0261	3462	22490	649.0	Fail
0.0272	3111	21761	699.0	Fail
0.0283	2775	21110	760.0	Fail
0.0293	2490	20438	820.0	Fail
0.0304	2242	19771	881.0	Fail
0.0315	2036	19131	939.0	Fail
0.0326	1861	18533	995.0	Fail
0.0337	1679	17947	1068.0	Fail
0.0348	1520	17430	1146.0	Fail
0.0359	1384	16909	1221.0	Fail
0.0369	1263	16412	1299.0	Fail
0.0380	1145	15891	1387.0	Fail
0.0391	1042	15440	1481.0	Fail
0.0402	949	14977	1578.0	Fail
0.0413	858	14560	1696.0	Fail
0.0424	785	14155	1803.0	Fail
0.0435	708	13739	1940.0	Fail
0.0445	645	13315	2064.0	Fail
0.0456	580	12952	2233.0	Fail
0.0467	528	12609	2388.0	Fail
0.0478	477	12223	2562.0	Fail
0.0489	434	11887	2738.0	Fail
0.0500	391	11544	2952.0	Fail
0.0511	361	11236	3112.0	Fail
0.0521	339	10962	3233.0	Fail
0.0532	313	10638	3398.0	Fail
0.0543	290	10325	3560.0	Fail
0.0554	268	10044	3747.0	Fail
0.0565	246	9774	3973.0	Fail
0.0576	228	9484	4159.0	Fail
0.0586	214	9234	4314.0	Fail
0.0597	199	8983	4514.0	Fail
0.0608	183	8763	4788.0	Fail
0.0619	174	8532	4903.0	Fail
0.0630	160	8320	5200.0	Fail
0.0641	149	8131	5457.0	Fail
0.0652	134	7899	5894.0	Fail
0.0662	122	7703	6313.0	Fail
0.0673	116	7521	6483.0	Fail
0.0684	99	7325	7398.0	Fail
0.0695	86	7147	8310.0	Fail
0.0706	81	6974	8609.0	Fail
0.0717	77	6781	8806.0	Fail
0.0728	67	6615	9873.0	Fail
0.0738	61	6437	10552.0	Fail

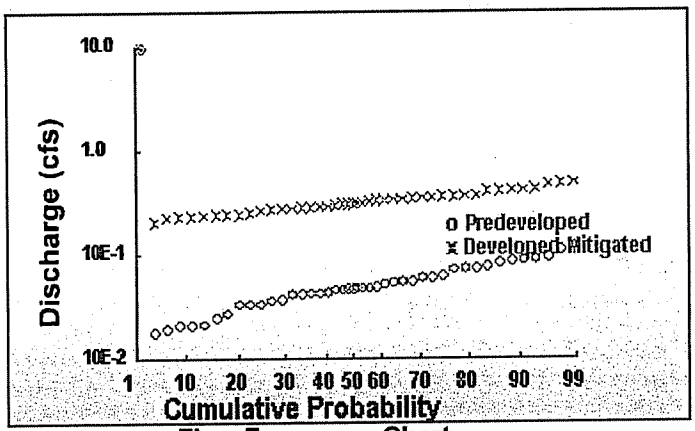
0.0749	56	6268	11192.0	Fail
0.0760	51	6125	12009.0	Fail
0.0771	47	5948	12655.0	Fail
0.0782	45	5820	12933.0	Fail
0.0793	40	5654	14135.0	Fail
0.0804	38	5543	14586.0	Fail
0.0814	35	5404	15439.0	Fail
0.0825	33	5303	16069.0	Fail
0.0836	30	5180	17266.0	Fail
0.0847	28	5080	18142.0	Fail
0.0858	25	4956	19824.0	Fail
0.0869	24	4841	20170.0	Fail
0.0880	22	4733	21513.0	Fail
0.0890	21	4605	21928.0	Fail
0.0901	19	4490	23631.0	Fail
0.0912	18	4378	24322.0	Fail
0.0923	17	4297	25276.0	Fail
0.0934	16	4196	26225.0	Fail
0.0945	15	4104	27360.0	Fail
0.0956	13	4004	30800.0	Fail
0.0966	12	3896	32466.0	Fail
0.0977	12	3808	31733.0	Fail
0.0988	11	3718	33800.0	Fail
0.0999	11	3630	33000.0	Fail
0.1010	9	3542	39355.0	Fail
0.1021	9	3462	38466.0	Fail
0.1032	8	3384	42300.0	Fail
0.1042	7	3309	47271.0	Fail
0.1053	6	3222	53700.0	Fail
0.1064	6	3148	52466.0	Fail
0.1075	5	3092	61840.0	Fail
0.1086	5	3022	60440.0	Fail
0.1097	5	2947	58940.0	Fail
0.1108	4	2871	71775.0	Fail
0.1118	3	2813	93766.0	Fail
0.1129	3	2742	91400.0	Fail
0.1140	2	2686	134300.0	Fail
0.1151	2	2631	131550.0	Fail
0.1162	2	2575	128750.0	Fail
0.1173	2	2517	125850.0	Fail
0.1184	2	2467	123350.0	Fail
0.1194	2	2409	120450.0	Fail
0.1205	1	2336	233600.0	Fail
0.1216	1	2288	228800.0	Fail
0.1227	1	2238	223800.0	Fail
0.1238	1	2199	219900.0	Fail
0.1249	1	2155	215500.0	Fail
0.1259	0	2116	n/a	Fail
0.1270	0	2066	n/a	Fail
0.1281	0	2026	n/a	Fail
0.1292	0	1979	n/a	Fail
0.1303	0	1945	n/a	Fail
0.1314	0	1901	n/a	Fail
0.1325	0	1872	n/a	Fail

The development has an increase in flow durations from 1/2 predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The Development Has an increase in flow durations for more than 50% of the flows from the 2 year to the 50 year flow.

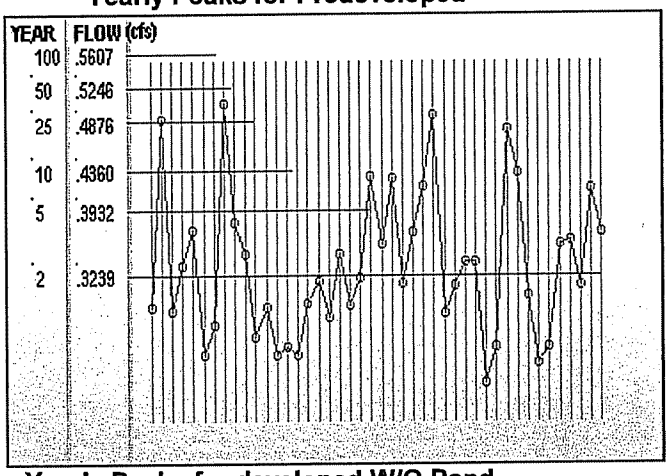
Water Quality BMP Flow and Volume.
On-line facility volume: 0 acre-feet
On-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**
Off-line facility target flow: 0 **cfs.**
Adjusted for 15 min: 0 **cfs.**



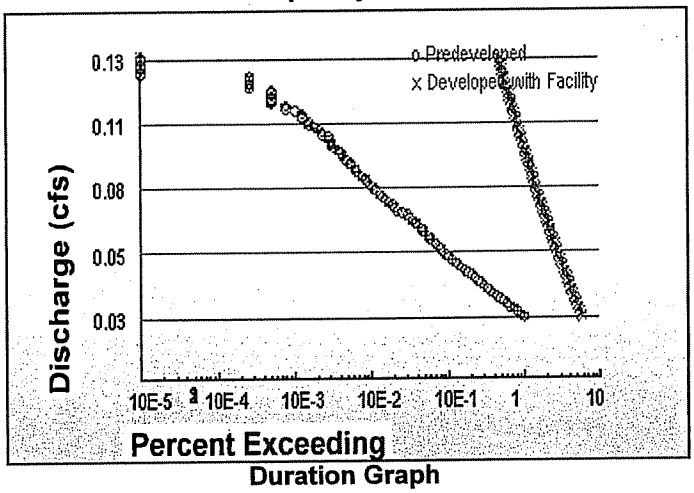
Yearly Peaks for Predeveloped



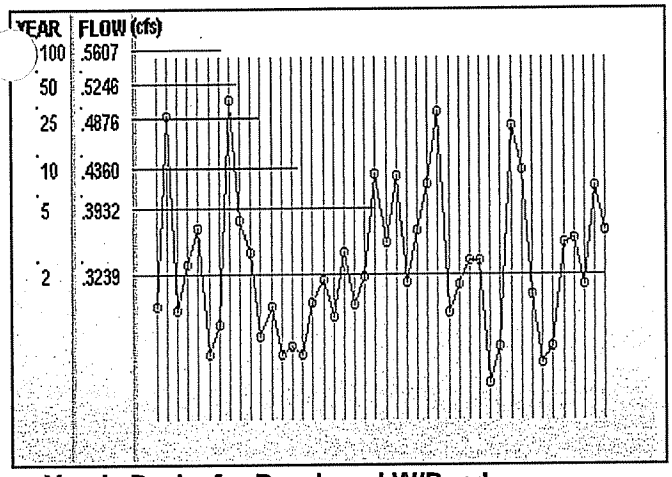
Flow Frequency Chart



Yearly Peaks for developed W/O Pond



Duration Graph



Yearly Peaks for Developed W/Pond

WESTERN WASHINGTON HYDROLOGY MODEL V2
PROJECT REPORT

Project Name: default
Site Address: Port of olympia
City : Olympioa
Report Date : 02/16/2010
Gage : Olympia
Data Start : 1955
Data End : 1999
Precip Scale: 1.11

PREDEVELOPED LAND USE

Basin : outside wall
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
TILL FOREST:	0.96

DEVELOPED LAND USE
Basin : outside wall
Flows To : Point of Compliance
GroundWater: No

Land Use	Acres
IMPERVIOUS:	0.96

RCHRES (POND) INFORMATION

ANALYSIS RESULTS

Flow Frequency Return Periods for Predeveloped

Return Period	Flow(cfs)
2 year	0.052174
5 year	0.078422
10 year	0.096596
25 year	0.120225
50 year	0.138221
100 year	0.156503

Flow Frequency Return Periods for Developed Unmitigated

Return Period	Flow(cfs)
2 year	0.338024
5 year	0.410255
10 year	0.454941
25 year	0.508802
50 year	0.547435
100 year	0.585041

Flow Frequency Return Periods for Developed Mitigated

Return Period	Flow(cfs)
2 year	0.338024
5 year	0.410255
10 year	0.454941
25 year	0.508802
50 year	0.547435

100 year 0.585041

Yearly Peaks for Predeveloped and Developed-Mitigated

Year	Predeveloped	Developed
1956	0.063	0.301
1[illegible]7	0.125	0.511
1[illegible]8	0.035	0.297
1959	0.049	0.348
1960	0.079	0.388
1961	0.050	0.248
1962	0.019	0.282
1963	0.116	0.529
1964	0.051	0.397
1965	0.058	0.362
1966	0.029	0.269
1967	0.056	0.303
1968	0.044	0.248
1969	0.026	0.258
1970	0.044	0.249
1971	0.059	0.307
1972	0.088	0.331
1973	0.051	0.291
1974	0.045	0.362
1975	0.035	0.305
1976	0.077	0.335
1977	0.021	0.448
1978	0.051	0.371
1979	0.046	0.445
1980	0.049	0.327
1981	0.081	0.386
1982	0.045	0.436
1983	0.094	0.516
1984	0.053	0.294
1985	0.023	0.326
[illegible]6	0.091	0.353
[illegible]7	0.078	0.353
1988	0.036	0.218
1989	0.039	0.258
1990	0.100	0.501
1991	0.131	0.453
1992	0.039	0.315
1993	0.023	0.239
1994	0.022	0.258
1995	0.058	0.373
1996	0.093	0.378
1997	0.049	0.325
1998	0.067	0.434
1999	0.064	0.386

Ranked Yearly Peaks for Predeveloped and Developed-Mitigated

Rank	Predeveloped	Developed
1	0.1254	0.5157
2	0.1158	0.5109
3	0.1005	0.5013
4	0.0942	0.4528
5	0.0930	0.4476
6	0.0908	0.4449
7	0.0883	0.4359
8	0.0814	0.4337
9	0.0789	0.3972
10	0.0777	0.3883
11	0.0765	0.3864
[illegible]	0.0668	0.3863
[illegible]	0.0636	0.3779
14	0.0631	0.3725
15	0.0591	0.3714
16	0.0585	0.3623
17	0.0578	0.3621
18	0.0556	0.3535
19	0.0526	0.3528
20	0.0510	0.3485

21	0.0507	0.3352
22	0.0506	0.3315
23	0.0500	0.3272
24	0.0494	0.3258
25	0.0488	0.3253
26	0.0487	0.3154
27	0.0462	0.3067
28	0.0453	0.3049
29	0.0451	0.3028
30	0.0443	0.3010
31	0.0441	0.2968
32	0.0393	0.2942
33	0.0385	0.2912
34	0.0357	0.2818
35	0.0355	0.2686
36	0.0354	0.2579
37	0.0291	0.2575
38	0.0259	0.2575
39	0.0228	0.2489
40	0.0225	0.2479
41	0.0220	0.2479
42	0.0207	0.2387
43	0.0190	0.2180

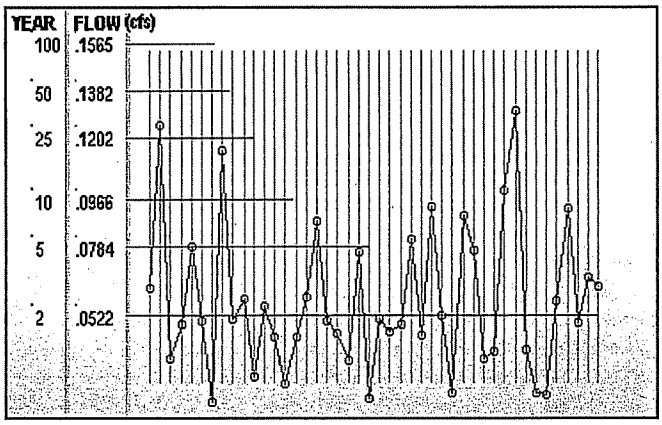
1/2 2 year to 50 year

Flow(CFS)	Predev	Final	Percentage	Pass/Fail
0.0261	3823	23254	608.0	Fail
0.0272	3462	22490	649.0	Fail
0.0284	3112	21761	699.0	Fail
0.0295	2775	21110	760.0	Fail
0.0306	2491	20442	820.0	Fail
0.0318	2240	19767	882.0	Fail
0.0329	2036	19131	939.0	Fail
0.0340	1861	18529	995.0	Fail
0.0351	1679	17951	1069.0	Fail
0.0363	1519	17426	1147.0	Fail
0.0374	1384	16909	1221.0	Fail
0.0385	1263	16416	1299.0	Fail
0.0397	1145	15895	1388.0	Fail
0.0408	1042	15440	1481.0	Fail
0.0419	949	14977	1578.0	Fail
0.0431	859	14564	1695.0	Fail
0.0442	785	14159	1803.0	Fail
0.0453	708	13739	1940.0	Fail
0.0465	645	13311	2063.0	Fail
0.0476	580	12956	2233.0	Fail
0.0487	528	12605	2387.0	Fail
0.0499	477	12223	2562.0	Fail
0.0510	435	11891	2733.0	Fail
0.0521	392	11548	2945.0	Fail
0.0533	361	11236	3112.0	Fail
0.0544	339	10962	3233.0	Fail
0.0555	313	10638	3398.0	Fail
0.0567	290	10325	3560.0	Fail
0.0578	268	10044	3747.0	Fail
0.0589	246	9774	3973.0	Fail
0.0601	228	9484	4159.0	Fail
0.0612	214	9234	4314.0	Fail
0.0623	199	8983	4514.0	Fail
0.0635	183	8763	4788.0	Fail
0.0646	174	8532	4903.0	Fail
0.0657	160	8320	5200.0	Fail
0.0669	149	8131	5457.0	Fail
0.0680	134	7903	5897.0	Fail
0.0691	122	7703	6313.0	Fail
0.0703	116	7521	6483.0	Fail
0.0714	99	7325	7398.0	Fail
0.0725	86	7147	8310.0	Fail
0.0737	81	6974	8609.0	Fail
0.0748	77	6781	8806.0	Fail
0.0759	67	6615	9873.0	Fail
0.0771	61	6437	10552.0	Fail

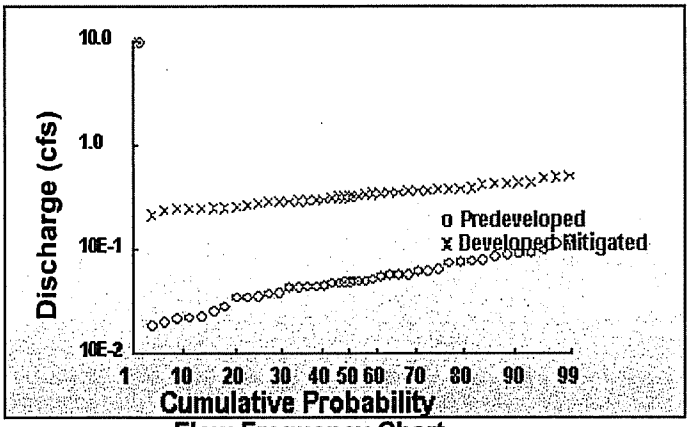
0.0782	56	6268	11192.0	Fail
0.0793	51	6125	12009.0	Fail
0.0805	47	5948	12655.0	Fail
0.0816	45	5820	12933.0	Fail
0.0827	40	5654	14135.0	Fail
0.0839	38	5539	14576.0	Fail
0.0850	35	5404	15439.0	Fail
0.0861	33	5303	16069.0	Fail
0.0873	30	5180	17266.0	Fail
0.0884	28	5080	18142.0	Fail
0.0895	25	4956	19824.0	Fail
0.0906	24	4844	20183.0	Fail
0.0918	22	4733	21513.0	Fail
0.0929	21	4605	21928.0	Fail
0.0940	19	4486	23610.0	Fail
0.0952	18	4378	24322.0	Fail
0.0963	17	4297	25276.0	Fail
0.0974	16	4196	26225.0	Fail
0.0986	15	4108	27386.0	Fail
0.0997	13	4000	30769.0	Fail
0.1008	12	3899	32491.0	Fail
0.1020	12	3812	31766.0	Fail
0.1031	11	3718	33800.0	Fail
0.1042	11	3631	33009.0	Fail
0.1054	9	3540	39333.0	Fail
0.1065	9	3454	38377.0	Fail
0.1076	8	3383	42287.0	Fail
0.1088	7	3312	47314.0	Fail
0.1099	6	3222	53700.0	Fail
0.1110	6	3149	52483.0	Fail
0.1122	5	3088	61759.0	Fail
0.1133	5	3016	60320.0	Fail
0.1144	5	2946	58920.0	Fail
0.1156	4	2873	71825.0	Fail
0.1167	3	2812	93733.0	Fail
0.1178	3	2742	91400.0	Fail
0.1190	2	2689	134450.0	Fail
0.1201	2	2631	131550.0	Fail
0.1212	2	2574	128700.0	Fail
0.1224	2	2517	125850.0	Fail
0.1235	2	2469	123450.0	Fail
0.1246	2	2407	120350.0	Fail
0.1258	1	2336	233600.0	Fail
0.1269	1	2291	229100.0	Fail
0.1280	1	2233	223300.0	Fail
0.1292	1	2199	219900.0	Fail
0.1303	1	2156	215600.0	Fail
0.1314	0	2113	n/a	Fail
0.1326	0	2068	n/a	Fail
0.1337	0	2028	n/a	Fail
0.1348	0	1979	n/a	Fail
0.1360	0	1944	n/a	Fail
0.1371	0	1902	n/a	Fail
0.1382	0	1871	n/a	Fail

The development has an increase in flow durations from 1/2 predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The Development Has an increase in flow durations for more than 50% of the flows from the 2 year to the 50 year flow.

