REVISED JOHNSON LAKE, UPLAND SOURCE CONTROL REVIEW REPORT

OWENS BROCKWAY GLASS CONTAINER, INC.

5850 NE 92ND DRIVE
PORTLAND, OREGON

ECSI # 2086

Revised September 2022

Prepared for:
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Table of Contents

TABLES

FIGURES

ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

AST ..... Above Ground Storage Tank

BMP ..... Best Management Practice

BOD_5 ..... Biological Oxygen Demand (5-day test)

DEQ ..... Oregon Department of Environmental Quality

DOF ..... Dalton, Olmsted & Fuglevand, Inc.

ISGP ..... Industrial Stormwater General Permit

Owens ..... Owens Brockway Glass Container, Inc.

NPDES ..... National Pollution Discharge Elimination System

PAHs ..... Polycyclic Aromatic Hydrocarbons

PCBs ..... Polychlorinated Biphenyls

PPM ..... Part Per Million

ROD ..... Record of Decision

SVOCs ..... Semi-Volatile Organic Compounds

SWPCP ..... Stormwater Pollution Control Plan

TPH ..... Total Petroleum Hydrocarbons

TSS ..... Total Suspended Solids

VCP ..... Voluntary Cleanup Program

1.0 INTRODUCTION

1.1 Purpose

Dalton, Olmsted & Fuglevand, Inc. (DOF) has prepared this report on behalf of Owens Brockway Glass Container, Inc. (Owens). The Oregon Department of Environmental Quality (DEQ) has requested a "Draft Johnson Lake, Upland Source Control Review Report" to address DEQ concerns there is potential that upland sources of contamination, particularly from uncontrolled stormwater, are contributing to recontamination of the previously remediated Johnson Lake.

1.2 Site Description

Owens owns and operates a glass manufacturing plant located at 5850 NE 92nd Drive, Portland, Oregon (the "Property"). The Property is approximately 43 acres in size and located on the south shore of Johnson Lake (Figure 2.1). Johnson Lake extends over 18 acres and is directly connected to the Whitaker Slough, which in turn flows to the Columbia Slough. Johnson Lake is bounded to the south by the Property and to the west and east by other industrial facilities. The Property and Johnson Lake are collectively referred to as the "Site".

Johnson Lake receives stormwater discharge from the Property via four different outfalls, as described in Section 2. The lake also receives stormwater discharge from the City of Portland's street stormwater runoff, which enters the lake via a swale adjacent to Owen's Outfall 6 swale, and from a discharge pipe on the east side of the lake, which discharges stormwater from the Myer's Container property (Figure 2.1).

1.3 Regulatory Framework

1.3.1 STORMWATER

Owens is required to operate under the 1200-Z National Pollutant Discharge Elimination System Industrial Stormwater Discharge General Permit (ISGP) issued by the Oregon Department of Environmental Quality (DEQ 2021a).

Under the previous ISGP, which was effective August 1, 2017 (DEQ 2017), and has since been replaced by the current ISGP, which became effective July 1, 2021 (DEQ 2021a), Owens was required to collect stormwater discharge samples from each outfall on their Property (Outfalls 2, 4, 5, 6, and 8) and compare the results to the benchmark levels in Schedule B of the ISGP.

The primary contaminants of concern identified from this sampling were phosphorous and E. coli at Outfall 2, and total suspended solids (TSS) at Outfall 6. Additional contaminants analyzed for under the 2017 ISGP include oil and grease, copper, lead, zinc, iron, and BOD_5. Owens' has not taken samples from the additional two known stormwater outfalls to Johnson Lake (Figure 2.1) that are owned by others (City of Portland outfall and outfall from Myers Drum property).

1.3.2 JOHNSON LAKE SEDIMENTS

Previously, sediments in Johnson Lake were found to contain polychlorinated biphenyls (PCBs), as described in the Johnson Lake Investigation Work Plan (ARCADIS 2004a), Site Investigation Report (ARCADIS 2004b), and Johnson Lake Risk Assessment (Environ and ARCADIS 2004). Based on the previous investigations and a Feasibility study prepared in 2006, Oregon Department of Environmental Quality (DEQ) selected a final remedy for the Site in the Record of Decision dated October 2007 (DEQ 2007) and Record Decision Amendment dated July 2009 (DEQ 2009b). The 2007 Record of Decision and the 2009 Amendment are referred to collectively in this document as the ROD. Owens completed the implementation of the remedial actions described in the ROD and received a No Further Action Letter on February 25, 2014 (DEQ 2014).

In a letter dated December 2, 2021, DEQ has specifically requested a summary of work completed for the stormwater discharges that are currently out of compliance with the permit levels (DEQ 2021b). Owens' discharges *are not currently out of compliance with permit levels*; however, they did exceed the 2nd year Geometric Mean Benchmark Evaluation in 2019 (henceforth referred to as the 2019 Benchmark Evaluation) which resulted in a Tier II Corrective Action for TSS at Outfall 6 as well as phosphorous and e-coli at Outfall 2. Site-specific contaminants of interest from previous source investigations include metals (arsenic, lead, and cadmium), PCBs, and PAHs (Arcadis 2004b). However, the facility is not required to monitor for these contaminants as part of their ROD or their ISGP permit and therefore no additional data for these are included in this report.

1.4 Source Control Objective

The objective of this stormwater source control review is to summarize the work that has been completed or is in the process of being completed on the Property with regards to the stormwater exceedances that triggered the Tier II Corrective Action and determine whether additional source control measures are needed at this time based on the review of existing data.

Per the request in the December 2, 2021, DEQ letter, this report will focus on previous investigations and NPDES stormwater monitoring data for the outfalls that had benchmark exceedances in the 2019 Benchmark Evaluation (Outfalls 2 and 6).

DOF did not compile or review sampling data for other off-Property potential sources of contamination to Johnson Lake for this report, including the east outfall from the Myers Container property and the City's stormwater outfall that is adjacent to Outfall 6 on the Property.