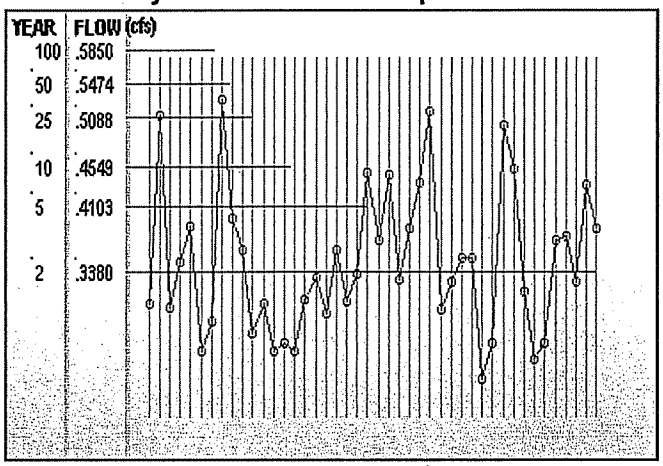
Water Quality BMP Flow and Volume.
On-line facility volume: 0 acre-feet
On-line facility target flow: 0 cfs.
Adjusted for 15 min: 0 cfs.
On-line facility target flow: 0 cfs.
Adjusted for 15 min: 0 cfs.



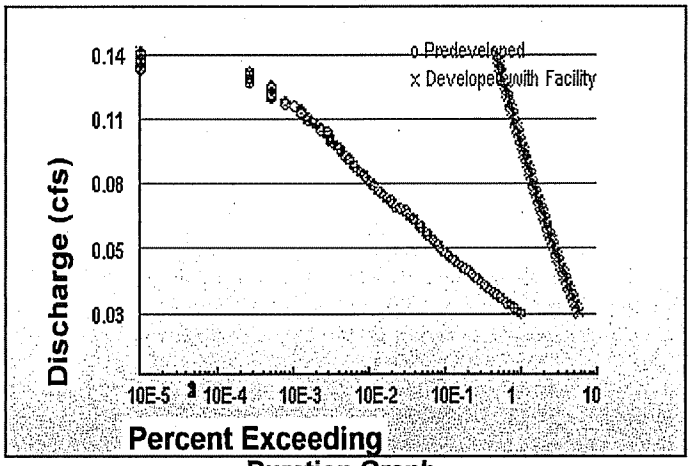
Yearly Peaks for Predeveloped



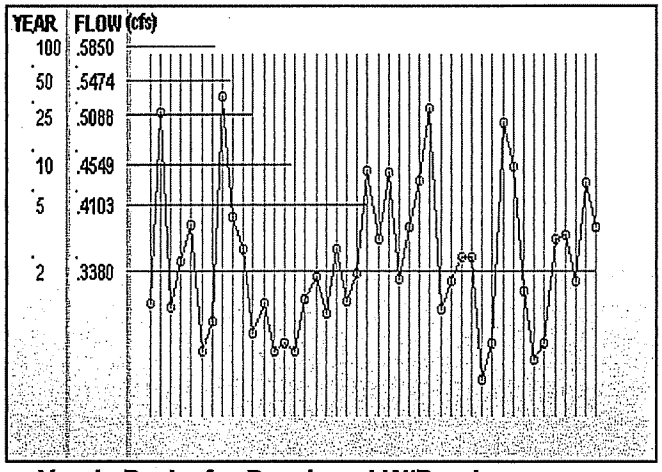
Flow Frequency Chart



Yearly Peaks for developed W/O Pond



Duration Graph



Yearly Peaks for Developed W/Pond

APPENDIX L

WSDOT Bremerton SWPPP

Stormwater Pollution Prevention Plan

For
Port of Olympia: East Bay Infrastructure Project

Prepared For
Southwest Regional Office
300 Desmond Dr.
Lacey, WA 98503
360-407-6300

Owner	**Developer**	**Operator/Contractor**
Port of Olympia	Port of Olympia	Stan Palmer Construction
915 Washington Street NE	915 Washington Street NE	5107 State Hwy 3 SW
Olympia, WA 98501 98501	Olympia, WA 98501 98501	Port Orchard, WA 98367

Project Site Location
315 Jefferson Street NE Olympia, WA

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Appendix A Site plans

- Vicinity map (with all discharge points)
- Site plan with TESC measures
- Soils Report

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- Copies of BMP applications and specifications from SMMWW and WDOT.

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- List of BMPs not selected, referenced under each of the 12 elements.

Appendix D General Permit

Appendix E Site Log and Inspection Forms

Appendix F Stan Palmer's Dewatering and Collection Plan

Revision Schedule

This Stormwater Pollution Prevention Plan (SWPPP) should be revised and updated to address changes in site conditions, new or revised government regulations, and additional on-site stormwater pollution controls.

All revisions to the original project SWPPP must be documented on the SWPPP Revision Documentation Form, which should include the information shown below. A representative of Clear Water Compliance Services, Inc. (Clear Water) will evaluate changing site conditions and revise the original SWPPP as necessary to prevent stormwater pollution. The signature of this representative attests that information within this SWPPP revision is true and accurate. All SWPPP revisions will either be drafted or approved by Clear Water.

East Bay Infrastructure SWPPP Revision Documentation Form

Revision Number	Date	Author	Company Representative Signature	Description of Revision	Page # or Appendix
0	6/15/2009	Clear Water Compliance Services		ORIGINAL COPY	
1					
2					
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1.0 Introduction

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared as part of the NPDES Waste Discharge permit No. WA0040231, requirements for the Port of Olympia (Port): East Bay Infrastructure project in Olympia, Washington. The proposed 13.3 acre project, known as the East Bay Site, is generally located at 315 Jefferson Street NE, in Olympia, Washington. Stan Palmer Construction Inc. will be the general contractor and Clear Water Compliance Services will implement CESF/Carbon water treatment in compliance with the Port of Olympia's issued Waste Discharge Permit.

The proposed scope of work includes demolition, reuse and disposal of existing roads, sidewalks, curbs, concrete slabs and utilities. Constructing new infrastructure including, roads, sidewalks, public and private utilities, and landscaping. A Temporary Erosion & Sediment Control design plan has been developed by Stan Palmer Construction (Contractor) defining BMP measures. Stormwater and groundwater from all disturbed areas will be controlled and directed to a water treatment system where turbidity, pH levels and all chemicals of concern (COC) will be monitored and treated or neutralized prior to discharge throughout the construction phases. The East Bay Development discharges to inner Bud Inlet through City of Olympia storm drain #001.

Budd Inlet (Inner) is on the 303(d) list as impaired for dissolved oxygen, pH, fecal coliform, temperature and ammonia-N for water and many other contaminates for tissue. A Total Daily Maximum Load (TDML) has not currently been developed.

The purpose of this SWPPP is to describe the proposed construction activities and all temporary and permanent erosion and sediment control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and recordkeeping that will be implemented during the proposed construction project. The objectives of this SWPPP are to:

1. Plan for Best Management Practices (BMPs) to prevent erosion and sedimentation, and to identify, reduce, eliminate or prevent stormwater contamination and water pollution from construction activity.

2. Prevent violations of surface water quality, ground water quality, or sediment management standards.

3. Prevent adverse water quality impacts including impacts on beneficial uses of the receiving water by controlling peak flow rates and volumes of stormwater runoff at the site's outfalls and downstream of the outfalls.

This SWPPP was prepared using the Ecology SWPPP Template originally downloaded from the Ecology website May 15, 2006. This SWPPP was prepared based on the requirements set forth in the Waste Discharge Permit, Stormwater Management Manual for Western Washington (SWMMWW 2005). The plan is divided into seven main sections with several appendices that

include stormwater related reference materials. The topics presented in the each of the main sections are:

- Section 1 – INTRODUCTION. This section provides a summary description of the project, and the organization of the SWPPP document.
- Section 2 – SITE DESCRIPTION. This section provides a detailed description of the existing site conditions, proposed construction activities, and calculated stormwater flow rates for existing conditions and post–construction conditions.
- Section 3 – CONSTRUCTION BMPs. This section provides a detailed description of the BMPs to be implemented based on the 12 required elements of the SWPPP (SWMMWW 2005).
- Section 4 – CONSTRUCTION PHASING AND BMP IMPLEMENTATION. This section provides a description of the timing of the BMP implementation in relation to the project schedule.
- Section 5 – POLLUTION PREVENTION TEAM. This section identifies the appropriate contact names (emergency and non-emergency), monitoring personnel, and the onsite temporary erosion and sedimentation control inspector.
- Section 6 – INSPECTION AND MONITORING. This section provides a description of the inspection and monitoring requirements such as the parameters of concern to be monitored, sample locations, sample frequencies, and sampling methods for all stormwater discharge locations from the site.
- Section 7 – RECORDKEEPING. This section describes the requirements for documentation of the BMP implementation, site inspections, monitoring results, and changes to the implementation of certain BMPs due to site factors experienced during construction.

Supporting documentation and standard forms are provided in the following Appendices:

Appendix A – Site plans
Appendix B – Construction BMPs
Appendix C – Alternative Construction BMP list
Appendix D – Waste Discharge Permit
Appendix E – Site Log and Inspection Forms
Appendix F – Stan Palmer's Dewatering and Collection Plan

2.0 Site Description

The East Bay site is located on the south end of the Port Peninsula adjacent to the East Bay of Budd Inlet in Olympia, Washington. The existing project site is approximately 13.6 acre of mixed use and commercial properties. Historic activities at the site have caused soil and groundwater contamination. The Port entered the State's Voluntary Cleanup Program and was eventually transferred by Agreed Order No. DE5471, to a formal cleanup process under Model Toxics Control Act (MTCA) in February 2008 to expedite the cleanup and to ensure Department of Ecology oversight. MTCA is designed to set strict cleanup standards to ensure that the quality of cleanup and protection of human health and the environment are not compromised. A site vicinity map is provided in Appendix A.

2.1 Existing Conditions

Portions of the site were used for timber-related industries from the late 1880s until 1968. Previous users included sawmill, planing mill, shingle mill and plywood manufacturers. From 1968 to present, the site has been used for commercial and light industrial activities and storage. The northern and western portions of the site are paved with asphalt, and the southern and eastern portions of the site are covered with crushed rock and bare land. Contamination of the soil and groundwater were detected at levels above MTCA standards.

The soils consist of primarily sand and gravel. The entire site is based on fill performed in phases, with the last fill placed in early 1980's. Based on historical records, the first layer of fill material consists of dredged material from Budd Inlet in the late 1800's. There are pocket of wood layers and light colored sand. Much of the shallow subsurface soils are non-native. The topography is flat with less than 1% grade.

Portions of the roadways and infrastructure are located within the shoreline zone adjacent to East Bay in Budd Inlet (Inner). Prior to construction activities, stormwater enters the storm system through catch basins on site which then discharges in Budd Inlet (Inner).

2.2 Proposed Construction Activities

The proposed work will include demolition reuse and disposal of existing roads and infrastructure. Construction of new concrete and hot mix asphalt roads, sidewalks, curbs will widen roadways to provide for vehicles, bicycles and parking. Public utility improvements will include, 2000 LF of watermain, 2100 LF of reclaimed water, 1450 LF of sanitary sewer and 5200 LF of storm sewer. The final infrastructure phase will consist of joint utility trenching and backfilling, street lighting and landscaping. The excavating, stockpiling, reuse, removal and disposal of contaminated soils is approved under the Interim Action Work Plan and water quality treatment will be implemented under an Ecology issued NPDES Waste Discharge Permit. A

Water Treatment System will mobilized to handle contaminated ground and storm water and existing catch basins will be wrapped in plastic to avoid untreated discharges into Budd Inlet.

Stormwater runoff volumes were calculated using the rational method and storm event data from NOAA Atlas II and NOAA Isopluvial maps for the project area. Data shown below were calculated using flow rates for the 2-year and 10-year 24-hour storm events. Existing flow calculations utilized a 0.98 runoff coefficient, flow calculations for during construction utilized a 0.85 runoff coefficient and post-construction calculations utilized a 0.95 runoff coefficient.

The following summarizes details regarding site areas:

- Total site area: 14 acres
- Percent impervious area before construction: 98 %
- Percent impervious area after construction: 95 %
- Disturbed area during construction: 13.3 acres
- Disturbed area that is characterized as impervious (i.e., access roads, staging, parking): 13.0 acres
- 2-year stormwater runoff peak flow prior to construction (existing): 0.96 cfs
- 10-year stormwater runoff peak flow prior to construction (existing): 1.33 cfs
- 2-year stormwater runoff peak flow during construction: 0.83 cfs
- 10-year stormwater runoff peak flow during construction: 1.16 cfs
- 2-year stormwater runoff peak flow after construction: .99 cfs
- 10-year stormwater runoff peak flow after construction: 1.29 cfs

3.0 Construction Stormwater BMPs

3.1 The 12 BMP Elements

3.1.1 Element #1 – Mark Clearing Limits

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. Trees that are to be preserved, as well as all sensitive areas and their buffers, shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible. The BMPs relevant to marking the clearing limits that will be applied for this project include:

- Preserving Natural Vegetation (BMP C101)
- High Visibility Plastic or Metal Fence (BMP C103)
- Alternative BMP not included in SWMMWW(2005) or SWMMEW(2004)

There is a small vegetative strip with twenty-three existing oak trees. Site development will retain at least twenty of these trees. This area is located away from construction activities and will only be impacted during proposed traffic roundabout installation during which time contractor will employ high visibility fencing to protect natural vegetation. No trees outside the construction limits shall be removed or damaged.

The East Bay Site: Interim Action Work Plan, draft March 2009, requires implementing and maintaining engineering controls during infrastructure construction. Site control will be maintained by a continuous perimeter fence with a height of approximately five feet to limit access to the site interior for the duration of subsurface construction activities.

3.1.2 Element #2 – Establish Construction Access

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads, and wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. The specific BMPs related to establishing construction access that will be used on this project include:

- Stabilized Construction Entrance (BMP C105)
- Construction Road/Parking Area Stabilization (BMP C107)

- Wheel Wash (BMP C106)

- Regular vacuum-type street sweeping on adjacent roads.

Access by contractors and heavy trucks onto the construction site will be primarily from an established construction entrance existing paved roads (Appendix A – Drawing No. 8). Only essential equipment should be allowed in disturbed areas on the site, and loose sediment shall be cleaned from all equipment prior to leaving the site. The contractor shall have access to the construction site via Olympia Drive NE or Marine Drive NE, unless otherwise provided for by the Port. All vehicles will be parked within the defined work area or on city streets.

Trucks departing the site must prevent dirt and dust from entering the adjacent roadways. Dump trucks shall cover all loads and wash truck tires and undercarriages before leaving the site. If feasible, sediment removal by manual means shall control any tracked-out. However, large amounts of mud and dirt will require a mechanical street sweeper at the conclusion of each day's operations to prevent the off-site transport of sediment. Street sweepers shall be designed and operated to meet air quality standards.

Due to the contaminants in the soils, a wheel wash diagram has been included in Appendix A – Drawing No. 38. Section 31 25 00- Erosion Control and Water Pollution Control of the specifications require implementation of a tire wash. All vehicles leaving the site must stop and wash sediment from their tires.

Alternate construction access BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the NPDES Waste Discharge Permit (Appendix D).

3.1.3 Element #3 – Control Flow Rates

In order to protect the properties and waterways downstream of the project site, stormwater discharges from the site will be controlled. The specific BMPs for flow control that shall be used on this project include:

- Alternative BMP not included in SWMMWW (2005) the SWMMEW (2004)

The NPDES Permit states, "..prevent discharge of untreated stormwater to Budd Inlet during construction through the use of..plugging existing catch basins, and berms'. Furthermore, the contractor is required to prevent any run-on of uncontaminated stormwater and to collect and convey runoff to chemical treatment facilities. Temporary curbs shall be installed along pavement edges to prevent runoff from flowing off-site. These temporary curbs must be at least 4-inches in height and can be constructed from asphalt, concrete, sand bags, or straw wattles.

Use of well points, wells, utility trenches and existing plugged catch basins will collect all stormwater from the site. The site is currently graded in such a way that runoff will not flow over ground into receiving waters. To ensure that contaminated storm and groundwater does not enter unplugged catch basins, internal drainage "alleyway" will pump water in closed pipelines from collection points to advanced chemical treatment system, where Water Quality Standards are confirmed before discharging into Budd Inlet.

3.1.4 Element #4 – Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility. The specific BMPs to be used for controlling sediment on this project include:

- Silt Fence (BMP C233)
- Storm Drain Inlet Protection (BMP C220)
- Portable Water Storage Tanks (e.g., Baker Tanks) for Sedimentation

Silt fence shall consist of a steel wire backing with a maximum mesh spacing of 2-inch by 4-inch. The strength of the wire or plastic mesh shall be equivalent to or greater than that required in the applicable sections of WSDOT Standard Specification (Appendix B). When sediment reaches approximately 1/3 the height of the silt fence, the deposits shall be removed to a controlled sediment disposal site. Silt fence shall be installed along the perimeter of State Ave. NE and half way up Jefferson St. NE. *Additionally, any point along the perimeter of the site susceptible to stormwater runoff or run-on shall be protected with a silt fence.*

Existing and new catch basins within City of Olympia right-of-way on Jefferson St. NE and State Ave. NE require inlet protection. Protection devices shall meet or exceed the requirements in the applicable sections of WSDOT Standard Specifications (Appendix B).

All water is subject to analytical testing for turbidity, pH, and COCs. Portable Baker tanks and closed piping will be used to convey and store water prior to testing and discharge locations.

The following BMPs will be implemented as end-of-pipe sediment controls as required to meet permitted turbidity limits in the site discharge(s). Prior to the implementation of these technologies, sediment sources and erosion control and soil stabilization BMP efforts will be maximized to reduce the need for end-of-pipe sedimentation controls.

- Construction Stormwater Chemical Treatment (BMP C 250) (implemented only with prior written approval from Ecology)
- Construction Stormwater Filtration (BMP C251)

The contractor shall treat all site water (including groundwater and tidal inflows, reuse drainage, and stormwater) to meet the criteria for discharge of water to the City of Olympia storm sewer system as identified in the applicable sections of the NPDES Waste Discharge Permit (Appendix D). In Olympia--except where approved chemical treatment is utilized, full infiltration is practiced.

A description of the advanced treatment train for this site is included in The Water Treatment Plan (WTP), available from the contractor or the Port of Olympia.

3.1.5 Element #5 – Stabilize Soils

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project. The specific BMPs for soil stabilization that shall be used on this project include:

- Temporary and Permanent Seeding (BMP C120)
- Mulching (BMP C121)
- Plastic Covering (BMP C123)
- Surface Roughening (BMP C130)
- Dust Control (BMP C140)
- Early Application of Gravel Base on Areas to be Paved

The Interim Action Work Plan (IAWP) is designed to ensure the subsurface soil disturbances resulting from the infrastructure improvement project comply with applicable MTCA regulations and are protective of human health and the environment. Soil excavated from the infrastructure corridor that has concentrations exceeding Interim Action Reuse Under Pavement Levels (IARUPL) will be disposed of off-site.

Dust control is imperative during the dry season on this site. The contractor must have a water truck on-site at all times and must minimize the potential for runoff by limiting water use to the maximum extent practicable for adequate dust suppression.

The site mitigation requires tracking, testing and recordkeeping for all stockpiles at all times. Stockpiles must be covered with a polyethylene liner with a minimum thickness of 10-mils and anchor the liner with ropes and sandbags. Place all excavated soil on an impervious surface and uncover only the working face of the stockpile when adding, removing or sampling. The contractor must recover and re-anchor the entire stockpile at the end of each day. In addition, maintain drainage area in and around storage of contaminated soil stockpiles with a minimum slope of 1.5% to prevent pooling and minimize leachate formation. Use of water on any stockpiles is prohibited.

In preparation for seeding, the contractor shall use a cleated roller, or a similar type of equipment, forming longitudinal depressions at least 2-inches deep to help with compaction and infiltration retention. Seeding should be applied in proper weather condition with proper equipment. Unless otherwise approved, seeding shall be performed between September 1 to October 1. Mulch shall be evenly applied within 48-hours after seeding, unless it is combined with seeding mix. Contractor is responsible to ensure a healthy stand of grass is established for final stabilization.

Alternate soil stabilization BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the NPDES Permit. To avoid potential contamination and sediment control issues that may cause a violation(s) of the NPDES Waste permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

Polyacrylamide (PAM) and Soil Using Bonded Fiber Matrix (BFM) are strictly prohibited as a soil stabilization BMPs, because they will inhibit the CESF treatment system.

The project site is located west of the Cascade Mountain Crest. As such, no soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of the time of year, all soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on weather forecasts. In addition, clearing, grubbing, burrow or fill in the right-of-way shall never expose more than 5 acres during the wet season and 17 acres during the dry season.

3.1.6 Element #6 – Protect Slopes

There are no slopes on this site. The topography is flat with less than 1% grade.

3.1.7 Element #7 – Protect Drain Inlets

All storm drain inlets and culverts made operable during construction shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash water separate from entering storm drains until treatment can be provided. Storm Drain Inlet Protection (BMP C220) will be implemented for all drainage inlets and culverts that could potentially be impacted by sediment-laden runoff on and near the project site. The following inlet protection measures will be applied on this project:

- Catch Basin Filters

- Alternative BMP not included in SWMMWW (2005) the SWMMEW (2004)

During construction it is critical to prevent contaminated stormwater from discharging directly to the surface waters without conveying through the treatment train. The storm system shall be plugged and collected flows shall be pumped to the water treatment facility. The contractor will use storm drains wrapped in plastic as an alternative BMP not included in SWMMWW, but inspected by Ecology.

Below Inlet Grate devices shall be prefabricated units specifically designed for inlet protection and shall remain securely attached to the drainage structure when fully loaded. Above Inlet Grate devices may be silt fence, sandbags, or prefabricated units specifically designed for inlet protection

Appropriate inlet protection BMPs will be installed, maintained and interchanged to accommodate different needs and situations with the phasing and construction activities taking place near each storm drain on site. Any filter fabric or "socks" installed in publicly owned and maintained inlets will be the Contractor's responsibility to install, inspect, and maintain. When sediment reaches 1/3 capacity, the sock must be emptied and the potentially contaminated sediment must be disposed of appropriately.

If the BMP options listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the NPDES Waste Discharge Permit (Appendix D), or if no BMPs are listed above but deemed necessary during construction, the Certified Erosion and Sediment Control Lead shall initiate implementation of one or more of the alternative BMP inlet protection options listed in Appendix C.

3.1.8 Element #8 – Stabilize Channels and Outlets

Where site runoff is to be conveyed in channels, or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion. The specific BMPs for channel and outlet stabilization that shall be used on this project include:

- Check Dams (BMP C207)

Check dams shall be placed in ditches perpendicular to the flow and shall be sufficient height to maximize detention without causing water to leave the ditch. Suitable materials include rirap, washed gravel, sandbags and prefabricated structures. Straw bales shall not be used. All check dams shall meet the requirement in applicable sections of the WSDOT Standard Specification.

Alternate channel and outlet stabilization BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the NPDES Waste Discharge Permit (Appendix D). To avoid potential erosion and sediment control issues that

may cause a violation(s) of the NPDES Waste Discharge permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

The project site is located west of the Cascade Mountain Crest. As such, all temporary on-site conveyance channels shall be designed, constructed, and stabilized to prevent erosion from the expected peak 10 minute velocity of flow from a Type 1A, 10-year, 24-hour recurrence interval storm for the developed condition. Alternatively, the 10-year, 1-hour peak flow rate indicated by an approved continuous runoff simulation model, increased by a factor of 1.6, shall be used. Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent streambanks, slopes, and downstream reaches shall be provided at the outlets of all conveyance systems.

3.1.9 Element #9 – Control Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills. All heavy equipment, water trucks and support truck, as well as, smaller portable equipment will be stored in a secured parking area. All repairs will be performed in this area.

- On-site petroleum product storage containers shall include secondary containment. Fueling will be done after working hours in equipment staging and maintenance area using a mobile tanker.

- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.

- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.

- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

Chemical storage:

- Any chemicals stored in the construction areas will conform to the appropriate source control BMPs listed in Volume IV of the Ecology stormwater manual. In Western WA, all chemicals shall have cover, containment, and protection provided on site, per BMP C153 for Material Delivery, Storage and Containment in SWMMWW 2005

- All chemical storage tanks or containers shall be diked and located on impervious surfaces.

- Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

Excavation and tunneling spoils dewatering waste:

- Dewatering BMPs and BMPs specific to the excavation and tunneling (including handling of contaminated soils) are discussed under Element 10.

Demolition:

- Dust released from demolished sidewalks, buildings, or structures will be controlled using Dust Control measures (BMP C140).

- Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection (BMP C220 as described above for Element 7).

- Process water and slurry resulting from sawcutting and surfacing operations will be prevented from entering the waters of the State by implementing Sawcutting and Surfacing Pollution Prevention measures (BMP C152).

Concrete and grout:

- Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures (BMP C151).

Sanitary wastewater:

- Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.
- Wheel wash or tire bath wastewater will be collected on site and sent to a separate onsite treatment system, trucked offsite or discharged to the sanitary sewer as part of Wheel Wash implementation (BMP C106)Wheel wash water may not be discharged to the waters of the state, catch basins or the temporary water treatment train system.

Solid Waste:

- Waste materials will be stored in secure, clearly marked containers.
- Contaminated soils will be analytically tested and labeled in the field and disposed as outlined in the IAWP.
    - □ *Class A- Reuse Under Pavement* **ONLY**
    - □ *Class B- Reuse Anywhere On-site*
    - □ *Class C- Disposal*
- All settling tank sludge will be removed and disposed of properly by a certified contaminated waste Vactor trucking service provider.
- All used carbon filter media from the treatment system, will be comingled with the Class C stockpiles and disposed of at Weyerhaeuser Regional Private Landfill, Castle Rock, WA.

Other:

- Other BMPs will be administered as necessary to address any additional pollutant sources on site.
- No discharges to the sanitary sewer system are allowed without prior approval.

Stan Palmer Construction employees will conduct daily inspection of the equipment staging and maintenance areas, as well as, fueling, hazardous material staging and waste storage areas to ensure that spill control measures are in place.

3.1.10 Element #10 – Control Dewatering

Infrastructure trenching and exploratory boring activities will produce groundwater and receive tidal influence. The site water shall be controlled to maintain all excavations in a dry condition, prevent slope instability, and prevent spread of contamination. Dewatering wells shall be clearly marked and protected from all construction traffic and heavy equipment. Each well must be unobstructed providing for inspection, testing, and monitoring. Collected contaminated groundwater will be conveyed to the water treatment facility through a manifolded system utilizing glues PVC and flexible hoses. Pumps and hoses will be inspected for leaks. If a leak occurs, a drain pan will collect the contaminated groundwater.

For further information refer to Stan Palmer Construction's East Bay Infrastructure Project- Port of Olympia: Dewatering and Collection Plan (Appendix F)

Recycling cement concrete to the maximum extent practicable and where materials are deemed to be not suitable for reuse haul broken-up pieces of asphalt/concrete pavement to an approved site disposal location. Saw-cutting and surfacing operation generating slurry and processed water, the contractor must use a vacuum during cutting (BMP C 152).

- Concrete Handling (BMP C151)
- Construction Stormwater Chemical Treatment (BMP C250)
- Construction Stormwater Filtration (BMP C251)

The Engineering Design Report, EDR (Skillings Connolly, Jan. 2009) has calculated the designed flow rates of the Water Treatment System at 500 gpm. Estimates allow for 130 gpm flows of groundwater from trenching activities. The SWPPP reflects treatment designed based on the BMP C250 requiring a minimum flow rate to handle 1.5 times the 10-year storm event. This design model in conjunction with the EDR design strategy based on the 2-year, 24 hour stormwater event, 2.51-inches, a conservative chemical treatment design has been established to handle all anticipated groundwater and stormwater flows during the project timetable.

Alternate dewatering control BMPs are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed above or Stan Palmers' Dewatering and Collection Plan are deemed ineffective or inappropriate during construction to satisfy the requirements set forth in the NPDES Waste Discharge Permit (Appendix D). To avoid potential erosion and sediment control issues that may cause a violation(s) of the NPDES Waste Discharge Permit (as provided in Appendix D), the Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.11 Element #11 – Maintain BMPs

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with each particular BMP's specifications. Visual monitoring of the BMPs will be conducted at least once every calendar week and within 24 hours of any rainfall event that causes a discharge from the site. If the site becomes inactive, and is temporarily stabilized, the inspection frequency will be reduced to once every month.

All temporary erosion and sediment control BMPs shall be removed within 30 days after the final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed and disposed of properly. Disturbed soil resulting from removal of BMPs or vegetation shall be permanently stabilized.

3.1.12 Element #12 – Manage the Project

Erosion and sediment control BMPs for this project have been designed based on the following principles:

- Design the project to fit the existing topography, soils, and drainage patterns.
- Emphasize erosion control rather than sediment control.
- Minimize the extent and duration of the area exposed.
- Keep runoff velocities low.
- Retain sediment on site.
- Thoroughly monitor site and maintain all ESC measures.
- Schedule major earthwork during the dry season.

In addition, this project site is located west of the Cascade Mountain Crest, the project will be managed according to the following key project components:

Phasing of Construction

The construction project is being phased to the extent practicable in order to prevent soil erosion, and, to the maximum extent possible, the transport of sediment from the site during construction.

Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the clearing activities during each phase of construction, per the Scheduling BMP (C 162).

Seasonal Work Limitations

From November 1 through April 30, clearing, grading, and other soil disturbing activities shall only be permitted if shown to the satisfaction of the local permitting authority that silt-laden runoff will be prevented from leaving the site through a combination of the following:

- □ conditions including existing vegetative coverage, slope, soil type, and proximity to receiving waters; and
- □ Limitations on activities and the extent of disturbed areas; and
- □ Proposed erosion and sediment control measures.

- Based on the information provided and/or local weather conditions, the local permitting authority may expand or restrict the seasonal limitation on site disturbance.
- The following activities are exempt from the seasonal clearing and grading limitations:
  - □ Routine maintenance and necessary repair of erosion and sediment control BMPs;
  - □ Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil; and
  - □ Activities where there is 100 percent infiltration of surface water runoff within the site in approved and installed erosion and sediment control facilities.

Coordination with Utilities and Other Jurisdictions

- Care has been taken to coordinate with utilities, other construction projects, and the local jurisdiction in preparing this SWPPP and scheduling the construction work.

Inspection and Monitoring

- All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Site inspections shall be conducted by a person who is knowledgeable in the principles and practices of erosion and sediment control. This person has the necessary skills to:

- Assess the site conditions and construction activities that could impact the quality of stormwater, and
- Assess the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges.

- A Certified Erosion and Sediment Control Lead shall be on-site or on-call at all times.
- Whenever inspection and/or monitoring reveals that the BMPs identified in this SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any pollutant, appropriate BMPs or design changes shall be implemented as soon as possible.

Maintaining an Updated Construction SWPPP

- This SWPPP shall be retained on-site or within reasonable access to the site.
- The SWPPP shall be modified whenever there is a change in the design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the state.
- The SWPPP shall be modified if, during inspections or investigations conducted by the owner/operator, or the applicable local or state regulatory authority, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within seven (7) days following the inspection.

3.2 Site Specific BMPs

Site specific BMPs are shown on the TESC Plan Sheets and Details in Appendix A and in Appendix B (construction site BMPs). These site specific plan sheets will be updated as needed.

3.3 Additional Advanced BMPs

- BMP C250: Construction Stormwater Chemical Treatment
- BMP C251: Construction Stormwater Filtration

4.0 Construction Phasing and BMP Implementation

The BMP implementation schedule will be driven by the construction schedule. The following provides a sequential list of the proposed construction schedule milestones and the corresponding BMP implementation schedule. The list contains key milestones such as wet season construction.

The BMP implementation schedule listed below is keyed to proposed phases of the construction project, and reflects differences in BMP installations and inspections that relate to wet season construction. The project site is located west of the Cascade Mountain Crest. As such, the dry season is considered to be from May 1 to September 30 and the wet season is considered to be from October 1 to April 30.

- Notice to Proceed Issued: 06/02/2009
- Mobilize equipment on site: 06/03/09
- Install stabilized construction entrance: 06/03/09
- Constructed perimeter security fencing around site: 06/04/09
- Mobilize and store all ESC and soil stabilization products: 06/08/09
- Begin concrete demolition and disposal: 06/08/09
- Site water treatment mobilization: 06/09/09
- Site water treatment begins: 06/19/09
- Dewatering wells: 06/22/09
- Start storm utilities 07/02/09
- Sewer tie-in: 07/29/09
- Preparing roads for paving; on going
- Begin implementing soil stabilization and sediment control BMPs throughout the site in preparation for wet season: 09/24 /09
- **Wet Season starts: 10/01/2009**
- Implement Element #12 BMPs and manage site to minimize soil disturbance during the wet season: 10/01/09

- Landscaping and final stabilization: 10/01/09
- Estimate Substantial Completion: 10/15/2009
- Final Completion: 11/14/2009

5.0 Pollution Prevention Team

5.1 Roles and Responsibilities

The pollution prevention team consists of personnel responsible for implementation of the SWPPP, including the following:

- Certified Erosion and Sediment Control Lead (CESCL) – primary contractor contact, responsible for site inspections (BMPs, visual monitoring, sampling, etc.); to be called upon in case of failure of any ESC measures.
- Resident Engineer – For projects with engineered structures only (sediment ponds/traps, sand filters, etc.): site representative for the owner that is the project's supervising engineer responsible for inspections and issuing instructions and drawings to the contractor's site supervisor or representative
- Emergency Ecology Contact – individual to be contacted at Ecology in case of emergency.
- Emergency Owner Contact – individual that is the site owner or representative of the site owner to be contacted in the case of an emergency.
- Non-Emergency Ecology Contact – individual that is the site owner or representative of the site owner than can be contacted if required.
- Monitoring Personnel – personnel responsible for conducting water quality monitoring; for most sites this person is also the Certified Erosion and Sediment Control Lead.

5.2 Team Members

Names and contact information for those identified as members of the pollution prevention team are provided in the following table.

Title	Name(s)	Phone Number
Certified Erosion and Sediment Control Lead (CESCL)	Kevin Hinds – Stan Palmer Construction	(360) 340-0617
Resident Engineer	Kevin Dragon – Port of Olympia	(360) 528-8022
Resident Engineer	John Zaratian – Stan Palmer Construction	(360) 674-2100
Emergency Ecology Contact	WA State Toxic Clean Up	(360) 407-6300
Emergency Owner Contact	Joanne Snarski - Port of Olympia	(360) 528-8020
Non-Emergency Ecology Contact	Steve Teel	(360) 407-6247
Monitoring Personnel	Kevin Hinds – Stan Palmer Construction	(360) 340-0617
Monitoring Personnel/ Water Treatment Facility	Tyrone Clager – Clear Water Compliance Service	(425) 754-4016
Monitoring Personnel	Rick Anderson – Port of Olympia	(360) 239- 7099

6.0 Site Inspections and Monitoring

Monitoring includes visual inspection, monitoring for water quality parameters of concern and documentation of the inspection and monitoring findings in a site log book. A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements;
- Site inspections; and,
- Stormwater quality monitoring.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book. This SWPPP may function as the site log book if desired, or the forms may be separated and included in a separate site log book. However, if separated, the site log book but must be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

6.1 Site Inspection

All BMPs will be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Site inspections will be conducted by a person who is knowledgeable in the principles and practices of erosion and sediment control. The onsite inspector will have the skills to assess the potential for water quality impacts as a result of the type of construction activities occurring on site, and the knowledge of the appropriate and effective ESC measures needed to control the quality of stormwater discharges.

All BMPs will be inspected, maintained, and repaired as needed to assure continued performance of their intended function. The inspector will be a Certified Erosion and Sediment Control Lead (CESCL) per BMP C160. The name and contact information for the CESCL is provided in Section 5 of this SWPPP.

Site inspection will occur in all areas disturbed by construction activities and at all dewatering and stormwater discharge points. Stormwater will be examined for the presence of suspended sediment, turbidity, discoloration, and oily sheen. The site inspector will evaluate and document the effectiveness of the installed BMPs and determine if it is necessary to repair or replace any of the BMPs to improve the quality of stormwater discharges. All maintenance and repairs will be documented in the site log book or forms provided in this document. All new BMPs or design changes will be documented in the SWPPP as soon as possible.

6.1.1 Site Inspection Frequency

Site inspections will be conducted at least once a week and within 24 hours following any rainfall event which causes a discharge of stormwater from the site. For sites with temporary stabilization measures, the site inspection frequency can be reduced to once every month.

6.1.2 Site Inspection Documentation

The site inspector will record each site inspection using the site log inspection forms provided in Appendix E or an alternately approved format. The site inspection log forms may be separated from this SWPPP document, but will be maintained on-site or within reasonable access to the site and be made available upon request to Ecology or the local jurisdiction.

6.2 Stormwater Quality Monitoring

6.2.1 Turbidity

The Washington State Surface Water Quality Standards (chapter 173-201A WAC) were designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include condition that ensure the discharge will meet established surface water quality standard 9WAC 173-201A-510).

Turbidity sampling and monitoring will be conducted during the entire construction phase of the project to monitor site discharges for water quality compliance with the Waste Water Discharge Permit (Appendix D) and City of Olympia Stormwater Drainage Manual. DMRs will be submitted monthly whether or not the treatment facility was discharging or not. If there is no flow, the attempt to sample will be recorded in the site log book and reported to Ecology in the monthly Discharge Monitoring Report (DMR) as "No Discharge". Samples will be analyzed for turbidity using the EPA 180.1 analytical method. Turbidity is also measured and recorded by the temporary treatment system and treatment system operator prior to discharge.

Sampling and analytical methods used to meet the monitoring requirements specified in the permit must conform to the latest revision of the *Guidelines Established Test Procedures for the Analysis of Pollutants* contained in 40 CFR Part 136. The maximum daily discharge allowable is 12.3 NTU.

Sampling and measurements taken to meet the requirement of the permit must represent the volume and nature of the monitored parameters, including representative sampling of any unusual discharge or discharge condition, including bypasses, upsets, and

maintenance-related conditions affecting effluent quality. During these conditions the following steps will be conducted:

1. Immediately take action to stop, contain and cleanup unauthorized discharge.

2. Submit additional sampling to Ecology within 30 days of violation.

3. Notify Ecology by phone within 24-hours of violation.

4. Describe inspection results and remediation action that was taken in site log book and monthly discharge report.

6.2.2 pH

pH sampling must produce a daily minimum is equal or greater than 7.0 and the daily maximum is less than or equal to 8.5. Samples will be analyzed for pH using a calibrated pH meter and recorded in the site log book. The advanced treatment facility designed in the EDR, requires automatic pH adjust prior to discharge.

Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC) and Ground Water Standards (chapter 172-200 WAC). In accordance with Section S4.B of the NPDES Permit No. WA0040231, if the treatment system overflows or any unanticipated bypass occurs the following steps will be conducted:

1. Immediately take action to stop, contain and cleanup unauthorized discharge.

2. Submit additional sampling to Ecology within 30 days of violation.

3. Notify Ecology by phone within 24-hours of violation.

4. Describe inspection results and remediation action that was taken in site log book and monthly discharge report.

7.0 Reporting and Recordkeeping

7.1 Site Log Book

A site log book will be maintained for all on-site construction activities and will include:

- A record of the implementation of the SWPPP and other permit requirements;
- Site inspections; and,
- Stormwater quality monitoring.

For convenience, the inspection form and water quality monitoring forms included in this SWPPP include the required information for the site log book.

7.2 Records Retention

Records of all monitoring information (site log book, inspection reports/checklists, etc.), this Stormwater Pollution Prevention Plan, and any other documentation of compliance with permit requirements will be retained during the life of the construction project and for a minimum of three years, Waste Discharge Permit(S3.B).

7.2.1 Access to Plans and Records

The SWPPP, NPDES Waste Discharge Permit No. WA0040231 and Site Log Book will be retained on site or within reasonable access to the site and will be made immediately available upon request to Ecology or the local jurisdiction. A copy of this SWPPP will be provided to Ecology within 14 days of receipt of a written request for the SWPPP from Ecology. Any other information requested by Ecology will be submitted within a reasonable amount of time. A copy of the SWPPP or access to the SWPPP will be provided to the public when requested in writing in accordance with permit condition.

7.2.2 Updating the SWPPP

In accordance with Conditions set forth in the permit the SWPPP will be modified if it is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site or there has been a change in design, construction, operation, or maintenance at the site that has a significant effect on the discharge, or potential for discharge, of pollutants to the waters of the State. The SWPPP will be modified within seven days of determination based on inspection(s) that additional or modified BMPs are necessary to correct problems identified, and an updated timeline for BMP implementation will be prepared.

7.3 Reporting

7.3.1 Discharge Monitoring Reports

Water quality sampling results will be submitted to Ecology monthly on Discharge Monitoring Report (DMR) forms in accordance with permit condition S3. If there was no discharge during a given monitoring period, the form will be submitted with the words "no discharge" entered in place of the monitoring results. If a maximum daily effluent limits were exceeded, a brief summary of inspection results and remedial actions taken will be included. If sampling could not be performed during a monitoring period, a DMR will be submitted with an explanation of why sampling could not be performed.

7.3.2 Notification of Noncompliance

If any of the terms and conditions of the permit is not met, and it causes a threat to human health or the environment, the following steps will be taken in accordance with permit section S4 E.2.:

- Ecology will be immediately notified of the failure to comply.
- Immediate action will be taken to control the noncompliance issue and to correct the problem. If applicable, sampling and analysis of any noncompliance will be repeated immediately and the results submitted to Ecology within five (5) days of becoming aware of the violation.
- A detailed written report describing the noncompliance will be submitted to Ecology within five (5) days, unless requested earlier by Ecology.

7.3.3 Permit Application and Changes

In accordance with permit condition, a complete application form will be submitted to Ecology and the appropriate local jurisdiction (if applicable) to be covered by the Permit.

Appendix A – Site Plans

Appendix B – Construction BMPs

Preserving Natural Vegetation (BMP C101)

High Visibility Plastic or Metal Fence (BMP C103)

Stabilized Construction Entrance (BMP C105)

Wheel Wash (BMP C106)

Construction Road/Parking Area Stabilization (BMP C107)

Temporary and Permanent Seeding (BMP C120)

Mulching (BMP C121)

Plastic Covering (BMP C123)

Surface Roughening (BMP C130)

Dust Control (BMP C140)

Concrete Handling (BMP C 151)

Sawcutting and Surface Pollution Prevention (BMP C152)

Material Delivery, Storage and Containment (BMP C153)

Scheduling (BMP C162)

Check Dams (BMP C207)

Storm Drain Inlet Protection (BMP C220)

Silt Fence (BMP C233)

Construction Stormwater Chemical Treatment (BMP C250)

Construction Stormwater Filtration (BMP C251)

Street Sweeping

Appendix C – Alternative BMPs

The following includes a list of possible alternative BMPs for each of the 12 elements not described in the main SWPPP text. This list can be referenced in the event a BMP for a specific element is not functioning as designed and an alternative BMP needs to be implemented.

Element #1 - Mark Clearing Limits

• Suggested BMPs
BMP C102: Buffer Zones
BMP C104: Stake and Wire Fence

Element #2 - Establish Construction Access

• Suggested BMPs
BMP C107: Construction Road/Parking Area Stabilization

Element #3 - Control Flow Rates

• Suggested BMPs
BMP C240: Sediment Trap
BMP C241: Temporary Sediment Pond
Refer to Volume 3, Detention Facilities, Infiltration Stormwater Quantity and Flow Control

Element #4 - Install Sediment Controls

• Suggested BMPs
BMP C230: Straw Bale Barrier
BMP C231: Brush Barrier
BMP C232: Gravel Filter Berm
BMP C234: Vegetated Strip
BMP C235: Straw Wattles
BMP C240: Sediment Trap
BMP C241: Temporary Sediment Pond

Element #5 - Stabilize Soils

• Suggested BMPs
BMP C122: Nets and Blankets
BMP C124: Sodding
BMP C125: Topsoiling
BMP C131: Gradient Terraces

Element #6 - Protect Slopes

• There are no slopes onsite.

Element #7 – Protect Drain Inlets

• Suggested BMPs
BMP C220: Storm Drain Inlet Protection

Element #8 - Stabilize Channels and Outlets

• Suggested BMPs
BMP C202: Channel Lining
BMP C209: Outlet Protection

Element #9: Control Pollutants

• Suggested BMPs
See Volume IV – Source Control BMPs

Element #10 - Control Dewatering

Additional Advanced BMPs to Control Dewatering: See Attached

Appendix D – NPDES Waste Discharge Permit #WA0040231

Appendix E – Site Inspection Forms (and Site Log)

The results of each inspection shall be summarized in an inspection report or checklist that is entered into or attached to the site log book. It is suggested that the inspection report or checklist be included in this appendix to keep monitoring and inspection information in one document, but this is optional. However, it is mandatory that this SWPPP and the site inspection forms be kept onsite at all times during construction, and that inspections be performed and documented as outlined below.

At a minimum, each inspection report or checklist shall include:

a. Inspection date/times

b. Weather information: general conditions during inspection, approximate amount of precipitation since the last inspection, and approximate amount of precipitation within the last 24 hours.

c. A summary or list of all BMPs that have been implemented, including observations of all erosion/sediment control structures or practices.

d. The following shall be noted:

   i. locations of BMPs inspected,

   ii. locations of BMPs that need maintenance,

   iii. the reason maintenance is needed,

   iv. locations of BMPs that failed to operate as designed or intended, and

   v. locations where additional or different BMPs are needed, and the reason(s) why

e. A description of stormwater discharged from the site. The presence of suspended sediment, turbid water, discoloration, and/or oil sheen shall be noted, as applicable.

f. A description of any water quality monitoring performed during inspection, and the results of that monitoring including, the analysis techniques. Results, dates, parameters and who performed analysis

g. General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.

h. A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP and the NPDES permit. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation.

i. Name, title, and signature of person conducting the site inspection; and the following statement: "I certify under penalty of law that this report is true, accurate, and complete, to the best of my knowledge and belief".

When the site inspection indicates that the site is not in compliance with any terms and conditions of the NPDES permit, the Permittee shall take immediate action(s) to: stop, contain, and clean up the unauthorized discharges, or otherwise stop the noncompliance; correct the problem(s); implement appropriate Best Management Practices (BMPs), and/or conduct maintenance of existing BMPs; and achieve compliance with all applicable standards and permit conditions. In addition, if the noncompliance causes a threat to human health or the environment, the Permittee shall comply with the Noncompliance Notification requirements in Special Condition S3 E. 2. of the permit.

Appendix F – Stan Palmer's Dewatering Plan

APPENDIX M

Model NPDES Permit for Discharges Resulting from the Cleanup of Gasoline Released from Underground Storage Tanks

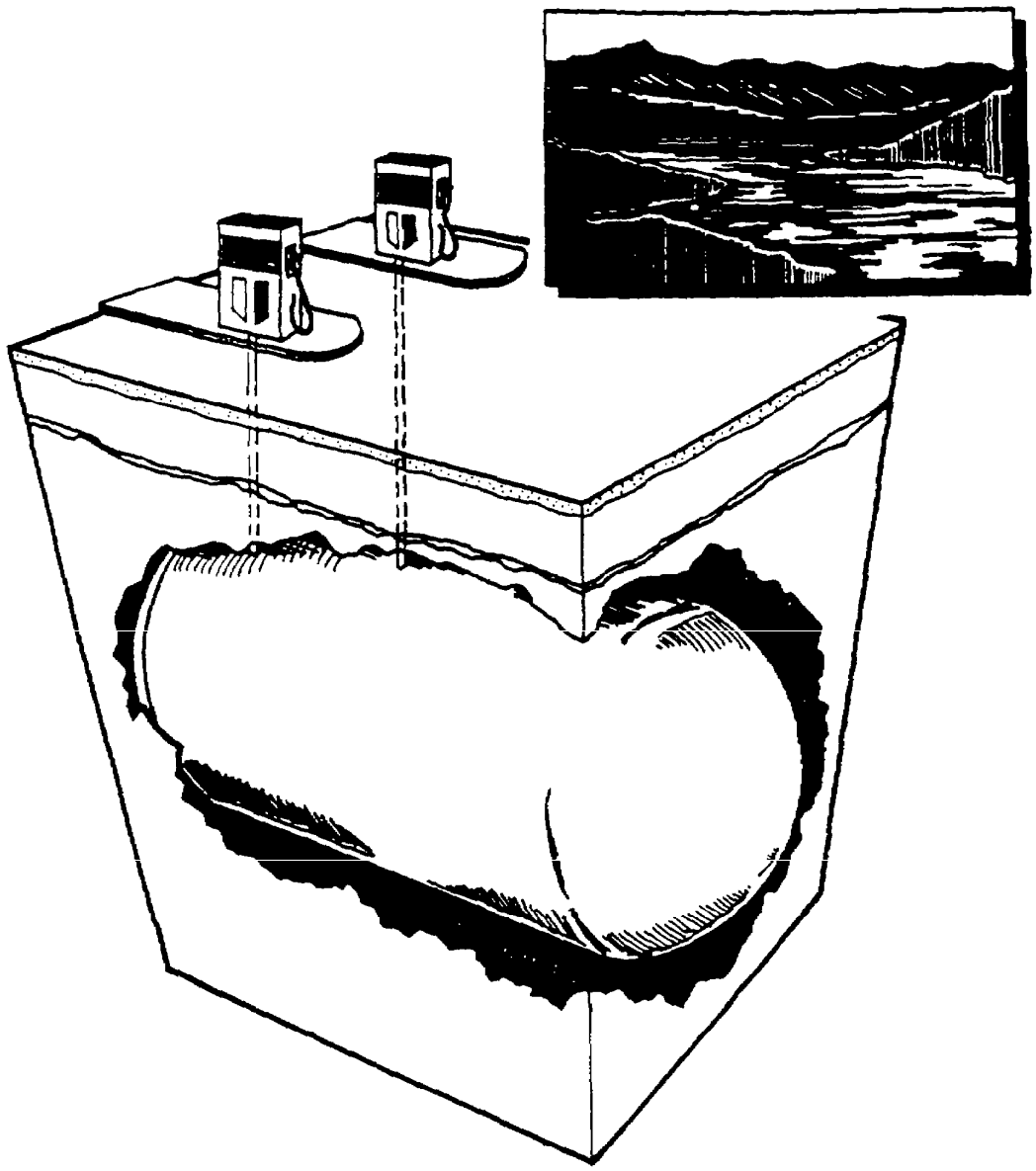
United States
Environmental Protection
Agency

Office of Water
Office of Underground Storage Tanks
Washington, DC 20460

June 1989

EPA

Model NPDES Permit for Discharges Resulting From The Cleanup of Gasoline Released From Underground Storage Tanks



PART I

INSTRUCTIONS FOR MODEL NPDES PERMIT PACKAGE FOR DISCHARGES RESULTING FROM THE CLEANUP OF GASOLINE RELEASED FROM UNDERGROUND STORAGE TANKS

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1.0 INSTRUCTIONS FOR MODEL NPDES PERMIT PACKAGE

This package was developed to assist U.S. Environmental Protection Agency (EPA) Regional and State permitting authorities in writing National Pollutant Discharge Elimination System (NPDES) permits for direct discharges to surface waters resulting from the cleanup of gasoline from leaking underground storage tank (UST) sites.

The UST program originally was mandated under Subtitle I of the Resource Conservation and Recovery Act of 1976 (RCRA) to regulate the installation, operation, and closure of USTs. The Hazardous and Solid Waste Amendments of 1984 (HSWA) strengthened the existing RCRA provisions to provide for a comprehensive regulatory program to address USTs and releases of regulated substances (primarily petroleum products) into the environment. Like other RCRA programs, States may be authorized by EPA to implement their own UST programs.

When a release is detected, the enforcement agency (either EPA or its delegated State) has the authority to require the owner/operator to conduct a release response and corrective action to cleanup the release. Depending on the situation, the EPA or delegated State may choose to conduct the release response or corrective action. Any discharge to surface waters occurring during a release response or corrective action would be subject to regulation under an NPDES permit.

This Model Permit package is only intended for use at facilities where gasoline has been released and the cleanup (or corrective action) involves a release or discharge of waters and wastewaters to surface waters. It is not intended for use at sites where nongasoline products are the primary source of contamination (e.g., jet fuels, fuel oil, diesel fuel, etc.). This package consists of four documents. Part I, Instructions for Model NPDES Permit Package, briefly describes NPDES permit requirements. The remaining three documents are briefly described below:

- Part II - Model NPDES Permit For Discharges Resulting From The Cleanup Of Gasoline Released From Underground Storage Tanks
- Part III - Fact Sheet For Model NPDES Permit For Discharges Resulting From The Cleanup Of Gasoline Released From Underground Storage Tanks
- Part IV - Decision Tool For Developing Water Quality-Based Effluent Limitations.

The UST Model Permit Package is available on diskette in WordPerfect® version 4.2. In addition, the Model Permit Package can be made available in IBM® Document Control Architecture revisable-format-text (DCA RFT) or ASCII formats for use on IBM PC (or compatibles) or for Apple Macintosh® computers.

1.1 NPDES PERMITTING AUTHORITY

This Model Permit is intended for use in developing individual, site-specific NPDES permits. NPDES permit application requirements (discussed in Section 1.1.1 below) may vary depending upon the NPDES permitting authority. Under the NPDES Program, a total of 57 jurisdictions are regulated including the 50 States plus the District of Columbia, Puerto Rico, the Virgin Islands, American Samoa, Guam, West Marinaras, and U.S. Trust Territories. Thirty-nine of these jurisdictions have the authority to conduct their own NPDES program. In the remaining 18 jurisdictions, EPA is responsible for implementing the NPDES program.

According to 40 CFR §122.28, States can apply for the authority to issue general NPDES permits. General permits apply the same set of limitations to a group of dischargers that discharge the same types of wastes, require the same effluent limitations or operating conditions, and require similar monitoring. The information provided in this Model Permit Package may also be used as the basis for developing a general permit. Thirteen NPDES-approved States have the authority to issue general permits. EPA can issue general permits in all of the 18 jurisdictions where EPA is the permitting authority. Currently, general permits cannot be issued in 26 jurisdictions.

1.1.1 NPDES Permit Application Requirements

Dischargers must submit an NPDES permit application before an individual NPDES permit can be issued. The information provided in the permit application serves as one source of data for developing NPDES permit requirements. States may have their own permit application forms and requirements but must request from the applicant as a minimum, the information required by the Federal NPDES regulations.

Some of the major constituents of gasoline can be detected by analytical methods for volatile organics. Analytical methods are specified at 40 CFR Part 136. Certain other chemicals (e.g., xylene) should be tested for if the applicant believes that other substances are present in the discharge, for which there are no approved analytical methods. For these other substances, the applicant is required to use another suitable analytical method. One such method that is particularly suitable for potential gasoline constituents is EPA Method 8240. This method is an approved RCRA method for the analysis of volatile organic compounds such as xylene.

The data provided in the NPDES permit application should be carefully revieved by the permit writer. Specifically, information such as discharge flow rates and the presence of toxic pollutants should be carefully evaluated. For example, the effluent limits in the Model Permit may be modified to account for the presence of additional pollutants. Similarly, the monitoring requirements may need to be modified based upon unique discharge characteristics (e.g., batch discharges).

1.2 MODEL NPDES PERMIT

This Model Permit is based on the approach taken, in part, by several States and EPA Regional Offices. While a Model Permit may not be applicable in every situation, the information contained in this Model Permit Package should serve as a framework for the permit writer and expedite the NPDES permit issuance process. Key elements of the Model Permit include chemical-specific effluent limitations, standard conditions, and special conditions including Best Management Practices (BMPs) and biomonitoring requirements. These elements are recommended for inclusion in all NPDES permits for discharges from the cleanup of gasoline-related UST sites.

This Model Permit was based principally on guidance provided by the NPDES regulations and the Training Manual For NPDES Permit Writers, EPA Office of Water and Permits, May 1987. However, the Model Permit should be modified to conform with State regulations and policies, air and ground-water protection strategies or requirements, or site-specific conditions. This Model Permit differs from most NPDES permits in that gasoline cleanups typically last for one or two years while most NPDES permits are issued for a five year period. Due to this shorter time span, biomonitoring requirements may need to be altered or deleted in some cases. The following subsections highlight four major components of the Model Permit.

1.2.1 Authorization to Discharge

The "Authorization to Discharge" section of the Model Permit must be completed by the permit writer. In order to fill in this section the following information must be provided:

- Name and Address of Facility
- Outfall Designations
- Receiving Water Name and Present/Future Water Quality Standard Classification of Receiving Water
- Effective Date of Permit
- Expiration Date of Permit.

1.2.2 Effluent Limitations and Monitoring Requirements

Part I of the Model Permit provides technology-based effluent limitations and monitoring requirements for surface water discharges from corrective actions at gasoline underground storage tank sites. Specifically, effluent limitations have been developed for benzene and the aggregate parameter BETX (benzene, ethylbenzene, toluene, and the xylenes). The technology basis used to develop these limits is free product recovery, followed by air stripping. These effluent limits are based on the characterization of constituents commonly found in gasoline as described in the Fact Sheet (listed in Tables 3-1, 5-1, and 5-2 of the Fact Sheet). Additional site-specific constituents, such as gasoline additives, may be reported in the sampling data required as

part of the NPDES permit application. Should this occur, the permit writer may need to develop additional effluent limitations.

> **NOTE:** An optional set of effluent limitations has also been developed based upon consideration of the potential impacts of treatment costs, particularly on smaller firms that own retail motor fuel outlets. These optional effluent limitations, based upon a reduction in air stripping efficiency, could be used by permit writers if a firm could not afford the cost of compliance with the more stringent effluent limitations. However, if these optional effluent limitations, as with all technology-based limitations, would result in the exceedance of water quality standards and/or endanger aquatic life, human health, or the environment, then water-quality based limitations should be established.

Weekly flow and chemical-specific monitoring is recommended based on EPA guidelines. In addition, chronic toxicity testing requirements are recommended and provided in the permit. Alternative approaches to establishing biomonitoring requirements, such as the whole effluent toxicity screening approach, are provided in the Fact Sheet.