1.5 Report Organization

This report generally follows DEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (DEQ 2009a), and is organized into the following sections:

2.0 – Site Background

3.0 – Potential Sources and Contaminants of Interest

4.0 – Ongoing Stormwater Management Measures

5.0 – Data Collection and Interpretation

2.0 SITE BACKGROUND

2.1 OI Property Stormwater Conveyance System

The Property includes buildings, parking areas, outdoor materials storage, and landscaped areas (including two bioswales).

Approximately 62 percent of the 43-acre property is impervious as it is covered by buildings or pavement. Stormwater routinely discharges from the Property through 5 different discharge points (outfalls 2, 4, 5, 6 and 8), with occasional discharges from one additional outfall (outfall 7) [Figure 2.2]. These outfalls, which all originate on Owens' Property, but do not all drain to Johnson Lake, are discussed further below. Additional outfalls that drain to Johnson Lake from other sources are not discussed.

The majority of the stormwater from the Property discharges to Johnson Lake via Owens' outfalls 2, 4, 5, and 6. Outfall 7 is located on the eastern edge of the Property and only discharges when the spill containment valve is manually opened and it connects to an ODOT stormwater line, and ultimately to the Columbia Slough. Outfall 8 is located in the southwest area of the property and stormwater from this area is conveyed to the City's Municipal Separate Storm Sewer System which discharges to the Columbia Slough.

Outfalls 4, 5, and 8 are routinely sampled per the ISGP, but they receive stormwater from mostly non-industrial areas of the Property and they haven't had any benchmark exceedances in recent years. As such they are not the focus of this report.

This report focuses on Outfalls 2 and 6, which drain the most active industrial areas with contaminant sources exposed to stormwater at the facility and had benchmark exceedances in the 2019 Benchmark Evaluation.

2.1.1 OUTFALL 2

Outfall 2 is located on the eastern portion of the Property, and includes drainage from the former Outfalls 1 and 3. Outfall 2 receives stormwater from Drainage Basin B (Figure 2.2), which is a large drainage area (approximately 11.2 acres) that occupies the mid-eastern portion of the Property and includes Buildings 1, 2, 5, 6, 7A, 7B, 8, 20, 34, and 38, the recycling storage areas, multiple cullet bunkers, two 21,500-gallon LPG Above Ground Storage Tanks (ASTs), and the surrounding paved surfaces (including two employee parking lots and portions of Glass Plant Road). This drainage area surrounds a gravel lined transformer yard (approximately 7,000 square feet).

Stormwater from this area is directed to catch basins that flow to a StormGate Separator™ sedimentation vault, where solids are allowed to settle out. The stormwater then flows into a vegetated bioswale, which is approximately 540 feet in length. Stormwater that does not infiltrate within the bioswale footprint flows through the bioswale, which has a series of check dams to allow for longer retention time, prior to flowing into Johnson Lake. The upland area of the bioswale was previously remediated as part of the Voluntary Cleanup Program (VCP) cleanup action, which is discussed further in Section 2.3.

Additional source control and treatment measures are currently being constructed within the drainage basin for Outfall 2, which are discussed in more detail in Section 4 of this report.

2.1.2 OUTFALL 6

Outfall 6 is located on the western edge of the facility. This outfall receives stormwater from the western portion of Drainage Basin A (Figure 2.2), which is approximately 14.6 acres in size and includes buildings 3, 27, 30, 31, and 37, truck loading docks, a 1000-gallon liquefied petroleum gas (LPG) AST, and the surrounding paved surfaces. Stormwater from this area is directed to a series of catch basins to underground stormwater piping that leads to a stormwater sedimentation vault and then to the Outfall 6 swale. Some additional stormwater from NE Glass Plant Rd also flows to the stormwater sedimentation vault prior to discharge into the Outfall 6 swale. The swale associated with Outfall 6 increases stormwater retention time and infiltration prior to discharge to Johnson Lake.

The Outfall 6 swale was constructed with an adjacent swale that was built to treat runoff from the City's former stormwater Outfall #84, with a drainage basin that is located between NE Killingsworth St and Columbia Blvd from NE 97th Ave to 92nd Dr in Portland, Oregon. The two swales are separated by a berm (Sung 2007).

2.2 Property Ownership and Operating History

The Owens facility was established in 1956 on previously undeveloped or agricultural land. The facility currently consists of 16 major buildings including five large structures (three warehouses and two buildings housing glass manufacturing operations). The facility also includes an exterior process yard containing the transformer yard, batch house (Building 6), compressor room (Building 5), and cooling towers; recycled glass processing storage center northeast of Building 1; surrounding asphalt parking; service and storage areas; and landscaped areas (including a baseball field north of Building 1). Material handling locations include the Redemption Center (Building 34), multiple outdoor storage bunkers, and the batch house (Building 6). (Figure 2.2)

All glass manufacturing, inspecting, and packaging operations take place under cover, with the exception of the raw cullet storage. The glass manufacturing process involves the melting of sand, limestone, soda ash, and reclaimed crushed glass (cullet) to form new glass containers. Raw materials are measured and mixed in the batch house (Building 6) and are then conveyed (under cover) to one of two large furnaces (melters) in Building 1. The unmelted batch initially floats in a pool of molten glass and gradually melts as it moves through the furnace at approximately 2,700°F. After melting, the glass is conditioned in refiners and distributed to individual forming machines, which mold the glass into containers. The containers then pass through a Lehr oven for annealing. Various quality control tests are performed on the finished product before it is packaged for shipment or storage in warehouses. The Owens facility produces up to a million containers per day.

2.3 Regulatory History

2.3.1 PCB'S IN JOHNSON LAKE SEDIMENTS

Elevated levels of PCBs were identified in Johnson Lake during the 1994-1995 sediment investigation of the Columbia Slough. Johnson Lake is located immediately north of and partially owned by Owens.