1.2.3 Standard Conditions

The standard conditions established in Part II of the Model NPDES Permit are based on those required in 40 CFR §122.41. Standard conditions may vary from State to State. Therefore, the permit writer is free to substitute State requirements for the Standard Conditions in this Model Permit as appropriate.

2.4 Special Conditions

Part III of the Model Permit requires the permittee to develop a Best Management Practices (BMP) plan. In addition, biomonitoring is recommended for inclusion in each gasoline UST cleanup NPDES permit. The Fact Sheet provides additional guidance for developing and implementing biomonitoring requirements. Additional special conditions may be required to address site-specific problems. The conditions presented in this Model Permit are severable, which means if one condition is proven to be invalid the other conditions still hold. Regions and States may choose to incorporate additional requirements in accordance with their own policies on BMPs and biomonitoring requirements.

1.3 FACT SHEET

The NPDES regulations [40 CFR §124.8(a)] require the preparation of a Fact Sheet for every major NPDES permit to document the facts, methodology, and basis used to develop the permit. For purposes of this Model Permit it is assumed that the discharge from an UST cleanup may constitute a major point source discharge. Therefore, a Fact Sheet has been prepared as part of this package that provides a rationale for the effluent limitations, monitoring requirements, and special conditions set forth in the Model Permit. This Fact Sheet should be reviewed carefully by the permit writer before using the Model Permit. The rationale given in the Fact Sheet may need to be modified to account for site-specific considerations.

1.4 DECISION TOOL FOR DEVELOPING WATER QUALITY-BASED EFFLUENT LIMITATIONS

Both the Clean Water Act and NPDES regulations require all NPDES permits to include effluent limitations to achieve applicable State water quality standards. Since State standards are typically specified on a site-specific basis, water quality-based effluent limitations have not been developed for this Model Permit. However, a Decision Tool for addressing site-specific water quality criteria is presented for use by State and EPA Regional permit writers. This Decision Tool includes EPA's ambient water quality criteria for the protection of aquatic life and human health for benzene, ethylbenzene, toluene, xylene, and naphthalene, the only constituents of gasoline for which water quality criteria have been established.

PART II

MODEL NPDES PERMIT FOR DISCHARGES RESULTING FROM THE CLEANUP OF GASOLINE RELEASED FROM UNDERGROUND STORAGE TANKS

MODEL NPDES PERMIT FOR DISCHARGES RESULTING FROM THE CLEANUP OF GASOLINE RELEASED FROM UNDERGROUND STORAGE TANKS

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended (33 U.S.C. Section 1251 et seq., hereinafter the "Clean Water Act" or "Act"), and attendant regulations incorporated by the U.S. Environmental Protection Agency under Title 40 of the Code of Federal Regulations,

(Name of Discharger) (hereinafter "Permittee")

is authorized to discharge from (description of facility), located at

(insert Address)

to the receiving waters named (identify) in accordance with effluent limitations, monitoring requirements, and other conditions set forth in Parts I, II, and III herein. The permit consists of this cover sheet, Part I - 1 page, Part II - 13 pages, and Part III - 3 pages.

All references to Title 40 of the Code of Federal Regulations are to regulations that are in effect on the effective date of this permit. Unless otherwise specified herein, all terms are defined as provided in the applicable regulations in Title 40 of the Code of Federal Regulations.

This permit shall become effective on (insert date). This permit and the authorization to discharge shall expire at midnight (insert date) .

Date

Director
(or Other Authorized Official)

Permit No. _____

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: Outfall 001 - discharge resulting from gasoline underground storage tank corrective actions.

1. During the period beginning on the effective date of the permit and lasting through the term of this permit, the permittee is authorized to discharge treated water and wastewater that has been contaminated by gasoline.

Such discharges shall be limited and monitored by the Permittee as specified below:

Effluent Characteristic	Discharge Limitations Micrograms per Liter		Monitoring Requirements	
	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	1 per week	Continuous
Benzene	5	5	1 per week	Grab
Total BETX*	100	100	1 per week	Grab

The pH shall neither be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge or mixing with the receiving waters.

* BETX shall be measured as the sum of benzene, ethylbenzene, toluene, and xylenes. EPA methods 602, 624, or 1624 shall be used for the measurement of benzene, ethylbenzene, and toluene. EPA method 8240, or an equivalent method, shall be used for the measurement of xylenes including ortho-, meta-, and para-xylene. (Note: Depending on Regional/State policy, EPA Method 8240 may be used as a substitute or equivalent for the CWA methods 602, 624, or 1624 required under the CWA in 40 CFR Part 136.)

OPTIONAL EFFLUENT LIMITATIONS FOR DISCHARGES RESULTING FROM THE CLEANUP OF GASOLINE RELEASED FROM UNDERGROUND STORAGE TANKS

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS: Outfall 001 - discharge resulting from gasoline underground storage tank corrective actions.

1. During the period beginning on the effective date of the permit and lasting through the term of this permit, the permittee is authorized to discharge treated water and wastewater that has been contaminated by gasoline.

   Such discharges shall be limited and monitored by the Permittee as specified below:

Effluent Characteristic	Discharge Limitations Micrograms per Liter		Monitoring Requirements	
	Daily Avg.	Daily Max.	Measurement Frequency	Sample Type
Flow, MGD	Report	Report	1 per week	Continuous
Benzene	50	50	1 per week	Grab
Total BETX*	750	750	1 per week	Grab

The pH shall neither be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored once per week by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): nearest accessible point after final treatment but prior to actual discharge or mixing with the receiving waters.

* BETX shall be measured as the sum of benzene, ethylbenzene, toluene, and xylenes. EPA methods 602, 624, or 1624 shall be used for the measurement of benzene, ethylbenzene, and toluene. EPA method 8240, or an equivalent method, shall be used for the measurement of xylenes including ortho-, meta-, and para-xylene. (Note: Depending on Regional/State policy, EPA Method 8240 may be used as a substitute or equivalent for the CWA methods 602, 624, or 1624 required under the CWA in 40 CFR Part 136.)

Permit No. _____

PART II

STANDARD CONDITIONS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action, for permit termination, permit revocation and permit reissuance, or modification, or for denial of a permit reneval application.

2. Toxic Pollutants

The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

3. Penalties for Violations of Permit Conditions

Any person who violates a permit condition is subject to a civil penalty not to exceed $10,000 per day for each violation. Any person who willfully or negligently violates permit conditions is subject to a fine of not less than $2,500 nor more than $25,000 per day for each violation, or by imprisonment for not more than 1 year, or both.

4. Duty to Reapply

(a) If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a reneval permit. The Permittee shall submit a new application at least 180 days before the expiration date of this permit, unless permission for a later date has been granted by the Director.

(b) Where EPA is the Permit Issuing Authority for the reneval permit, the terms and conditions of this permit continue in force under 5 U.S.C. Section 558(c) until the effective date of the new permit (or permit denial) only if the Permittee has submitted a timely and complete application under 40 CFR Section 122.21 for a reneval permit and the Permit Issuing Authority, through no fault of the Permittee, does not issue a new permit (or deny the permit) before the expiration date of this permit. The permit continued under 5 U.S.C. Section 558(c) remains fully effective and enforceable, including subject to the actions set forth in 40 CFR §122.6(c).

5. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

6. Permit Actions (Modification, Revocation and Reissuance, or Termination)

(a) This permit may be modified, revoked and reissued, or terminated for causes (as described in 40 CFR Sections 122.62, 122.63, and 122.64), including, but not limited to: violation of any terms or conditions of this permit; obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or a change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(b) Notwithstanding Paragraph II-A-6(a) above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Clean Water Act for a toxic pollutant that is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit may be modified or revoked and reissued to conform to the toxic effluent standard or prohibition.

(c) Nothwithstanding Paragraph II-A-6(a) above, this permit may be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(A), (C), (D), (E), and (F), or 304(b)(2) of the Clean Water Act, if the effluent standards or limitation so issued or approved contains different conditions or is otherwise more stringent than any effluent limitation in this permit; or controls any pollutant not limited in this permit.

7. Effect of Permit/Other Laws

(a) Issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to persons or property, or invasion of other private rights, or any infringement of Federal, State, or local laws or regulations.

(b) Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Clean Water Act.

(c) Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject to under Section 311 of the Act.

(d) Except as provided in permit conditions on "Upsets," Paragraph II-B-4 below, and pH Excursions, Paragraph II-C-7(c) below, nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance with a permit condition.

(e) Pursuant to Section 509(b)(1)(F) of the Clean Water Act, a challenge to the validity of permit conditions, including the effluent limitations in Part I-A of this permit, shall not be a defense to an enforcement action under Section 309 or 505 of the Clean Water Act. Each and every violation of a permit condition is subject to an enforcement action.

(f) Compliance with the terms of this permit does not constitute a defense to any action brought under Section 504 of the Clean Water Act, or any other law governing protection of public health or welfare, for any imminent and substantial endangerment to public health or welfare.

8. Onshore or Offshore Construction

This permit does not authorize or approve the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any waters of the United States.

9. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of ensuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility, which is not a designed or established operating mode for the facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities that renders them inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass Not Exceeding Limitations

The Permittee may allow any bypass to occur that does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to ensure efficient operation. These bypasses are not subject to the provisions of Paragraphs c. and d. of this section.

c. Notice

(1) Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass; including an evaluation of the anticipated quality and effect of the bypass.

(2) Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required in Paragraph II-D-6 (24-hour notice).

d. Prohibition of Bypass

(1) Bypass is prohibited and the Permit Issuing Authority may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe and extensive property damage;

(b) There were no feasible alternatives to the bypass, such as maintenance of sufficient reserve holding capacity, the use of auxiliary treatment facilities, retention of untreated wastes, waste hauling, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment

should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The Permittee submitted notices as required under Paragraph b. of this section.

(2) The Permit Issuing Authority may, within its authority, approve an anticipated bypass, after considering its adverse effects, if the Permit Issuing Authority determines that it will meet the three conditions listed above in Paragraph d.(1) of this section.

4. Upsets

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit limitations if the requirements of 40 CFR Section 122.41(n)(3) are met. (Note that this provision does not apply to water quality requirements).

5. A Schedule of Maintenance

Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by the Permitting Authority.

6. Removed Substances

This permit does not authorize discharge of solids, sludge, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters to waters of the United States unless specifically limited in Part I.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Permit Issuing Authority.

2. Sampling Points

All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by

any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Permitting Authority.

3. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10 percent from the true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration, and operation of acceptable flow measurement devices can be obtained from the following references:

(1) "A Guide of Methods and Standards for the Measurement of Water Flow," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U.S. Government Printing Office, Washington, DC 20402. Order by SD Catalog No. C13.10:421).

(2) "Water Measurement Manual," U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U.S. Government Printing Office, Washington, DC 20402. Order by Catalog No. 127.19/2:W29/2, Stock No. S/N 24003-0027).

(3) "Flow Measurement in Open Channels and Closed Conduits," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

(4) "NPDES Compliance Flow Measurement Manual," U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-77, September 1981, 135 pp. (Available from the General Services Administration (8BRC), Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

4. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

5. Calibration

The Permittee shall periodically calibrate and perform maintenance on all monitoring and analytical equipment used to monitor the pollutants discharged under this permit, at intervals that will ensure the accuracy of measurements.

6. Testing Variability Not a Defense

If the Permittee believes or has reason to believe that monitoring or sampling results reflect an analytical variability so as to render the results inaccurate, he may monitor or sample more frequently than required by this permit. The validity of the testing results, whether or not the Permittee has monitored or sampled more frequently, shall not be a defense to an enforcement action under Sections 309 or 505 of the Clean Water Act.

7. pH Effluent Limitations Under Continuous Monitoring

Notwithstanding Part I of this permit, where the Permittee continuously measures the pH of water and wastewater discharges pursuant to a requirement or option in this permit, excursions from the range provided in Part I are permitted, provided:

(a) The pH limitation in Part I of this permit is based upon a requirement imposed under 40 CFR Subpart N.

(b) The total time during which the pH values are outside the required range of pH values shall not exceed 446 minutes in any calendar month.

(c) No individual excursions from the range of pH values shall exceed 60 minutes.

(d) For purposes of this section, an "excursion" is an unintentional and temporary incident in which the pH value of the discharge exceeds the range set forth in Part I of this permit. The number of individual excursions exceeding 60 minutes and the total accumulated excursion time in minutes occurring in any calendar month shall be reported in accordance with Paragraph II-D-4 of this permit.

8. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

9. Retention of Records

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by the Permitting Authority at any time.

10. Monitoring Records

Records of monitoring information shall include:

a. The date, exact place, and time of sampling or measurements;
b. The individual(s) who performed the sampling or measurements;
c. The date(s) analyses were performed;
d. The individual(s) who performed the analyses;
e. The analytical techniques or methods used; and
f. The results of such analyses.

11. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report (DMR). Such increased frequency shall also be indicated.

12. Averaging of Measurements

Calculations for limitations that require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Permitting Authority in the permit.

SECTION D. REPORTING REQUIRMENTS

1. Change in Discharge

The Permittee shall give notice to the Permitting Authority as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

a. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source; or

b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements under Section D, Paragraph 10(a).

2. Anticipated Noncompliance

The Permittee shall give advance notice to the Permitting Authority of any planned change in the permitted facility or activity that may result in noncompliance with permit requirements. Any maintenance of facilities, which might necessitate unavoidable interruption of operation and degradation of effluent quality, shall be scheduled during noncritical water quality periods and carried out in a manner approved by the Permitting Authority.

3. Transfer of Ownership or Control

A permit may be automatically transferred to another party if:

a. The Permittee notifies the Permitting Authority of the proposed transfer at least 30 days in advance of the proposed transfer date;

b. The notice includes a written agreement between the existing and new Permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

c. The Permitting Authority does not notify the existing Permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in Paragraph b, above.

4. Reporting of Monitoring Results

Monitoring results obtained during the previous calendar quarter shall be summarized for each month (each quarter if monitoring frequency is quarterly) and must be reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the day of the month following the completed calendar quarter. Duplicate signed copies of these, and all other reports required by Section D of Part II, Reporting Requirements, shall be submitted to the Permitting Authority at the following addresses:

U.S. EPA Regional Office:	State Office:
(insert address) _____	(insert address) _____
_____	_____
_____	_____

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty-Four Hour Reporting

The Permittee shall orally report any noncompliance that may endanger health or the environment within 24 hours from the time the Permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance, its cause, and the period of noncompliance, including exact dates and times. If the noncompliance has not been corrected, the written submission shall also include the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Permitting Authority may verbally waive the written report, on a case-by-case basis, when the oral report is made.

The following violations shall be included in the 24-hour report when they might endanger health or the environment:

a. An unanticipated bypass that exceeds any effluent limitation in the permit.

b. Any upset that exceeds any effluent limitation in the permit.

7. Other Noncompliance

The Permittee shall report, in narrative form, all instances of noncompliance not previously reported under Section D, Paragraphs 2, 4, 7, and 8, at the time monitoring reports are submitted. The reports shall contain the information listed in Paragraph 8.

8. Other Information

Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Permitting Authority, it shall promptly submit such facts or information.

9. Changes in Discharges of Toxic Substances

The Permittee shall notify the Permit Issuing Authority as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic substance(s) (listed at 40 CFR Part 122, Appendix D, Tables II and III) that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony; or

(3) Five (5) times the maximum concentration value reported for that pollutant(s) in the permit application.

b. That any activity has occurred or will occur that would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant (listed at 40 CFR Part 122, Appendix D, Tables II and III) that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"

(1) Five hundred micrograms per liter (500 ug/l);

(2) One milligram per liter (1 mg/l) for antimony; or

(3) Ten (10) times the maximum concentration value reported for that pollutant(s) in the permit application.

10. Duty to Provide Information

The Permittee shall furnish to the Permitting Authority, within a reasonable time, any information that the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee also shall furnish to the Permitting Authority, upon request, copies of records required to be kept by this permit.

11. Signatory Requirements

All applications, reports, or information submitted to the Permit Issuing Authority shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means: (1) a president, secretary, treasurer or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decisionmaking functions for the corporation; or (2) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, other political subdivision, public agency/agents thereof: by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the Permitting Authority shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above;

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (A duly authorized representative thus may be either a named individual or any individual occupying a named position.); and

(3) The written authorization is submitted to the Permit Issuing Authority.

c. Certification. Any person signing a document under Paragraphs (a) or (b) of this section shall make the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Permitting Authority. As required by the Act, permit applications and permit and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representative, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 2 years per violation, or by both.

SECTION E. DEFINITIONS

1. Permit Issuing Authority

The Regional Administrator or his designee, unless at some time in the future the State receives the authority to administer the NPDES program and assumes jurisdiction over the permit, at which time the Director of the State program receiving authorization becomes the issuing authority.

2. Act

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576 and Public Law 100-4, 33 U.S.C. 1251 et seq.

3. Concentration Measurements

a. The "average monthly concentration" is the sum of the concentrations of all daily discharges sampled and/or measured during a calendar month on which daily discharges are sampled and measured, divided by the number of daily discharges sampled and/or measured during such

month (arithmetic mean of the daily concentration values). The daily concentration value is equal to the concentration of a composite sample or, in the case of grab samples, is the arithmetic mean (weighted by flow value) of all the samples collected during the calendar day.

b. The "maximum daily concentration" is the concentration of a pollutant discharge during a calendar day. It is identified as "Daily Maximum" in Part I of the permit and the highest such value recorded during the reporting period is reported under the "Maximum" column under "Quality" on the DMR.

4. Other Measurements

a. The effluent flow, expressed as MGD, is the 24-hour average flow averaged monthly. It is the arithmetic mean of the total daily flows recorded during the calendar month. Where monitoring requirements for flow are specified in Part I of the permit, the flow rate values are reported in the "Average" column under "Quantity" on the DMR.

b. An "instantaneous flow measurement" is a measure of flow taken at the time of sampling, when both the sample and flow will be representative of the total discharge.

c. Where monitoring requirements for pH or dissolved oxygen are specified in Part I of the permit, the values are generally reported in the "Quality or Concentration" column on the DMR.

5. Types of Samples

a. Grab Sample: A "grab sample" is a single influent or effluent portion that is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the total discharge.

6. Calendar Day

A calendar day is defined as the period from midnight of one day until midnight of the next day. However, for purposes of this permit, any consecutive 24-hour period that reasonably represents the calendar day may be used for sampling.

7. Hazardous Substance

A hazardous substance means any substance designated under 40 CFR Part 116 pursuant to Section 311 of the Clean Water Act.

8. Toxic Pollutant

A toxic or "priority" pollutant is one of 126 substances listed as toxic under Section 307(a)(1) of the Clean Water Act.

PART III

A. SPECIAL CONDITIONS

1. Best Management Practices Requirements

A Best Management Practices (BMP) plan shall be developed within one month after the effective date of the permit and shall be implemented as soon as practicable but no later than two months from the effective date of the permit. The plan must address the following BMPs:

a. Prevention of run-on/interception of runoff: Technologies that are designed to prevent or reduce run-on include dikes, diversion channels, flood walls, terraces, grading, and revegetation. Temporary diversion dikes, diversion channels, and terraces are constructed upslope of a site to direct run-on from offsite to a collection system or away from the site. Terraces are used in combination with dikes or ditches to channel water stopped by the terraces away from the site.

b. Prevention of infiltration: The primary method for preventing infiltration of onsite surface water is capping. Grading also helps to minimize infiltration by maximizing the amount of water that will run off without causing significant erosion. Revegetation can either promote or minimize infiltration.

c. Collection and transfer of water: Several technologies can be used to collect diverted water for discharge or transfer to a storage or treatment system. Chutes (or flumes) and downpipes are designed to transfer water away from diversion structures such as dikes or terraces to stabilized channels or outlets. Waterways can be used to intercept or divert water as well as to collect and transfer water diverted elsewhere.

d. Storage and discharge of water: Technologies for this purpose include seepage basins and ditches, sedimentation basins, and storage ponds. Their function depends on the level of contamination of the water they receive. Seepage basins and ditches are used to discharge uncontaminated or treated water down and away from the site. Sedimentation basins are used to control suspended solid particles in surface-water flow.

2. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:

a. Contains different conditions or is otherwise more stringent than any condition in the permit; or

b. Controls any pollutant not limited in the permit.

3. Chronic Toxicity Testing Requirements for Characterizing Effluent Toxicity

The Permittee shall perform toxicity testing, as described below, on the discharge from Outfall 001.

a. The Permittee shall initiate the following series of tests as soon as practicable, but within 30 days of the effective date of this permit to evaluate toxicity of the discharge. Such testing will determine if an appropriately dilute effluent sample affects the survival, growth, or reproduction of the test species. All tests will be conducted on 24-hour composite samples. A minimum of four replicates will be used in each of the following tests. The Student's t test shall be used to determine whether differences in control and effluent data are significant.

(1) The Permittee shall conduct a seven-day Ceriodaphnia survival and reproduction toxicity test on the final effluent diluted by appropriate control water. Toxicity will be demonstrated if there is a statistically significant difference at the 95-percent confidence level in survival or reproduction between Ceriodaphnia exposed to an appropriate control water and the final effluent. All test solutions shall be renewed using an approved renewal schedule. If, in any control, more than 20 percent of the test organisms die, that test shall be repeated.

(2) The Permittee shall conduct a seven-day fathead minnow survival and growth toxicity test on the final effluent diluted by appropriate control water. Toxicity will be demonstrated if there is a statistically significant difference at the 95-percent confidence level in survival or growth between fathead minnows exposed to an appropriate control water and the final effluent. All test solutions shall be renewed using an approved renewal schedule. If, in any control, more than 20 percent of the test organisms die, that test shall be repeated.

b. The toxicity tests specified in Paragraph (a) above, shall be conducted once per month for a period of one year following initiation of the tests and once every six months thereafter for the duration of the permit. Results shall be reported according to EPA/600/4-85/014, Section 10 Report Preparation, and shall be submitted to EPA with the monthly Discharge Monitoring Report. If any one test indicates the effluent is toxic, another confirmatory chronic toxicity test using the same species and the same methodology shall be conducted within one week.

c. All test species, procedures, and quality assurance criteria used shall be in accordance with Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Section 13; Ceriodaphnia Survival and Reproduction Test Method 1002.0; Section 11; Fathead Minnow (Pimephales promelas); Larval Survival and Growth Test Method 1000.0, EPA 600/4-85/04. The selection of an appropriate control water for all toxicity tests shall be submitted to EPA for review and approval prior to use.

4. Modification of Monitoring Requirements

a. After three months of weekly flow and chemical-specific monitoring, the Permittee may submit a written request for reduced frequency or elimination of monitoring requirements. The Permitting Authority may grant or refuse the request based on site-specific conditions, as appropriate.

b. After three months of monthly toxicity testing as required in Paragraph III-A-3, the Permittee may submit a written request for cessation or reduction of biomonitoring requirements. The Permitting Authority may grant or refuse the request based on site-specific conditions, as appropriate.

PART III

FACT SHEET FOR MODEL NPDES PERMIT FOR DISCHARGES RESULTING FROM THE CLEANUP OF GASOLINE RELEASED FROM UNDERGROUND STORAGE TANKS

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1.0 FACT SHEET FOR MODEL NPDES PERMIT FOR DISCHARGES RESULTING FROM THE CLEANUP OF GASOLINE RELEASED FROM UNDERGROUND STORAGE TANKS

Pursuant to the Clean Water Act (CWA), the U.S. Environmental Protection Agency (EPA), or an EPA-approved State, is authorized to issue a National Pollutant Discharge Elimination System (NPDES) permits for the discharge of "pollutants" from any "point source" into "waters of the United States." CWA 301(b) requires all point sources that discharge directly to the waters of the U.S. to meet technology-based effluent limitations and State water quality standards for the discharge of pollutants. EPA has determined technology-based effluent limitations through the development of National effluent limitations guidelines for many specific categories of industries. However, national effluent guidelines have not been promulgated for wastewater discharges resulting from gasoline underground storage tank (UST) cleanups. Consequently, this technology-based permit has been developed on a best professional judgment (BPJ) basis in accordance with 40 CFR 125.3. BPJ is used to develop technology-based effluent limits in those cases where an effluent guideline has not been promulgated for the industry and water quality standards do not dictate limits more stringent than technology-based limits.

Water quality-based limitations should be used in a permit when technology-based effluent limits are not stringent enough to protect the "designated use" of the receiving waters (as determined by the State). Water quality-based permits involve a site-specific evaluation of the discharge, the State's water quality standards, the designated use of the receiving water, and published EPA water quality criteria. Therefore, the Model Permit and this Fact Sheet only address technology-based effluent limitations. Guidance for addressing water quality considerations is included in Part IV - Decision Tool for Developing Water Quality-Based Effluent Limitations.

2.0 SCOPE OF THE PROBLEM

It is estimated that 1.7 million underground storage tanks exist in the United States. Based on data collected by EPA's Office of Underground Storage Tanks (OUST) (Ref. No. 1)*, 15 percent of these tanks are currently leaking. Gasoline leaks have been cited in more than 70 percent of the reported release incidents (Ref. No. 14). The OUST estimates that over the next 5 years, approximately 200,000 cleanups will be conducted to mitigate releases of petroleum-related products into the environment. Assuming that 70 percent of all underground tank releases involve gasoline, then as many as 140,000 gasoline-related UST cleanups could occur over the next 5 years.

Any discharges to surface waters resulting from gasoline UST cleanups fall under the auspices of the NPDES program. These discharges could include treated ground water, storm water, and tank cleaning wastewaters. The treatment technologies commonly employed for gasoline UST cleanups are discussed in greater detailed in Section 4.0.

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*Reference numbers correspond to the number assigned to each reference listed in Section 8.0 of this Fact Sheet.

3.0 DISCHARGE CHARACTERIZATION

The volume and nature of discharges resulting from gasoline UST cleanups is expected to be highly variable. Based on available data, the following sections briefly describe the volume and nature of the discharges that would be expected from gasoline UST cleanups.

3.1 VOLUME OF DISCHARGE

The volume of discharges generated from gasoline UST cleanups varies. Such variation is due to site-specific factors such as the size of the release, depth to ground water, etc. However, OUST estimates the typical flow rate of treated water and wastewater discharges resulting from gasoline cleanups falls in the range of three to 20 gallons per minute, or about 4,000 to 30,000 gallons per day (Ref. No. 2).

3.2 CONSTITUENTS OF GASOLINE

Available data that enumerate the constituents of gasoline was reviewed, based on the assumption that the same compounds identified in gasoline would likely be found in treated water and wastewater resulting from gasoline cleanups. Those constituents are shown in Table 3-1. The chemical properties of these constituents, such as solubility (in water) and volatility, have been used to characterize the treatability of discharges resulting from gasoline UST cleanups (see Section 5.0). It should be noted that lead is used as an anti-knocking compound in gasoline. However, lead is present in gasoline as a component of the organic compound tetraethyllead.

The characterization of gasoline shown in Table 3-1 is based on an analysis of constituents commonly found in gasoline. However, little to no data are available regarding the concentration of pollutants in treated water and wastewater discharges from UST cleanups of gasoline. Similarly, additional site-specific constituents, such as gasoline additives, may be present. Some of these are proprietary additives for which little or no data exist (Ref. No. 6).

TABLE 3-1. CONSTITUENTS OF GASOLINE

Gasoline Constituent	Reference
Isobutane	3,4,5
n-Butane	3,4,5
Isopentane	3,4,5
n-Pentane	3,4,5
n-Octane	3
Benzene	3,4,5
Toluene	3,4,5
o-Xylene	5
m-Xylene	5
p-Xylene	5
n-Hexane	3,4,5
2-Methylpentane	3,4,5
3-Methylpentane	4,5
2,2-Dimethylhexane	5
2,4-Dimethylhexane	3
Ethylbenzene	3,4,5
2,2,4-Trimethylhexane	3
2,2,5,5-Tetramethylhexane	3
1-Hexene	3
1,3,5-Trimethylbenzene	3
2,2-Dimethylpropane	4
2,2-Dimethylbutane	4
1,2,4-Trimethylbenzene	4
2,3-Dimethylbutane	5
2-Methylhexane	5
3-Methylhexane	5
2,3-Dimethylpentane	5
2,4-Dimethylpentane	5
2,2,4-Trimethylpentane	5
2,3,4-Trimethylpentane	5
2,3,3-Trimethylpentane	5
2,2,3-Trimethylpentane	5
2-Methyloctane	5
3-Methyloctane	5
4-Methyloctane	5
Cyclopentane	5
Methylcyclopentane	5
Methylcyclohexane	5
1,cis,3-Dimethylcyclopentane	5
Cyclohexane	5
n-Heptane	5

TABLE 3-1. CONSTITUENTS OF GASOLINE (Continued)

Gasoline Constituent	Reference
1,cis,3-Dimethyl-cyclopentane	5
1,trans,3-Dimethyl-cyclopentane	5
Propylene	5
trans Butene-2	5
cis Butene-2	5
1-Pentene	5
trans Pentene-2	5
cis Pentene-2	5
2-Methylpentene-1	5
2-Methylpentene-2	5
1-Methyl, 3-Ethylbenzene	5
1-Methyl, 4-Ethylbenzene	5
1,2,4-Trimethylbenzene	5
Tetraethyllead	6
Naphthalene	5

3.3 POTENTIAL SOURCES OF DISCHARGE

Discharges from gasoline UST cleanups can originate from one or more of several sources. Examples of these sources include:

- Contaminated ground water that has been extracted and treated
- Contaminated storm water that has been collected and treated
- Wastewaters that are generated from tank cleaning operations
- Contaminated water that results from product recovery operations.

As discussed in Section 1.1, any direct discharge to waters of the U.S. would be subject to regulation under a NPDES permit.

4.0 TREATMENT TECHNOLOGIES

The cleanup or "corrective action" for releases from gasoline USTs usually involves two phases. The first phase includes actions designed to immediately contain and control a release. The second phase involves assessing and developing long-term measures designed to rectify and mitigate contamination to a level that will protect human health and the environment.

4.1. FREE PRODUCT RECOVERY

Where site conditions permit, an UST cleanup typically begins with recovery of gasoline (known as free product) floating on the water table. Prompt removal of free product can minimize the extent of soil and ground water that may potentially be contaminated by an UST release.

Free product is often removed by digging a trench to intercept the flow of floating gasoline or by pumping ground water to create a cone of depression in the water table. In either case, the free product flows toward the collection point where it is removed by pumping. The ongoing process of free product removal often requires the pumping or collection of substantial amounts of ground water which may contain dissolved gasoline constituents. This water may require treatment prior to discharge. This Fact Sheet describes two technologies commonly used to treat such water. These technologies are air stripping and carbon adsorption.

4.2 TREATMENT OF CONTAMINATED WATER AND WASTEWATERS

As product recovery continues, a variety of aqueous wastestreams and contaminated waters may require additional treatment (see section 3.3). There are many treatment technologies and methods available that could remove gasoline constituents from these aqueous wastestreams and contaminated waters including air stripping, carbon adsorption, biorestoration, reverse osmosis, steam stripping, ozonation, etc. Use of any one of these treatment technologies will depend upon the site-specific factors involved in an UST corrective action. For example, due to equipment and utility requirements, the use of steam stripping is not practicable for emergency field use unless the contaminated ground water can be transported form the site to a steam

stripping facility (Ref. No. 7). However, air stripping and carbon adsorption are the most cost-effective and widely used treatment technologies available. In fact, these two technologies are used in over 95 percent of ground-water cleanups and are applicable to most cases where gasoline has contaminated the groundwater (Ref. No. 6). Therefore, both air stripping and carbon adsorption are described below.

4.2.1 Air Stripping

Due to the high volatility of many of the soluble constituents of gasoline that remain in contaminated water and wastewater, air stripping is an efficient and cost effective wastewater treatment technology. Air stripping is a proven, effective means to remove volatile organic compounds (VOCs) from ground water. Less volatile compounds (e.g., compounds with low Henry's Law Constants) are not as easily removed via air stripping. There are several methods of air stripping including diffused aeration, tray aerators, spray basins, and packed towers. Regardless of the configuration used, all air stripping units provide contact between air and water to allow the volatile substances to diffuse from the liquid to the gaseous phase (Ref. No. 6).

Air stripping transfers the pollutants removed from the contaminated water into the air. In some cases, volatilized pollutants may require additional treatment (e.g., vapor phase carbon adsorption) to control pollutant discharges to air.

4.2.2 Carbon Adsorption

Activated carbon is widely used in the treatment of wastewater contaminated with gasoline (Ref. No. 6). This treatment may be used either separately or in combination with air stripping to address air quality concerns that may arise from volatilizing the constituents of gasoline. The process of absorption onto activated carbon requires the wastewater to come into contact with the carbon, which selectively adsorbs organic constituents by a surface attraction phenomenon (due to chemical or physical properties). The organic molecules are attracted to the internal pores of the carbon granules. Adsorption depends on the strength of the molecular attraction between

adsorbent and adsorbate, molecular weight, type and characteristic of adsorbent, electrokinetic charge, pH, and adsorbent surface area.

Most waste treatment applications use granular activated carbon (GAC) adsorption units. These units are generally used in a downflow fixed bed series mode where the waste stream flows through a series of packed bed reactors. Eventually the carbon surfaces become saturated with organic molecules, and reach the "breakthrough" point. The carbon must be replaced and disposed of or regenerated for treatment to continue.

Use of GAC may be limited by site-specific conditions and cost considerations. For example, treatment of ground water with naturally high iron and manganese levels can clog the carbon filters. In addition, requirements for disposing of the spent carbon may add significantly to treatment costs (see section 5.3.3).

5.0 TECHNOLOGY-BASED EFFLUENT LIMITATIONS

After a gasoline UST release has occurred, free product floats on the surface or ground water near the site where it is skimmed or recovered using a product recovery system. While many gasoline constituents remain as part of a free floating gasoline layer (as opposed to dissolving into the water), the more soluble fractions of the gasoline can dissolve into the surface or ground water. Dissolved gasoline constituents typically remain in oil/water separator effluent at a concentration of 15 ppm (Ref. No. 6).

The technology-based effluent limitations developed in the Model Permit were based on the use of an air stripping unit. Air stripping units have been demonstrated to be effective in removing the same or similar pollutants that are found in gasoline. In addition, air stripping units are widely used and readily available, and are generally less expensive than other available treatment technologies. It is important to note that EPA does not intend to specify the actual treatment that must be used at gasoline UST cleanup sites. Other treatment technologies, such as carbon adsorption and biorestoration, have also been used to treat contaminated water and wastewater resulting from gasoline UST cleanups. Air stripping units are only used as the technology-basis for justifying BPJ effluent limitations that are achievable with an existing treatment technology.

5.1 SELECTION OF POLLUTANTS TO BE REGULATED

As discussed in Section 3.0, the chemical properties of gasoline constituents determine the treatability of these constituents. Constituent treatability forms the primary basis for selecting pollutants for which effluent limitations should be developed.

5.1.1 Solubility of Gasoline Constituents

Gasoline constituent solubilities in water are shown in Table 5-1. Generally, the higher the solubility of a constituent in water, the more difficult it is to remove the constituent from water using an air stripper.

TABLE 5-1. SOLUBILITY OF CONSTITUENTS OF GASOLINE

Gasoline Constituent	Solubility in Water (mg/l)
Isobutane	48.9
n-Butane	61.4
Isopentane	47.8
n-Pentane	38.5
n-Octane	6.57×10^{-1}
Benzene	1,780.0
Toluene	515.0
o-Xylene	175.0
m-Xylene	162.0
p-Xylene	198.0
n-Hexane	9.5
2-Methylpentane	13.8
3-Methylpentane	12.8
2,2-Dimethylhexane	2.24
2,4-Dimethylhexane	1.28
Ethylbenzene	152.0
2,2,4-Trimethylhexane	0.87
2,2,5,5-Tetramethylhexane	0.33
1-Hexene	59.5
1,3,5-Trimethylbenzene	69.1
2,2-Dimethylpropane	33.2
2,2-Dimethylbutane	18.4
1,2,4-Trimethylbenzene	57.0
2,3-Dimethylbutane	22.5
2-Methylhexane	2.54
3-Methylhexane	2.64
2,3-Dimethylpentane	5.25
2,4-Dimethylpentane	4.06
2,2,4-Trimethylpentane	1.14
2,3,4-Trimethylpentane	1.36
2,3,3-Trimethylpentane	2.59
2,2,3-Trimethylpentane	2.59
2-Methyloctane	1.42
3-Methyloctane	1.42
4-Methyloctane	0.01
Cyclopentane	160.0
Methylcyclopentane	61.1
Methylcyclohexane	14.0
Cyclohexane	55.6
n-Heptane	2.96

TABLE 5-1. SOLUBILITY OF CONSTITUENTS OF GASOLINE (Continued)

Gasoline Constituent	Solubility in Water (mg/l)
1,cis,3-Dimethyl-cyclopentane	7.07
1,trans,3-Dimethyl-cyclopentane	7.07
Propylene	2006.0
trans Butene-2	430.0
cis Butene-2	430.0
1-Pentene	148.0
trans Pentene-2	203.0
cis Pentene-2	203.0
2-Methylpentene-1	78.0
2-Methylpentene-2	84.2
1-Methyl, 3-Ethylbenzene	40.0
1-Methyl, 4-Ethylbenzene	40.0
1,2,4-Trimethylbenzene	57.0
Tetraethyllead	0.80
Naphthalene	3,400.0

Source: Reference No. 8

The three compounds of gasoline with the highest solubilities are naphthalene (3,400 mg/l), propylene (2,006 mg/l) and benzene (1,780 mg/l). Propylene, however, accounts for only 0.03 percent of gasoline (Ref. No. 5) and would not be likely to dissolve into ground water in significant amounts. Naphthalene is also a minor constituent of gasoline. Therefore, effluent limitations for naphthalene and propylene were not included in this Model Permit. Benzene was selected as the main pollutant of concern since it is a more significant constituent of gasoline than naphthalene or propylene.

5.1.2 Henry's Law Constants of Gasoline Constituents

The Henry's Law Constant for each of the constituents of gasoline is shown in Table 5-2 (Ref. No. 8). As discussed in Section 4.2, the Henry's Law Constant describes the ease with which specific compounds can be removed by air stripping. Compounds with lower Henry's Law Constants are more difficult to remove by air stripping than compounds with higher Henry's Law Constants. Where multiple volatile organic compounds are present, the compound with the lowest Henry's Law Constant will generally be the limiting compound (Ref. No. 6). As shown in Table 5-2, benzene, ethylbenzene, toluene, the xylenes, 1,3,5-trimethylbenzene, and naphthalene have the lowest Henry's Law Constants. While these compounds are the least strippable constituents of gasoline, all of the gasoline constituents are within the range where air stripping is considered to be effective (Ref. No. 6).