Subsequent investigations identified PCBs in adjacent soil on the Owens property and elevated levels of PCBs throughout the lake sediment with higher concentration locations on the southern shoreline. Elevated concentrations of metals and PAHs were also detected in the portion of the lake receiving stormwater runoff and historical settling pond overflow from the Owens facility. Owens entered the VCP by signing a Letter Agreement on September 18, 1997. (DEQ 2012)

Owens conducted a sediment investigation in 1998 under VCP oversight to verify PCB sediment contamination near the outfall draining Owens transformer yard. The investigation results verified low concentrations of PCBs (< 1 ppm) in sediments near the outfall. DEQ requested that Owens complete an Upland Source Investigation to determine if there is an active source of PCBs at the facility that impacts Johnson Lake sediments. The upland investigation was completed, and no significant ongoing sources of PCBs were found, however, PCBs detected in the drainage pathway to Johnson Lake indicated a historical source of contamination, likely from the old transformers. In summer 2002, DEQ indicated that Owens was likely the primary source of contamination to Johnson Lake, but that there was also clear contribution via the outfall at the east end of the lake extending under I-205 from the Myers Container property. DEQ directed Owens to conduct an investigation of Johnson Lake as well as to complete an investigation of upland contamination. The investigation and risk assessment were completed in 2005. (DEQ 2012)

The Record of Decision (ROD) was issued in 2007 (DEQ 2007), and then after additional PCB sampling, was amended and reissued in 2009 (DEQ 2009b).

In 2009-2010 Owens removed PCB-contaminated soil and created a swale for stormwater detention in the impacted area (current Outfall 2). In 2011/2012 Owens placed a minimum 6-inch cap of clean sand/sediment over the majority of the lake sediment. A portion of the lake at the west end was not capped to encourage mussel recolonization within the lake. As part of Owens' Consent Judgment with DEQ, they settled their liability for the Property's contribution to sediment contamination in the Whitaker Slough.

A Certification of Completion was filed with the court in January 2014 (DEQ 2014a). DEQ issued a no further action (NFA) determination for this Property in February 2014 (DEQ 2014b). Monitoring activities described in the DEQ-approved Remediation Operations and Maintenance Plan (DOF 2012) included a cap inspection to be performed for the first five years post-construction (2013-2017), a fish-tissue study performed at five- and ten-years post-construction (2017 and 2022), and semiannual visual swale inspections, which are ongoing.

As part of the monitoring, Owens is required to perform fish tissue sampling for PCBs in years' 5 and 10 per the DEQ approved *Remediation Operations and Maintenance Plan (O&M Plan)* (DOF 2012a). This sampling was last done in 2017 and is scheduled to take place this year (2022). In a letter from DEQ dated December 2, 2021, DEQ requested that in addition to the fish tissue sampling plan, Owens prepare a *Draft Johnson Lake, Upland Source Control Review Report* which details the summary of work completed for the stormwater discharges that previously received a Tier II Corrective Action (DEQ 2021b).

2.3.2 STORMWATER

Owens has been operating under the ISGP program since 2001. Per Schedule A.11 of the previous ISGP, permit registrants were to evaluate the sampling results collected during the second monitoring year of permit coverage and determine if the geometric mean of the qualifying samples collected at each monitored discharge point exceeded any applicable statewide benchmarks in Schedule A.9 of the ISGP. Owens previously collected the discharge samples and determined that some of the samples geometric means exceeded the benchmarks in Schedule A.9 of the ISGP in the 2nd year Geometric Mean Benchmark Evaluation in 2019 (hereafter referred to as the 2019 Benchmark Evaluation). The pollutants of concern with geometric means that exceeded permit benchmarks at respective outfalls include:

- Outfall 2 – Phosphorus and E. coli
- Outfall 6 – Total Suspended Solids (TSS)

As a result of the 2019 Benchmark Evaluation, in compliance with the ISGP, Owens had an Engineering Evaluation of the Property performed. After the initial engineering evaluation, interim actions were performed while final corrective measures were evaluated. Proposed control measures for the exceedances were designed and submitted for review by the City of Portland in the *Tier II Engineering Evaluation* (DOF 2021a), which was approved by the City of Portland on April 23, 2021. Initial control measures were installed as an interim action in May 2020, and additional improvements are ongoing, targeted for completion by the end of May 2022.

Per the ISGP, if a qualifying sample result exceeds any applicable statewide benchmark (including TSS or phosphorus), a Tier 1 corrective action must occur, which includes an investigation of elevated pollutant levels and a review of the SWPCP to ensure all control measures are implemented properly. Owens' is currently exempt from Tier 1 corrective actions for phosphorus at Outfall 2 under the current permit until their Tier II corrective actions from the previous permit are implemented.

3.0 POTENTIAL SOURCES AND CONTAMINANTS OF INTEREST

3.1 Potential Contaminant Sources

DEQ requested a source control evaluation due to concerns about potential upland sources of contamination, particularly from uncontrolled stormwater could be contributing to recontamination of the previously remediated Johnson Lake (DEQ 2021b). Johnson Lake receives stormwater from industrial and administrative sources on Property as well as industrial and municipal sources off Property.

The Site was issued a NFA determination (DEQ 2014) after source removal and remediation was completed as part of the ROD (DEQ 2009). As a result, since then stormwater on Property has been managed and controlled in compliance with the requirements of the ISGP with the addition of the semi-Long Term Monitoring Requirements as noted under the NFA determination (DEQ 2014b).

3.1.1 ON PROPERTY CONTAMINANT SOURCES

Potential pollutants on the Property that could reach and contaminate stormwater are described below. Table 1 summarizes the potential pollutants at the Property relative to Outfalls 2 and 6.

- Metals include copper, lead, and zinc. These metals are present in and may become available from sources such as buildings, fencing, vehicles, equipment, and paint.
- Industrial chemicals include anhydrous ammonia (used as a delivery mechanism for emissions control of a manufacturing process).
- Raw components include those used in the manufacturing of glass such as sand, limestone, soda ash (i.e., sodium carbonate), and reclaimed crushed glass (cullet).
- Petroleum hydrocarbons may become available from vehicle/equipment refueling or vehicle/equipment leaks or from lubricating oils and grease.
- Nutrients and organic material, such as phosphorus and nitrogen may become available from food and beverage debris among the cullet stockpiles.
- Gross pollutants generally consist of litter (e.g., human derived trash, such as, paper, plastic, metal, and glass), debris (e.g., organic material including leaves, branches, seeds, twigs, and grass clippings), and coarse sediments (inorganic breakdown products from soils, pavement or building materials).
- Materials resulting from trespass or actions of trespassers generally consist of human waste, animal waste, vehicular fluids, trash, debris, and miscellaneous drug paraphernalia brought onto the site.

Table 3.1. Potential on Property Contaminant Sources for Outfalls 2 and 6

Outfall	Potential Pollutant	Source/Activity
2	Metals	Vehicle traffic/parking; building roofs
	Industrial chemicals	Anhydrous Ammonia
	Raw components	Sand, limestone, soda ash, cullet
	Petroleum hydrocarbons	Equipment leaks
	Nutrients and organic material	Cullet storage areas, organic material in swale (leaves, etc.)
	Gross pollutants	Litter, debris, coarse sediment
6	Metals	Truck loading docks; vehicle traffic/parking; building roofs
	Petroleum Hydrocarbons	Vehicle/equipment refueling
	Nutrients and organic material	Cullet storage areas, organic material in swale (leaves, etc.)
	Gross pollutants	Litter, debris, coarse sediment

3.1.2 OFF PROPERTY CONTAMINANT SOURCES

A summary of potential off Property contaminant sources is provided with contaminants of concern based on general references; no comprehensive review has been completed of offsite sources.

- City of Portland's street stormwater runoff, which enters the lake via a swale adjacent to Owen's Outfall 6 swale (Figure 2.1),
    - Potential contaminants of concern- metals, nutrients, pH, suspended solids, TPH, PCBs, pesticides, and PAHs (City of Portland 2016).
- Stormwater from the Myer's Container property from a discharge pipe on the east side of the lake (Figure 2.1).
    - Potential contaminants of concern- metals, TPH, PCBs, suspended solids, and SVOCs (DEQ 2014c).
- Stormwater and potentially wastewater from homeless encampments along NE Glass Plant Road, in the areas between outfall 006 and outfall 005, on the Northern Shore of Johnson Lake and adjacent to the Whitaker Slough.
    - Potential contaminants of concern- metals, oil, suspended solids, sanitary waste, and hazardous waste (Iboshi 2021, Sparling 2021).

3.2 Outfall Sediment Data

No outfall sediment data was evaluated for this report. Owens is currently not required to collect outfall sediment samples.

3.3 Stormwater Data

Historical stormwater sampling results for the NPDES permit discharge locations at on Property Outfalls were screened against the NPDES discharge levels and Columbia Slough-specific upland source control values. A summary of these results is shown in Section 4.

3.4 Contaminants of Interest

DEQ requested data on contaminants that are currently out of compliance with the permit levels in their letter dated December 2, 2021 (DEQ 2021b), but subsequently requested additional data in their comment letter dated March 29, 2022 (DEQ 2022). This report originally included data for phosphorus, e-coli, and total suspended solids (since these were the contaminants that had previously exceeded benchmarks and triggered a Tier II investigation and corrective action in 2019.). Tables have been updated to provide historical sample results for oil and grease, copper, lead, zinc, iron, TSS, phosphorous, e-coli, and BOD_5.Site-specific contaminants of interest from previous source investigations include metals (arsenic, lead, and cadmium), PCBs, and PAHs (Arcadis 2004b). However, the facility is not required to monitor for these contaminants as part of their ROD or their ISGP permit and therefore no additional data for these are included in this report.

4.0 ONGOING STORMWATER MANAGEMENT MEASURES

As a result of the 2019 Benchmark Evaluation detailed in the Tier II Engineering Evaluation, Owens' retained DOF to perform an Engineering Evaluation of the Property and design control measures for the exceedances.

4.1 Outfall 2

An investigation of the phosphorus benchmark exceedances in stormwater discharge from Outfall 2 showed that the likely source was the outdoor cullet storage. The following two control measures were selected for the Property, and approved by the City of Portland in a letter dated April 23, 2021, and shown on Figure 4.1:

1) *Source Control – Structure to Cover Raw Materials* – A portion of the outdoor long-term cullet storage is now covered by tarps, so they are no longer exposed to stormwater. This was implemented in May 2020. A permanent structure is currently being constructed over a portion of the short-term cullet storage area and is expected to be completed in May 2022. The combination of these two measures should reduce the amount of phosphorus at Outfall 2 by up to 50%, based on the footprint of cullet and what will no longer be exposed to stormwater.

2) *Stormwater Treatment System* – At catch basin 11, which receives the majority of the stormwater adjacent to the remaining uncovered cullet piles, a Modular Wetland system will be installed. The system is designed to target both dissolved and suspended phosphorus. Construction and installation of this system is currently being done and is expected to be completed in May 2022.

4.2 Outfall 6

The investigation of the exceedances of Total Suspended Solids (TSS) at Outfall 6 determined that the likely cause of the high TSS was from clean soil stockpiles of import material located in the drainage that were there during the construction of a new transformer site (Transformer #26, Figure 2.2). Prior to the Tier II report, the facility had already made updates to the swale, including removal of the soil stockpiles, and the addition of six (6) rock check dams in the swale, north of the concrete weir located within the swale, and a rock apron just prior to the discharge point into Johnson Lake (Figure 2.2). These updates allow for stormwater to move more slowly through the swale, allowing for a longer settling time for solids. It was determined that no further corrective measures were needed for this outfall.

Previous sampling of the lake under the VCP and during construction of the swale did not indicate that there were any historical (Sung 2007, DEQ 2014) sources of PCBs connected with this outfall. No known sources or activities that may include PCBs discharge to this outfall. Outdoor site use in the drainage basin above Outfall 6 are administrative parking, truck traffic and parking, and the loading docks for the facility (Figure 2.2).