5.1.3 Indicator Pollutants Recommended for Limitation

Based on the chemical properties of gasoline constituents (i.e., solubility and Henry's Law Constants), there are several primary pollutants of concern for discharges from UST cleanups:

- Benzene
- Propylene
- Ethylbenzene
- Xylene

TABLE 5-2. HENRY'S LAW CONSTANTS FOR CONSTITUENTS OF GASOLINE

Gasoline Constituent	Henry's Law Constant (20°C) ($atm \cdot m^3/mole$)
Isobutane	0.9 to 1.0(1)
n-Butane	0.859
Isopentane	1.31
n-Pentane	1.26
n-Octane	3.20
Benzene	5.47×10^{-3}
Toluene	6.65×10^{-3}
o-Xylene	5.20×10^{-3}
m-Xylene	5.27×10^{-3}
p-Xylene	5.27×10^{-3}
n-Hexane	1.86
2-Methylpentane	1.53
3-Methylpentane	1.07
2,2-Dimethylhexane	2.28
2,4-Dimethylhexane	3.55
Ethylbenzene	8.74×10^{-3}
2,2,4-Trimethylhexane	3.03
2,2,5,5-Tetramethylhexane	5.94
1-Hexene	0.346
1,3,5-Trimethylbenzene	5.70×10^{-3}
2,2-Dimethylpropane	1.25
2,2-Dimethylbutane	1.27
1,2,4-Trimethylbenzene	3.02×10^{-2}
2,3-Dimethylbutane	0.993
2-Methylhexane	1.73
3-Methylhexane	1.42
2,3-Dimethylpentane	1.81
2,4-Dimethylpentane	1.61
2,2,4-Trimethylpentane	2.34
2,3,4-Trimethylpentane	1.24
2,3,3-Trimethylpentane	1.28
2,2,3-Trimethylpentane	1.52
2-Methyloctane	2.56
3-Methyloctane	2.48
4-Methyloctane	2.64
Cyclopentane	0.144
Methylcyclopentane	0.250
Methylcyclohexane	0.374
Cyclohexane	0.194
n-Heptane	2.04

TABLE 5-2. HENRY'S LAW CONSTANTS FOR CONSTITUENTS OF GASOLINE (Continued)

Gasoline Constituent	Henry's Law Constant (20°C) ($atm \cdot m^3/mole$)
1,cis,3-Dimethyl-cyclopentane	0.468
1,trans,3-Dimethyl-cyclopentane	0.47 to 0.50(2)
Propylene	0.230
trans Butene-2	0.193
cis Butene-2	0.172
1-Pentene	0.294
trans Pentene-2	0.229
cis Pentene-2	0.224
2-Methylpentene-1	0.271
2-Methylpentene-2	0.211
1-Methyl, 3-Ethylbenzene	2.63×10^{-2}
1-Methyl, 4-Ethylbenzene	0.027 to .030(3)
Tetraethyllead	3×10^{-2} (4)
Naphthalene	5.47×10^{-4}

(1)Although no Henry's Law Constant was found for this compound, the number shown was estimated based on the values for n-Butane and Isopentane.

(2)Although no Henry's Law Constant was found for this compound, the number shown was estimated based on the value for 1,cis,3-Dimethyl-cyclopentane.

(3)Although no Henry's Law Constant was found for this compound, the number shown was estimated based on the value for 1-Methyl,3-Ethylbenzene.

(4)Reference No. 6

Source: Reference No. 8

- Toluene
- 1,3,5 - Trimethylbenzene
- Naphthalene

The Model Permit includes effluent limitations for the aggregate parameter of benzene, ethylbenzene, toluene, and the xylenes (BETX). In addition, a limitation for benzene has been developed for use as an indicator parameter for the removal of propylene, 1,3,5-trimethylbenzene, and naphthalene. As an indicator, it is assumed that if benzene is removed, then the other compounds with similar treatability characteristics will also be removed. The primary advantage of using an indicator parameter is the reduction of monitoring required to ensure compliance. In addition, an indicator can be used for constituents for which no EPA approved analytical methods are available for monitoring.

A traditional approach to limiting effluent contaminated with gasoline or other fuel oils has been to limit BETX. This approach stems from petroleum industry practices for determining the quality of fuels by measuring BETX. Monitoring and limitation of BETX in discharges from gasoline UST corrective actions is prudent for several reasons. First, the composition of gasoline is highly variable and for some gasoline products any one of the four BETX constituents can be the predominant constituent. Second, EPA has promulgated or proposed water quality criteria for benzene, ethylbenzene, toluene, and the xylenes. Except for naphthalene, criteria have not been proposed for the other constituents of gasoline. Finally, as shown in Table 5-2, benzene, ethylbenzene, toluene, and the xylenes are gasoline constituents with low Henry's Law Constants. Therefore, limitation of the aggregate parameter, BETX, is provided in this Model Permit. On a site-specific basis, however, it may be more appropriate to individually limit ethylbenzene, toluene, and xylenes in addition to benzene.

In addition to BETX, the Henry's Law Constants for 1,3,5-trimethylbenzene and naphthalene are relatively low, as compared to other constituents contained in gasoline. The Merck Index (Ref. No. 19) states that 1,3,5-trimethylbenzene is "practically insoluble in water..." but may be

soluble in benzene. Furthermore, naphthalene is insoluble in water, but soluble in both benzene and toluene. Therefore, benzene is considered an appropriate indicator parameter for 1,3,5-trimethylbenzene and naphthalene. That is, if benzene is sufficiently treated or removed, then 1,3,5-trimethylbenzene and naphthalene should also be removed. In addition, naphthalene is considered to be a minor constituent in gasoline, accounting for less than 1 percent of the total gasoline product (Refs. No. 3 and 5).

The removal of benzene is also an indicator of the removal of propylene. As discussed in Section 5.1.1, propylene is slightly more soluble in water than benzene. However, propylene has a much higher Henry's Law Constant. Consequently, propylene is more amenable to treatment, by air stripping, than benzene. Therefore, removal of benzene is assumed to be indicative of the removal of propylene. As such, benzene is limited in this Model Permit.

5.2 CALCULATION OF TECHNOLOGY-BASED EFFLUENT LIMITATIONS

A recent EPA publication (Ref. No. 6) on UST cleanup technologies estimates that 15 ppm (or 15 mg/l) of dissolved product remains in ground water following free product recovery, under optimal operating conditions. Case studies have documented dissolved hydrocarbon levels of 2 to 10 mg/l after free product recovery was completed (Refs. No. 6, 18, and 20). These values have been used to estimate that the potential influent levels of total BETX into an air stripper (or other wastewater treatment system) varies from 2 to 15 mg/l. Vendors report that the potential removal efficiency of BETX using a commercially available air stripper unit is 99.5 percent. If air stripping is applied to influent BETX levels of 15 mg/l, the stripped effluent would contain 0.075 mg/l (or 75 ug/l) total BETX. One case study reported air stripper performance capable of reducing hydrocarbon influent levels of 4 to 6 mg/l to less than 100 ug/l after initial startup and shakedown testing was completed (Ref. No. 18). However, product recovery and air stripping technologies may not always occur under optimal conditions. Therefore, the total BETX discharge limit is 0.1 mg/l (or 100 ug/l). This is in keeping with total BETX effluent limitations currently required by EPA Region 1 (Ref. No. 20) and the State of Louisiana (Ref. No. 22).

Influent concentrations of benzene, which have rarely exceeded 1 mg/l in the State of Maryland, would be stripped to 0.005 mg/l (or 5 ug/l) at 99.5 percent efficiency (Ref. No. 21). Therefore, the limit of 5 ug/l was chosen for benzene. Further, EPA Region 1 (Ref. No. 20) and the States of Maryland (Ref. No. 21) and Nebraska (Ref. No. 23) have all indicated that dischargers in their jurisdictions have been able to meet the 5 ug/l limit for benzene.

5.2.1 Optional Effluent Limitations

Permit limitations based on BPJ must be achievable with existing technology at a reasonable cost. Based on data contained in the Regulatory Impact Analysis of Technical Standards for Underground Storage Tanks (Ref. No. 1), over 75 percent of retail motor fuel outlets (which accounts for the majority of gasoline USTs) in the U.S. are either owned or operated by businesses meeting the Small Business Administrations's definition for small businesses. Almost one-half of these own a single outlet with assets totaling over $400,000. Therefore, many of the smaller firms may be severely affected by the cost of compliance with the effluent limitations established in Section 5.2. Therefore, optional technology-based effluent limitations have been developed for discharges from gasoline UST cleanups where these costs will severely hinder a firm's ability to perform the remedial cleanup activities.

The same treatment technologies (i.e., free product recovery followed by air stripping) were used to establish the optional effluent limitations. However, the optional limitations are based on a 95 percent removal efficiency for both benzene and BETX. Using the same influent concentrations described in Section 5.2, the resultant effluent limitations will be 50 ug/l for benzene and 750 ug/l for BETX. This relaxed removal efficiency for benzene and BETX reduces the capital and operating costs for air stripping. This cost savings could be realized through a reduction in the tower height and packing depth, or a reduction in power requirements because a lower air-water ratio can be used, or both. For example, assuming the benzene influent concentration and all other operating conditions (e.g., loading rate, air-water ratio) remain the same, the depth of packing could be reduced by about 7 feet if the desired removal efficiency requirements were reduced from 99.5 percent removal to 95 percent removal.

5.2.2 Additional Effluent Limitations

The Daily Discharge limits set forth in Part I of the Model Permit restrict benzene and total BETX. In addition, pH is limited to the widely-accepted range of 6-9 standard units established for most industrial point source categories.

Some NPDES permit writers may be concerned about the potential presence of lead in gasoline at UST sites. In gasoline, however, lead is present as tetraethyllead (TEL) a component of an organic compound and thus not amenable to traditional metals removal technologies such as pH adjustment, flocculation and sedimentation. Based on the Henry's Law Constant for TEL, it would likely be removed by air stripping. TEL is also amenable to treatment by GAC, as discussed earlier in Section 4.2 (Ref. No. 6). Permit writers may consider applying monitoring requirements for lead, if lead is expected to be present in gasoline contaminated ground water in concentrations or quantities of concern.

5.3 TREATMENT COSTS

The following subsections briefly describes the cost of implementing product recovery, air stripping and carbon adsorption technologies.

5.3.1 Costs of Selected Treatment Technologies

According to Cleanup of Releases from Petroleum USTs: Selected Technologies (Ref. No. 6) the costs for free product recovery equipment will vary according to the methods chosen for remediation (e.g., surface vs. subsurface). Generally, the purchase costs will range from $6,000 to $10,000 for product recovery equipment.

Numerous literature sources report capital and operating and maintenance (O&M) costs for air stripping treatment systems. However, the literature reports costs for permanent structures rather than more flexible equipment. Because flexible equipment is more appropriate for use over the relatively short duration of many UST corrective actions, cost data has been collected for this Model Permit from vendors for pre-engineered, sled-mounted air stripping units (Ref. No. 10). Table 5-3 presents a summary of these costs, including total purchase costs and estimated annual operation and maintenance

TABLE 5-3. PURCHASE AND RENTAL COSTS FOR PRE-ENGINEERED PACKED COLUMN AIR STRIPPER UNITS

Air Stripper Design Flow (gallons/minute)	Tower Height/Diameter (feet)	Packing Height (feet)	Total Purchase Cost ($)[1]	Monthly Rental Cost ($)[2]	Estimated Annual Operations and Maintenance Costs ($)[3]
3-20	18.5/1	13	6,000	1,160	1,200
3-20	28.5/1	21	8,595	NA	1,700
30	16/1	11	5,150	1,400	1,030
30	19/1	14	5,400	1,400	1,080
15-60	12.5/2	8	8,450	1,699	1,690
15-60	22.5/2	16	11,700	NA	2,340
150	11/3	5.5	7,900	1,800	1,580
150	19/3	13.5	12,900	1,800	2,580

NA - Not Available

[1] Does not include delivery, installation, engineering, and contingency costs. These costs are estimated to be about 30-50 percent of purchase cost.

[2] Rental costs will vary according to the length of rental time. At least a 6 month rental period was assumed.

[3] Operational and maintenance costs are highly variable; assumed to be 20 percent of total purchase cost based on vendor estimates.

costs. In addition, if the corrective action is anticipated to be a relatively short term cleanup, the owner/operator or cleanup contractor may consider renting an air stripping treatment system. Therefore Table 5-3 also presents monthly rental costs.

Effluent limitations for pH are established as 6.0 (minimum) and 9.0 (maximum) standard units based on available pH adjustment technologies. These technologies include acid and/or base addition, the costs of which are incidental to the overall costs of treating water and wastewater prior to discharge.

5.3.2 Air Emissions Control

Emissions of volatile organics from wastewater treatment systems may impact local air quality. Carbon adsorption can be used to treat vapors containing volatile organics that are emitted from air strippers in those areas of the Nation where such controls are necessary (Ref. No. 7). Based on the procedures outlined in Underground Storage Tank Corrective Action Technologies (Ref. No. 7), costs for control of air emissions are estimated below for three daily discharge flows:

	Discharge Flow		
	<50,000 gpd	150,000 gpd	750,000 gpd
Airflow rate, cfm	500	5,000	8,000
Capital Cost	$40,000	$75,000	$100,000
Annual Operating and Maintenance Cost	$6,000	$60,000	$100,000

5.3.3 Costs of Alternative Treatment Technologies

Free product recovery followed by air stripping is the treatment technology used as a basis for the development of effluent limitations in the *Model Permit*. Carbon adsorption and biological treatment technologies are also reported, in the literature, as examples of appropriate treatment

technologies for discharges resulting from gasoline underground storage tank cleanups.

The use of GAC may substantially increase treatment costs. Capital costs may be twice to four times those capital costs generally needed for use of air stripping treatment units. Operation and maintenance (O&M) costs incurred when using GAC may increase to up to eight times the O&M cost of air stripping. This eight-fold increase in O&M costs is due to the need to renew the GAC carbon and dispose of spent carbon. These relative costs are shown in greater detail in Table 5-4.

TABLE 5-4. RELATIVE COST FACTORS FOR TREATMENT OF GROUND WATER

Technique	Relative Cost Factors[1] Capital	O&M[2]	O&M (RCRA)[3]
Air stripping	1*	1*	1
Air stripping & vapor-phase GAC	2.0	3.0	4.0
Air stripping & liquid-phase GAC	3.0	3.0	4.5
Air stripping & liquid-phase & vapor-phase GAC	4.0	5.0	7.5
Liquid GAC only	1.5	4.0	8.0

*Assigned

[1]Cost factors indicated are relative to air stripping.

[2]O&M costs for GAC include costs for carbon replacement/regeneration.

[3]Indicates cost if spent carbon must be treated as a hazardous waste under RCRA.

Source: Reference No. 6

6.0 *BEST MANAGEMENT PRACTICES*

The Model Permit requires the permittee to develop a Best Management Practices (BMP) plan to minimize potential for release of pollutants from corrective action activities. BMPs are designed to minimize contamination of surface waters as a result of cleanup operations. In addition, BMPs such as diversion and collection of runoff, prevent offsite transport of surface waters that may have become contaminated. The BMPs set forth in Part III, Section A.1, of the Model Permit are based on recommendations provided in the OUST document entitled Underground Storage Tank Corrective Action Technologies (Ref. No. 7).

7.0 MONITORING

Monitoring is the primary means of ensuring that the permit limitations are met. It is also the basis for enforcement actions against permittees who are in violation of their permit limits. State and EPA Regional offices usually recommend monitoring frequencies based on the design capacity of the treatment facility (Ref. No. 12).

The permittee may request reduced frequency or elimination of monitoring requirements after 3 months of the effective date of the permit. Part IV, Section A.4 of the Model Permit allows the permittee to collect data sufficient to demonstrate that the treatment system is performing well. After a review of discharge data collected over a 3 month period, the Permitting Authority may reduce the frequency of, or eliminate monitoring requirements.

7.1 FLOW MONITORING

Weekly flow monitoring is recommended for discharges less than 100,000 gallons per day (Ref. No. 12). Since discharges from gasoline UST cleanups are expected to be approximately 30,000 gallons per day (see Section 3.1), the Model Permit requires weekly flow monitoring.

7.2 CHEMICAL-SPECIFIC MONITORING

Chemical-specific monitoring is recommended on a quarterly basis for flows less than 100,000 gallons per day (Ref. No. 12). However, high concentrations of hydrocarbons are expected to be present in water and wastewater resulting from UST site corrective actions. Therefore weekly chemical-specific monitoring is recommended.

Chemical-specific monitoring is required for benzene, ethylbenzene, toluene, and the xylenes. Analytical methods 602, 624, and 1624 are approved under authority of the CWA for analyses of benzene, ethylbenzene, and toluene. EPA Method 8240 is an approved RCRA method for the analysis of ortho-, meta-, and para-xylene which are reported as "total xylenes" or "xylene." EPA Method 8240 should be used to test "xylenes" unless State or EPA Regional policies specify alternative analytical methods. EPA Method 8240 can also be

analyze or benzene, ethylbenzene, and toluene. Depending upon EPA Regional or State policy, the permit writer may opt to substitute Method 8240, when using the Model Permit for the CWA methods generally required under the NPDES program. Hence the permittee would not be required to perform two tests to report the required data for benzene, ethylbenzene, toluene, and total xylenes. Method 8240 is described in Test Methods for Evaluating Solid Waste Volume IA: Laboratory Manual Physical/Chemical Methods (Ref. No. 15).

Grab sample collection is required based on procedures recommended in the EPA Handbook for Sampling and Sample Preservation of Water and Wastewater (Ref. No. 13).

7.3 BIOMONITORING

In the absence of information on the toxicity of a specific discharge the EPA recommends biological monitoring requirements (Ref. No. 11). There are three principal reasons for generating biomonitoring data:

1) to ascertain whether a permittee exceeds the narrative no toxics water quality standard and thus needs water quality-based permit limits for toxicants

2) to identify a sensitive test species for toxicity monitoring purposes

3) to generate data on the variability of effluent toxicity.

Permits can be and are routinely issued with data generation requirements described in Part III, Special Conditions, of the permit to augment the limits imposed on other parameters. These testing procedures require permittees to generate data on their effluent so that the permit writer can determine whether additional permit limits or controls will be necessary to meet other statutory requirements, such as water quality standards.

This data generation mechanism should result in subsequent modification of the NPDES permit if the data generated show unacceptable toxicity. Should toxicity be demonstrated, the permit writer should consider developing site-specific water quality-based limits (see Part IV - Decision Tool for Developing Water Quality-Based Limitations).

The biomonitoring requirements set forth in Part III(A)(3) of the Model Permit were adapted from EPA guidance on developing water-quality based permits (Ref. No. 11). Specifically, chronic aquatic life toxicity testing is required to characterize effluent toxicity. As an alternative, the permit writer could use the whole-effluent toxicity screening procedure that is recommended in the EPA Technical Support Document for Water Quality-Based Toxics Control (Ref. No. 24). This approach, provided in Table 7-1, allows for decisions to be made regarding toxic impact early in the testing process. *Effluents* with low potential for instream toxicity can be eliminated as a priority or given a low priority for further analysis.

States may also have their own toxicity testing requirements that can be substituted as appropriate. One such approach has been successfully used in the State of North Carolina and has been included for consideration as an alternative for gasoline UST cleanups. The State of North Carolina developed a standard approach to whole-effluent toxicity testing that is based on the instream waste concentration (IWC) resulting from a discharge. The IWC, which is expressed as a percentage, is calculated by dividing the effluent flow or discharge flow by the sum of the receiving water low flow (defined as 7Q10 low flow) plus the effluent flow. Depending upon the IWC, one of three types of toxicity tests are generally required (Ref. No. 16):

- If the IWC exceeds 1 percent, then the permittee is required to perform the Ceriodaphnia Pass/Fail chronic toxicity test. This static renewal test is conducted at the IWC and runs for 7 days. Passing the Pass/Fail chronic test means there is no observable inhibition of reproduction or significant mortality at the IWC.