4.3 Stormwater Best Management Practices

In addition to the control measures described above, Owens has an extensive list of other site controls that they employ onsite to prevent contaminants from entering the stormwater system, including

stormwater best management practices (BMPs), spill prevention and response procedures, preventative maintenance, and employee education. A detailed list of the BMPs utilized by Owens is included as Table 4.1. More detail on these controls can be found in Owens' Stormwater Pollution Control Plan in Appendix C (DOF 2021b).

5.0 DATA COLLECTION AND INTERPRETATION

5.1 Sampling

5.1.1 NPDES MONITORING

Stormwater sampling for this report was performed by Owens and DOF personnel and followed the guidelines for NPDES stormwater sampling laid out in the ISGP. Stormwater samples from each monitoring point are collected and analyzed at least four times per year. Two samples are collected between July 1st and December 31st, and two samples are collected between January 1st and June 30th for each permit year. All grab samples are collected at least 14 calendar days apart.

Owens aims to monitor the discharge during the first 12 hours of the discharge event, which is a measurable storm event resulting in an actual discharge from a site. The facility is not required to sample outside of regular business hours or during unsafe conditions. Regular business hours are from 8 am to 5 pm on weekdays.

Table 5.1 shows the analytical methods, holding times, sample containers, detection limits, and other information for the stormwater sampling.

5.1.2 OTHER DATA

DOF also reviewed the following documents:

- Owens' SWPCP
- Engineering evaluations dated May 2012 and December 2014, and January 2021

From the Tier II Engineering Evaluation (DOF 2021a), sampling around the Property that was performed in 2014, 2016 and 2021 showed that total phosphorus was highest at Catch Basin 11, which is located in the center of the cullet storage area. This was the basis for installing treatment at Catch Basin 11, versus installing a larger system further downstream.

5.2 Data Summary

Stormwater sample results from the NPDES monitoring are shown in Tables 5.2-5.6. Figures 5.1 and 5.2 show the trends for TSS and phosphorus in Outfalls 2 and 6. Data was compared to benchmarks for the NPDES permit (note that the benchmark for TSS was just lowered in this last permit update, effective July 1, 2021). There were no Screening Level Values (SLVs) from the *DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites* for either parameter.

5.3 Data Interpretation

Based on the monitoring data, it appears that TSS and phosphorus are not ongoing issues for Outfall 6 (phosphorus was not part of the Tier II Corrective Action for Outfall 6 and there has not been an exceedance of the phosphorus benchmark at this outfall since 2017). There has been a recent benchmark exceedance at Outfall 6 and Outfall 2 for TSS, but per Owens' Tier I report, the likely source of the increased TSS was from dislodged soil within the swales during swale maintenance that occurred

that same month. TSS at Outfall 2 has not consistently exceeded benchmarks and was not part of the 2019 Tier II Corrective Action. The ongoing issue has been phosphorus at Outfall 2, but this will be addressed by completion of the additional corrective actions, as detailed in the 2019 Tier II Engineering Evaluation (DOF 2021a). Both swales were built with clean material after the documented source of PCBs (previous transformers) was removed from the Property.

6.0 SOURCES CONTROL MEASURES

6.1 Source Control and Treatment Implementation

As described in Section 4.0 of this report, source control and additional treatment measures for the Outfall 2 drainage basin are currently being implemented. Construction started in January of this year and is expected to be completed by May 2022. These measures were designed specifically to address phosphorus exceedances and the need for additional source control measures are not anticipated to meet stormwater benchmarks at this outfall.

6.2 Spills to the Waterway

6.2.1 SPILLS FROM OWENS

The only reportable spill since the remediation of Johnson Lake in 2012 occurred in September of 2018 when a post to the sub-station caught fire in the Outfall 2 drainage area (no buildings or transformers caught fire) and a portion of the water used to extinguish the fire flowed into Johnson Lake via Outfall 2. Owens followed all proper procedures and immediately reported this to DEQ. Owens' emergency contractor (NRC Environmental) responded to the spill and removed approximately 60,000 gallons of water from the site via a vac truck. An estimated 32,000 gallons of water flowed into the swale at Outfall 2. Per a request from the City of Portland, Owens personnel sampled the water that was discharged to the swale at both the upstream end of the swale and downstream at MP-002 and had the samples analyzed for metals. The results of this sampling, screened against the SLV screening values for stormwater for non-Portland Harbor sites (DEQ 2009), are included as Table 6.1. Documentation from the time of the fire is provided in Attachment B (letters to DEQ summarizing the response and the Oregon Emergency Reporting System [OERS] notes [*OERS Report #2018-2097]*).

6.2.2 OTHER KNOWN SPILLS TO JOHNSON LAKE

In 2012, personnel from Owens reported that an observed turbid plume was occurring at the east outfall of Johnson Lake, which flows under I-205 from Myers' container property. The sediments within the culvert were deemed potentially impacted by PCBs and Myers was ordered to clean out the culvert pipe by DEQ. Removal work for this order was performed by Bravo Environmental and was observed by DOF personnel on behalf of Owens. At the end of the cleanout process each day, Bravo removed a sandbag berm that was placed downstream of the culvert during the work, and a turbid plume and oil sheen was observed entering Johnson Lake. (DOF 2012b, Attachment A)

7.0 SOURCE CONTROL EVALUATION

An investigation into the likely sources of high phosphorus within the Outfall 2 drainage basin has already been performed and has been summarized in tables attached to the Tier II Engineering Evaluation (DOF 2021a). These investigations have shown that the highest contributors of phosphorus in this area is likely the glass cullet that is kept stockpiled outdoors, with additional phosphorus coming from the swale itself due to breakdown of leaves and other organic matter, which are common sources of nutrients (Upper Midwest Water Science Center 2019).

Owens is currently working to address the cullet piles by building a permanent structure over a portion of the short-term cullet storage area. When completed, the footprint of the structure will be approximately 8,000 square feet. They have already hired contractors to tarp a large portion of the long-term storage of cullet, which was effective as of May 2020. It is estimated that the combination of the permanent structure and the tarped piles will cover approximately 50% of the cullet that was previously exposed to stormwater.

8.0 FINDINGS AND CONCLUSIONS

Based on a review of the existing stormwater NPDES monitoring data as well as a review of the documents associated with the VCP cleanup action that occurred in 2009-2012, the following conclusions were made.

1. Existing and potential facility-related contaminant sources have been identified and characterized.
    - Sources for phosphorus in Drainage Basin B have been linked to the glass cullet piles
    - Additional phosphorus in Drainage Basin B could be coming from breakdown of organic materials in of the Outfall 2 swale, which is common contributor of nutrients such as phosphorus to stormwater.
2. Contaminant sources are being controlled to the extent feasible.
    - Suspended solids have not historically been an issue at Outfall 2. Only one sample has exceeded the permit benchmark for TSS of the last four samples analyzed. This exceedance occurred in December of 2021 and based on a site investigation by facility personnel was likely due to dislodged soil in the swale from swale maintenance activities. The most recent samples, taken in February and March 2022, did not exceed the permit benchmark.
    - Two samples from December 2021 and February 2022 analyzed for TSS at Outfall 6 have exceeded the permit benchmark. Prior to these samples, TSS hasn't exceeded the benchmark since April of 2019. In response to these recent exceedances, Owens' personnel are adding bio-bags/straw wattles around the five catch basins within the unpaved gravel lot north of Building 31, which is the primary source of TSS for this drainage basin. This corrective action is detailed in a Tier I report (Owens 2022). The most recent sample (March 2022) for TSS was below benchmarks.
    - Owens is currently constructing a permanent cover over a portion of the short-term cullet storage, which would eliminate this portion of material from contacting stormwater. This will help reduce the phosphorus along with other contaminants from entering the stormwater system. Construction is expected to be completed in May 2022.
    - Owens is also currently constructing an underground modular wetland to provide additional treatment to the highest impact area in Drainage Basin B, which will also serve to reduce contaminant loading, including phosphorus and TSS, to the Outfall 2 swale. Construction is expected to be completed in May 2022.
    - Outfall 2 already contains a sedimentation vault and a swale to allow for suspended solids to settle out prior to discharge to Johnson Lake. TSS was not part of the Tier II Corrective Action for Outfall 2.
    - The Outfall 2 and Outfall 6 swales are routinely maintained quarterly to reduce the quantity of organic debris within the swales.

- The facility has already made updates to the Outfall 6 swale to reduce suspended solids from entering Johnson Lake via stormwater. These measures were implemented in the fall of 2019, and since then only two stormwater samples (out of 11 samples taken) has exceeded the permit benchmark.
- The facility will continue monitoring for TSS and Phosphorus per the NPDES permit requirements.
- There are no known ongoing sources of PCBs at the Property.

3. Adequate measures are in place to ensure source control and good stormwater management measures occur in the future to meet stormwater benchmarks at their outfalls.
    - The facility is installing City approved source control and treatment of stormwater for Drainage Basin B, which flows to Johnson Lake via Outfall 2.
    - As part of a recent Tier 1 Corrective Action, Owens' personnel are adding bio-bags/straw wattles around the five catch basins within the unpaved gravel lot north of Building 31 to try and reduce TSS at Outfall 6.
    - The facility has already improved other discharge points and believe regular housekeeping will be sufficient to stay compliant with permit water quality discharge requirements at the other monitoring locations.

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Tables

Table 3.1 is located in text section 3.1.1

Table 4.1. Best Management Practices
Owens-Brockway Glass Container Inc., Plant No. 21

BMP Type		Control	Frequency
Containment	1	Concrete curb in place at the unused overhead door opening on the north side of Building 1 near the Heil separator to prevent seepage onto the parking lot.	-
	2	126,000 gallon fuel oil tank (averages less than 40,000 gallons, stored) is completely contained with in an 8-foot high earthen berm designed to adequate capacity.	-
	3	Hazardous waste accumulation is indoors and has double containment.	-
	4	Secondary containment on liquid caustic soda tank.	-
Oil & Grease	1	Compressor blow down water and minor leakage from compressed air piping is controlled by a containment area east of the compressor room which pumps water to oil/water separator in the furnace basement.	-
	2	Rental compressors are filled from fuel nozzle located on south compressor room wall eliminating the fuel transfer in drums and inherent spillage. A supply of absorbent pads is maintained in the compressor room for use in the event of a spill.	Supply checked monthly
	3	Sedimentation manholes and sediment vaults servicing the Outfall 2 drainage basins has oil separation capabilities.	-
	4	Absorbent pads or booms service the fuel oil tank area to remove oil sheen from strormwater (if present) before it is manually discharged.	Supply checked monthly
Waste Chemicals and Material Disposal	1	Used oil and waste anti-freeze are accumulated in properly labeled drums, stored indoors, and transported for off-site disposal or recycling by a vendor.	-
	2	Used drums are returned to vendors whenever possible. Drums not returnable are rinsed in the basement where the water goes into the furnace basement oil/water separator and crushed for scrap metal recycling.	-
	3	Parts washing solvents (degreasers) are recycled using a contract service.	-
	4	Use of cleaning agents is restricted to prevent discharge to storm water.	-
	5	Diverted non-contact cooling water bleed to cullet/sanitary waste water system.	-
	6	Discontinued use of non-contact cooling water chemicals which contained zinc or chlorine.	-
Debris Control	1	An acrylic coating over the galvanized roof over Building 20 reduces zinc debris runoff.	-
	2	Galvalume® roofing replaces the galvanized NE end of the Robinson Ventilator and a portion of the galvanized roof over Building 1 to reduce zinc debris runoff.	-