- If the IWC is between 0.25 and 1 percent, then the permittee is required to perform a static, nonrenewal, 48 hour acute toxicity test. This test is conducted over a range of effluent concentrations using either Ceriodaphnia dubia or Daphnia pulex. To pass, the 48 hour concentration of effluent lethal to 50 percent of the organisms (LC50) must be greater than or equal to the IWC (expressed as a concentration).

- If the IWC is less than 0.25 percent, then a short term Pass/Fail acute toxicity test must be performed by the permittee. This static nonrenewal test uses either the fathead minnow (Pimephales promelas), Daphnia pulex, or Ceriodaphnia dubia, and runs for 24 hours; typically at 90 percent of the effluent concentration. This test is failed if it is determined that mortality in the effluent treatment is significantly different than the control population (measured using the Student's test and a 99 percent confidence interval).

TABLE 7-1. RECOMMENDATIONS FOR WHOLE-EFFLUENT TOXICITY SCREENING

- Individual Dischargers - Compare receiving water flow rate (in terms of whatever water quality-based design low flow is specified by the State) to average effluent flow rate.

  - If dilution exceeds 10,000 to 1, and there is a reasonably rapid mix of the effluent outside of the rapid initial dilution area in the receiving water, then the effluent should be given a low priority for any further attention.

  - If dilution is less than 10,000 to 1, or mixing is not rapid and toxicity within a plume is of concern, then toxicity screening tests should be performed.

  - If dilution is between 1,000 to 1 and 10,000 to 1, or a poorly mixed effluent plume in a large receiving water (>10,000 to 1 dilution) is of concern, conduct acute toxicity screens as follows:

    1. Collect four to six effluent samples on one day (grab or short term composite), quarterly. Conduct screening tests (24-hour) in 100% effluent, using a daphnid and a fish, on each sample.

    2. If 50% mortality or greater is observed in three samples, the potential for toxicity is assumed and further testing is required.

    3. If 50% mortality or greater is observed for two or fewer samples, the discharge should be given a low priority for further analysis.

    If dilution is less than 1,000 to 1, conduct chronic toxicity screens (short term chronic tests are recommended) as follows:

    1. Collect four to six effluent samples (24-hour composite) on four to six successive days. Conduct static screening tests (seven-day) in 100% effluent, using a cladoceran and fish, on each sample.

    2. If a 50% or greater effect is observed between controls and test organisms, the potential for toxicity is assumed and further testing is required.

    3. If less than 50% effect is observed, the discharge should be given a low priority for further analysis

  Acute tests can be used in these dilution situations, but it should be noted that there will be cases where no acute toxicity is measured but the effluent is chronically toxic.

TABLE 7-1. RECOMMENDATIONS FOR WHOLE-EFFLUENT TOXICITY SCREENING (Continued)

- Where dilution is less than 100 to 1, the use of a toxicity-testing-based screening procedure is not recommended. Screening has already been accomplished through dilution analysis. Even in discharge situations where no toxicity is observed in screening tests, the narrow margin between effect concentration and available dilution suggests more complete effluent toxicity characterization is mandatory. If uncertainty factors are applied in a 100 to 1 discharge situation, dilution alone would mandate further testing. Where very limited dilution is available, it is recommended that toxicity-testing screening be skipped and the discharger be required to begin DEFINITIVE DATA GENERATION procedures (see Ref. No 24).

- Ambient Toxicity Analysis - Use ambient toxicity analysis to identify areas of instream toxicity associated with specific dischargers. This analysis may be most useful when conducted by the regulatory agency, but dischargers may be required to conduct the tests in conjunction with effluent tests. A systematic plan for identifying problem areas is recommended. This procedure is useful for multiple source discharge situations. The analysis should be conducted concurrently with discharge-specific screening and must be done at low flow conditions. A procedure is described in Appendix C (contained in Ref. No. 24).

Source: Reference No. 24.

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PART IV

DECISION TOOL FOR DEVELOPING WATER QUALITY-BASED EFFLUENT LIMITATIONS

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1.0 DECISION TOOL FOR DEVELOPING WATER QUALITY-BASED EFFLUENT LIMITATIONS

This document defines a procedure for deciding whether water quality-based effluent limitations should be required in a NPDES permit for discharges resulting from the cleanup of gasoline from leaking underground storage tank (UST) sites.

The development of one-hour maximum and four-day average water quality-based effluent limitations according to guidance set forth in the EPA Technical Support Document for Water Quality-Based Toxics Control (September 1985), or TSD, requires site-specific information. Certain assumptions have been made to simplify the application of this Decision Tool to a wide variety of site-specific conditions and circumstances in a manner consistent with the way the majority of the States now develop water quality-based effluent limitations. The site-specific information required for this simplified approach is limited to effluent flow, effluent concentration, and receiving water flow. Where the simplifying assumptions are not applicable, the procedure developed here for use as a Decision Tool should be modified accordingly. The simplifying assumptions and the limits they place on the application of the Decision Tool are summarized following the discussion of the methodology and its application to leaking UST cleanups.

1.1 BACKGROUND

Both the Clean Water Act and promulgated Federal regulations require that all NPDES permits include limitations to achieve all applicable State water quality standards. Further, NPDES permits must include limitations that reflect any total maximum daily loads or wasteload allocations set by EPA or States to achieve applicable water quality standards.

EPA's policy and legal basis regarding the use of State water quality standards to set NPDES permit limits on toxicants is provided by the Office of Water's Policy for the Development of Water Quality-Based Permit Limits for

Toxic Pollutants, 49 FR 9016, March 9, 1984. In part, this policy states that:

> Where violations of water quality standards are identified or projected, the State will be expected to develop water quality-based effluent limits for inclusion in any issued permit. Where necessary, EPA will develop these limits in consultation with the State. Where there is a significant likelihood of toxic effects to biota in the receiving water, EPA and the States may impose permit limits on effluent toxicity and may require an NPDES permittee to conduct a toxicity reduction evaluation (TRE). Where toxic effects are present but there is a significant likelihood that compliance with technology-based requirements will sufficiently mitigate the effects, EPA and the States may require chemical and toxicity testing after installation of treatment and may reopen the permit to incorporate additional limitations if needed to meet water quality standards. [Toxicity data, which are considered "new information" in accordance with 40 CFR 122.62(a)(2), could constitute cause for permit modification where necessary].

Two forms of State water quality standards for toxicants can be used to set NPDES permit limits: numerical standards and narrative standards. Numerical standards for some individual toxicants are contained in virtually all State water quality standards. They are usually expressed as an instream "not-to-be-exceeded" concentration of a toxicant (e.g., 0.019 mg/l for total residual chlorine).

All States also have narrative standards for pollutants. The most common form of the narrative standard contains language establishing that the waters are free from substances in amounts that will:

1. Settle to form objectionable deposits;
2. Float as debris, scum, oil, or other matter to form nuisances;
3. Produce objectionable color, odor, taste, or turbidity;
4. Injure, be toxic to, or produce adverse physiological responses in humans, animals, or plants; and
5. Produce undesirable or nuisance aquatic life.

States must also include a procedure for translating this "free from" language into numerical "water quality criteria," from which can be derived water quality-based effluent limitations. In addition, a State's water quality standards rule is not considered administratively complete unless it contains an antidegradation provision to protect existing water quality, where it is better than the minimum required to support at least fishing and swimming. Degradation only can be allowed when certain tests of social or economic benefit are met. Those tests are set forth in Section 302(b) of the Clean Water Act and the regulations developed to implement that section.

The standard under (4) above pertains to toxic effects and is an important element in any effective toxics control strategy. This standard should be used by States and EPA Regions to limit both individual toxicants (where a toxic effect can be traced to a specific chemical for which no standards or criteria exist) and whole effluent toxicity (where it is not obvious which chemicals are causing toxicity or where the limitation of generic effluent toxicity is more appropriate to that particular discharge situation).

Clean Water Act Section 303(d)(1)(C) mandates that water-quality based effluent limits more stringent than those required by Best Available Technology (BAT) regulations be imposed on a site-specific basis to assure the protection of receiving water quality with an ample margin of safety. Such limits, developed by the States, are to be based on the capacity of receiving waters to assimilate a particular toxic substance entering the system from all well-characterized sources. The assimilative capacity of the receiving water for a particular pollutant is defined in terms of the rate at which that pollutant is degraded at a concentration equal to the water quality standard or the existing concentration, whichever is lower under design low flow conditions. That rate in pounds or kilograms per day is specified as the Total Maximum Daily Load (TMDL).

The maximum load attributable to nonpoint sources (load allocation) is then subtracted from the TMDL, and the difference is apportioned among point sources according to an allocation rule. This is the point source waste load allocation (WLA) for the particular substance and receiving water. TMDL/WLA-

based toxic substance effluent limits are then incorporated into all affected point source discharge permits.

NPDES permits must be developed and issued in accordance with current permit issuance policies, including current Agency operating guidance, permit issuance strategies, and State-specific agreements and workplans. Applicable water quality standards and site-specific water quality data, as well as effluent composition data, should be assessed during the permit issuance process to determine whether water quality-based permit requirements for toxics are necessary for a particular discharge.

This is particularly important for waterbodies that have been identified as not achieving water quality standards pursuant to Section 304(l) of the Clean Water Act. For each stream segment or waterbody identified, Section 304(l) requires that individual control strategies be developed to reduce the discharge of toxic pollutants from point source discharges to the stream segment or waterbody. In addition, NPDES permits incorporating all necessary and appropriate elements should be developed for all point sources identified.

However, the requirement to develop water quality-based effluent limitations as necessary to achieve applicable water quality standards in the receiving water is not limited to 304(l) waterbodies. The requirements of Section 303(d)(1)(C) of the Clean Water Act apply to all U.S. waterbodies whose water quality is protected under the Clean Water Act.

1.2 METHODOLOGY

The technology-based effluent limitations set forth in the Model Permit are based on removal efficiencies of product recovery and air stripping treatment systems. While use of such technologies may significantly reduce the contaminant levels of the pollutants of concern, technology-based effluent limitations may not adequately address water quality concerns of affected receiving waters.

To guide NPDES permit writers in implementing the requirements of CWA Section 303(d)(1)(C), EPA's Office of Water published the TSD. This guidance

describes approved approaches for measuring or calculating the dimensions of and dilution afforded by zones of initial dilution (ZIDs) and mixing zones. This guidance also provides procedures for the calculation of chemical-specific and whole effluent toxicity-based 1-hour maximum or 4-day average effluent limitations, taking into account dilution within the ZID or mixing zone, the applicable acute or chronic water quality criterion, effluent composition variability, the receiving water flow, and the statistical confidence level equivalent to an acceptable frequency of recurrence of effluent limitation exceedance.

To quantify the relationship between the chemical-specific pollutant loading rate from a single discharge, or from multiple discharges, and the downstream receiving water quality at any point outside of the mixing zone, the permit writer has several options. For toxic pollutant discharges to rivers and run-of-river reservoirs, a simple mass balance equation can be used. This equation is based on the assumption that the flow and pollutant concentration of the effluent are fixed at their average values [i.e., constant average loading rate); the flow of the receiving water is treated as a constant (generally the once-in-ten-year, 7-day (7Q10) drought flow is applied for the chronic scenario and the once-in-three-year, 1-day low flow (1Q3) is applied for the acute scenario); and the rates of pollutant production, destruction, and storage within the system are assumed to be zero.

The simple mass balance equation as it applies to a single discharge and assuming complete mixing is as follows:

$$C = \frac{C_s Q_s + C_e Q_e}{Q_s + Q_e}$$

where: C = downstream concentration of pollutant

C_s = upstream concentration of pollutant

Q_s = upstream design flow of receiving water

C_e = effluent pollutant-specific concentration limit

Q_e = effluent design flow.

In situations where only a fraction of the receiving water flow is allocated for mixing to ensure that the mixing zone does not inhibit the free passage of fish, then a factor "f" is used. This factor accounts for the fraction of the upstream receiving water flow that constitutes the allocated mixing zone. To ensure that applicable water quality criteria are achieved downstream of the effluent discharge, C is defined such that:

$$C = f \cdot WQC$$

where: WQC = the pollutant-specific water quality criteria to be achieved in the receiving water

Rearranging and solving for the effluent concentration:

$$C_e = \frac{[f \cdot WQC \cdot (Q_e + Q_s)] - C_s \cdot Q_s}{Q_e}$$

According to the TSD, the final effluent limitations should be derived taking into account effluent variability. The more restrictive of the aquatic acute, aquatic chronic or long-term human health-based 1-hour maximum and 4-day average limitations are then used as the basis for the final effluent limitations. If the permit writer chooses not to address effluent variability, then acute aquatic and chronic aquatic or human health-based effluent limitations should be treated as "not to exceed" levels. As most States use the "not to exceed" approach, that approach will be followed here.

The above mass dilution equation is used to calculate 4-day average "not to exceed" effluent limitations from the more protective of chronic aquatic criteria or human health criteria, using the appropriate flow of the receiving water and "f" is taken to be the fraction of the receiving water flow with which the effluent mixes in the mixing zone.

The mass dilution equation can also be used to calculate 1-day maximum effluent limitations. For this purpose, the upstream concentration is usually assumed to be zero, the WQC becomes the acute aquatic criterion, and "f" is taken to be the fraction of the flow of the receiving water with which the

effluent mixes in the ZID. In the absence of a ZID and mixing zone, however, water quality criteria must be met at the end-of-pipe.

Where specific numerical criteria for a chemical or biological parameters (such as toxicity) are absent or where exposure to multiple pollutants is occurring via a complex effluent, compliance with the standards must be based on the general narrative criteria and on protection of the designated use of the receiving water. This standard is implemented via whole effluent toxicity testing using short-term tests (e.g., 48 to 96 hour) to protect from acute lethal effects at the edge of the ZID and long-term tests to protect from chronic sub-lethal effects at the edge of the mixing zone. In both circumstances the testing includes exposure to effluent diluted with upstream receiving water to the extent dictated by mixing within the ZID or within the mixing zone under drought flow conditions.

1.3 DISCHARGES FROM GASOLINE UNDERGROUND STORAGE TANK CLEANUPS

For the pollutants known to be present in gasoline UST discharges (see Part III - Fact Sheet), Federal water quality criteria have been developed only for benzene, ethylbenzene, toluene and naphthalene. The water criteria for each of these pollutants are shown in Table 1-1, as reported in Quality Criteria for Water 1986 (EPA 440/5-86-001). The air stripping effluent concentrations are reported in the Fact Sheet.

A comparison of water quality criteria to achievable undiluted air stripping effluent concentrations (i.e., the technology-based effluent limitations included in the Model Permit) reveals that only the water and fish ingestion criteria for protection of human health would be exceeded for benzene. A relationship for the downstream concentration of benzene is established below. First, the assumptions explained in the legend below are made, and the corresponding values are substituted in the mass balance equation.

C_s = assumed zero

WQC = human health criterion for benzene (water and fish ingestion) assuming an acceptable increased lifetime cancer risk at 10^{-6}

TABLE 1-1. WATER QUALITY CRITERIA FOR POLLUTANTS PRESENT IN DISCHARGES FROM GASOLINE UST CLEANUPS
(Concentrations in mg/l)

	Priority Pollutant	Carcinogen	Aquatic Life Protection			Human Health Protection	
			Fresh Acute Criteria	Marine Acute Criteria	Marine Chronic Criteria	Water and Fish Ingestion	Fish Consumption Only
Benzene	Yes	Yes	5.30*	5.10*	0.70*	0.00066**	0.040**
Ethylbenzene	Yes	No	32*	0.430*		1.4	3.28
Toluene	Yes	No	17.5*	6.30*	5.0*	14.3	424
Xylene	No	No					
Naphthalene	Yes	No	2.3*	.620*	2.35*		

* Means the data were insufficient to develop criteria; the value presented is the lowest observed effect level (L.O.E.L.).
** Human health criteria for carcinogens are generally reported for three risk levels; the value presented is for the 10^{-6} risk level.

C_e = technology-based effluent concentration for benzene

f = assumed 1.0 (i.e., the entire upstream receiving water flow is allocated for mixing).

$$C = f \cdot WQC = \frac{C_s Q_s + C_e Q_e}{Q_e + Q_s}$$

$$0.00066 \text{ mg/l} = \frac{(0.005 \text{ mg/l})\ Q_e}{Q_e + Q_s} \text{ or } Q_e = (0.152)Q_s$$

For the optional effluent limitations:

$$0.00066 \text{ mg/l} = \frac{(0.05 \cdot \text{mg/l})\ Q_e}{Q_e + Q_s} \text{ or } Q_e = (0.013)Q_s$$

The relationship between the effluent flow and the receiving stream flow calculated above can also be expressed in tabular form. Table 1-2 shows the receiving stream flow required to provide sufficient dilution to achieve the water quality criterion for benzene.

It should be noted that while the benzene water quality criterion to protect human health is lower than that to protect aquatic life, the potential need for a whole effluent toxicity-based effluent limitation is not removed. This is because of the potential complex composition of UST-contaminated ground water even after treatment has been carried out utilizing the equivalent of the best available technology. Whereas benzene, singly, is not expected to be acutely or chronically toxic to aquatic life at effluent concentrations necessary to protect human health, this situation may not necessarily hold for other constituents that may be present. In the absence of water quality criteria for all the potential contaminants present in the effluent or in anticipation of a potentially additive or synergistic toxic effect from the complex mixture, it is appropriate to also include a whole effluent toxicity monitoring requirement in the permit.

TABLE 1-2. RECEIVING STREAM FLOW REQUIRED TO ACHIEVE WATER QUALITY CRITERION FOR BENZENE

Effluent Flow (Gallons per minute)	Effluent Flow (Gallons per day)	Receiving Stream Flow (Gallons per minute)	Receiving Stream Flow (Cubic feet per second)
Air stripping effluent = 0.005 mg/l			
1	1,440	7	0.015
5	7,200	33	0.07
10	14,400	66	0.15
20	28,800	132	0.29
50	72,000	329	0.73
100	144,000	658	1.47
Air stripping effluent = 0.05 mg/l (optional effluent limitations)			
1	1,440	77	0.17
5	7,200	384	0.83
10	14,400	769	1.7
20	28,800	1,538	3.4
50	72,000	3,846	8.6
100	144,000	7,692	17.1

1.4 DISCUSSION

The use of the simple mass balance equation for calculating water quality-based effluent limitations presupposes that the volumes of the ZID and mixing zone have been defined and that the dilutions afforded by mixing within those volumes have been accurately quantified. In many States no provisions are made for ZIDs (acute limitations are met at the end-of-pipe) and the mixing zone is defined as a function of the cross-sectional area of the receiving water under 7Q10 conditions (e.g., 1/4 to 1/2). The length of the mixing zone is often chosen based on a maximum allowable distance (e.g., 1000 meters). Complete mixing with the 7Q10 flow of the receiving water is assumed to occur within the mixing zone.

For fast-flowing or highly turbulent rivers, the complete mix assumption may be valid. But under 7Q10 conditions many rivers are slow moving and relatively quiescent. Under these conditions, mixing can be slow. More so than for rivers and run-of-river estuaries, the assumption of uncomplicated, rapid mixing with receiving water flow to achieve a chemical-specific or narrative standard at the edge of the ZID or edge of the mixing zone is likely to be inapplicable for lakes and impoundments, or for estuaries and near-shore ocean discharges.

For complex mixing situations, permit writers should refer to the various hydrodynamic mixing models, referenced in the TSD. Such situations include submerged, low velocity discharges, particularly those with significant temperature and or salinity differences than the surrounding water. The application of the simple mass balance equation is inappropriate for these situations. This is also true of surface discharges with the same properties. In these circumstances it is necessary to conduct site-specific mixing studies under conditions that represent a worst-case (e.g., maximum temperature and density differences; lowest near-shore flow, tidal or wave action). The general approach for performing appropriate mixing studies and reference to more detailed guidance are contained in the TSD.