Table 4.1. Best Management Practices
Owens-Brockway Glass Container Inc., Plant No. 21

Stormwater Diversion	1	The factory cullet water system has been modified to minimize potential contact with stormwater. Factory cullet is transferred into hoppers with drainage holes to allow all cullet water to drain to the cullet basement prior to storing cullet outdoors on the pile.	-
	2	Diverted runoff from Outfall #3 to StormGate Separator on Outfall 2.	-
BMP Type		**Control**	**Frequency**
Erosion and Sediment Control	1	Bio-bags protect five catch basins.	Inspected monthly
	2	Cleanway Filters are installed in 16 catch basins.	Inspected monthly
	3	Debris screens are installed in 3 catch basins.	Inspected monthly
	4	A modular wetland is installed at CB11	Inspected monthly
	5	Sedimentation manholes and sediment vaults servicing the Outfall 2 and Outfall 6 drainage basins are designed to remove heavy metals and large size particles prior to discharge. System maintained every 6-12 months.	Inspected monthly
	6	Gate valves servicing the Outfall 2 and Outfall 6 drainage basins are designed to control flow in case of hazardous spills.	Inspected monthly
	7	Sedimentation boxes at the Outfall 2 discharge points capture additional heavy particles.	Inspected monthly
	8	Bio-swales servicing the Outfall 2 and Outfall 6 drainage basins are designed to trap pollutants through infiltration	Inspected monthly
	9	Rock check dams are installed in both bio-swales in order to give the stormwater a longer retention time to filter out solids	Inspected monthly
Covering Activities	1	Feed hopper for trash compactor is covered.	-
	2	Glass manufacturing operations are conducted indoors.	-
	3	Hazardous materials are stored under roof in designated storage areas.	-
	4	Forklift maintenance area is covered with a roof.	-
	5	The truck batch unloading area is covered with a roof.	-
	6	The tin recovered material mixing operation is contained indoors.	-
	7	Tin recovered material is stored indoors until shipped for reclamation.	-
	8	Outdoor vehicle washing is prohibited.	-

Table 4.1. Best Management Practices
Owens-Brockway Glass Container Inc., Plant No. 21

Housekeeping	1	Site sweeping operations, including area near the batch house, soda ash storage area, cullet storage area, and raw material unloading areas.	2 x week by facility staff, 2 X month by contractor
	2	Outdoor batch storage hoppers covered with tarps to contain loose material.	-
	3	Glass Plant Road is closed to traffic unrelated to Owens-Brockway.	-
	4	Outdoor uncovered trash hoppers have been eliminated.	-
	5	Waste profile developed at Hillsboro Land fill for oily debris and have covered drop box on site to handle this waste stream more effectively. This drop box contains a lining to prevent seepage.	-
	6	Central vacuum system installed for improved housekeeping in the Batch House.	-
	7	The Facility manages its cullet inventory to minimize the tons of cullet stored on site to minimize exposure.	-

Table 5.1. Laboratory Analytical Methods, Sample Containers, and Holding Times

Owens Brockway Glass Container, Inc.

Portland Facility

Parameter	TSS	Phosphorus
Test Method	USEPA 160.2	USEPA 365.1-365.2-365.4
Detection Limits	1 mg/L	4 ug/L
Sample Container	1 L HDPE	1 L HDPE
Preservative	Unpreserved	H_2SO_4
Holding Time	7 days	28 days

Table 5.2. NPDES Stormwater Monitoring Data for Outfall 2
Owens Brockway Glass Container, Inc.
Portland Facility

	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5	Iron
	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
Benchmarks	5.5-9.0	30	NA	0.017	0.1	0.24	406	0.16	24	
303(d) Limits										10
SLVs				0.0027	0.00054	0.036				
Sample Date	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
3/21/2022	7.7	27	NA	*0.012*	*0.026*	*0.131*	55	**0.23**	3	1
2/28/2022	7.7	26	NA	*0.007*	*0.027*	*0.107*	62	0.11	ND (2.00)	1.4
12/15/2021	7.9	**42**	NA	***0.018***	*0.027*	*0.115*	**548**	**0.41**	ND (2.00)	2.1
11/29/2021	7.8	ND (2.50)	NA	***0.017***	*0.006*	*0.053*	64	**0.36**	ND (2.00)	1.1
3/22/2021	W	W	W	W	W	W	236	0.15	W	W
2/3/2021	W	W	W	W	W	W	**1203**	0.13	W	W
1/8/2021	W	W	W	W	W	W	219	**0.43**	W	W
12/21/2020	W	W	W	W	W	W	196	**0.3**	W	W
11/18/2020	W	W	W	W	W	W	**687**	**0.4**	W	W
4/1/2020	W	W	W	W	W	W	24	**0.25**	W	0.3
12/13/2019	W	W	W	W	W	W	46	**0.38**	W	**1.2**
11/19/2019	W	W	W	W	W	W	**2420**	**0.34**	W	0.5
4/5/2019	W	9	W	*0.015*	W	*0.071*	**770**	0.14	W	**1**
2/14/2019	W	**130**	W	***0.022***	W	***0.316***	**2420**	**0.31**	W	**2.7**
11/28/2018	W	**35**	W	***0.025***	W	*0.142*	**1203**	**0.29**	W	**5.7**
10/31/2018	W	ND (2.50)	W	*0.018*	W	*0.045*	57	**0.21**	W	0.8
3/23/2018	7.9	**75**	ND (1.51)	*0.009*	*0.012*	*0.077*	**770**	0.12	ND (2.00)	NS
1/25/2018	8.4	**102**	ND (5.68)	***0.034***	*0.048*	*0.213*	**2420**	**0.41**	3	**3.7**
12/4/2017	7.9	7	ND (5.15)	*0.017*	*0.004*	*0.052*	12	**0.2**	ND (2.00)	NA
10/20/2017	8.1	12	ND (7.09)	***0.021***	*0.012*	*0.072*	**1986**	**0.37**	ND (2.00)	**2.3**
4/13/2017	7	W	W	W	W	W	49	0.12	W	0.3
2/23/2017	8.2	W	W	W	W	W	167	**0.19**	W	NS
12/20/2016	**9.1**	W	W	W	W	W	**2420**	**0.16**	W	**1.1**
11/9/2016	7.9	W	W	W	W	W	**411**	**0.97**	W	**3.6**
6/23/2016	7.6	W	W	W	W	W	**2420**	**0.2**	W	NA
2/18/2016	7	W	W	W	W	W	137	**0.21**	W	**1.7**
11/19/2015	7.8	W	W	W	W	W	**980**	**0.36**	W	**1.3**
9/2/2015	7.3	W	W	W	W	W	**2420**	**0.66**	W	NA
5/12/2015	**9**	W	W	W	W	W	**2420**	**0.35**	W	NA
2/2/2015	8.1	W	W	W	W	W	**1986**	**0.3**	W	NA
10/31/2014	7.1	4	ND (6.21)	***0.03***	*ND (0.01)*	*0.091*	**2420**	**0.66**	4	**1.7**
9/24/2014	7.2	20	ND (5.99)	***0.062***	*0.045*	*0.116*	**2420**	**1.45**	15	**2.6**
4/24/2014	**9.2**	**50**	ND (4.95)	*0.011*	*0.026*	*0.112*	**1986**	**0.22**	ND (2)	NA
2/18/2014	8.3	14	ND (5.08)	***0.034***	*0.026*	*0.127*	28	**0.53**	ND (2)	NA
9/25/2013	7.9	8	ND (9.62)	***0.024***	*0.008*	*0.085*	345	**0.49**	ND (2)	NA

Abbreviations
NA - Not Analyzed
ND - Non Detect
W - Monitoring Waiver
Bold - exeeded regulatory benchmark/limit
italic **-** exceeded SLV

Notes:
1. Benchmarks and 303(d) Limits are based on the May 6, 2021 1200-Z permit letter issued by the City of Portland Environmental Services. Although 303(d) limits are noted for copper, lead, and zinc in the Columbia Slough under the 1200z permit, the Owens-Brockway facility discharges are only covered by the 303(d) listing for iron. These benchmarks were effective as of July 1, 2021.

2. For data prior to July 1, 2021, benchmarks from the previous version of the 1200Z permit were used. The previous benchmarks were slightly different as follows: pH 5.5 to 8.5, Total Oil and Grease 10 mg/L, Total Copper 0.02 mg/L, Total Lead 0.06 mg/L, BOD5 33 mg/L. In addition iron had a reference impairment concentration of 1 mg/L.

3 SLVs are screening level values from DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites for non-Portland Harbor sites.

Table 5.3. NPDES Stormwater Monitoring Data for Outfall 4

Owens Brockway Glass Container, Inc.

Portland Facility

	pH	Suspended Sl	Oil & Gr	otal Coppe	Total Lead	Total Zinc	E. coli	otal Phosphoru	BOD_5	Iron
	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
Benchmarks	5.5-9.0	30	NA	0.017	0.1	0.24	406	0.16	24	
303(d) Limits										10
SLVs				0.0027	0.00054	0.036				
Sample Date	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
3/21/2022	7.3	5	NA	0.002	*0.003*	0.032	6	ND (0.05)	ND (2.00)	0.15
2/28/2022	7.3	24	NA	*0.004*	*0.006*	*0.045*	5	0.06	ND (2.00)	0.9
12/15/2021	7.5	ND (2.50)	NA	0.002	*0.003*	0.027	32	ND (0.05)	ND (2.00)	0.1
10/5/2021	7.5	11	NA	*0.003*	*0.002*	0.027	61	ND (0.05)	3	ND (0.200)
3/22/2021	W	W	W	W	W	W	W	W	W	W
2/3/2021	W	W	W	W	W	W	W	W	W	W
1/8/2021	W	W	W	W	W	W	W	W	W	W
12/21/2020	W	W	W	W	W	W	W	W	W	W
11/18/2020	W	W	W	W	W	W	W	W	W	W
4/1/2020	W	W	W	W	W	W	W	W	W	W
12/13/2019	W	W	W	W	W	W	W	W	W	W
11/19/2019	W	W	W	W	W	W	W	W	W	W
4/5/2019	7.6	W	W	W	W	W	W	W	W	**1.2**
2/14/2019	7.2	W	W	W	W	W	W	W	W	0.9
11/30/2018	7.7	W	W	W	W	W	W	W	W	0.7
11/2/2018	7.6	W	W	W	W	W	W	W	W	0.1
3/23/2018	8	5	ND (1.40)	*0.003*	*0.004*	*0.047*	365	ND (0.05)	ND (2.00)	NA
1/25/2018	7.8	**34**	ND (5.68)	*ND (0.004)*	*0.006*	*0.044*	291	0.08	ND (2.00)	NA
12/19/2017	**8.6**	**31**	ND (5.52)	*0.006*	*0.005*	*0.069*	11	0.1	ND (2.00)	**2.7**
11/17/2017	6.5	3	ND (7.04)	*ND (0.004)*	*0.003*	*0.055*	62	ND (0.05)	ND (2.00)	0.2
4/13/2017	W	W	W	W	W	W	W	W	W	NA
2/23/2017	W	W	W	W	W	W	W	W	W	NA
12/20/2016	W	W	W	W	W	W	W	W	W	NA
11/9/2016	W	W	W	W	W	W	W	W	W	NA
6/23/2016	W	W	W	W	W	W	W	W	W	NA
2/18/2016	6.9	**41**	W	W	W	W	84	W	W	**1.6**
11/19/2015	7.2	5	W	W	W	W	236	W	W	0.4
9/2/2015	6.8	ND (2.00)	W	W	W	W	91	W	W	NA
5/12/2015	6.2	**37**	W	W	W	W	79	W	W	NA
2/2/2015	6.1	5	W	W	W	W	3	W	W	NA
10/31/2014	6.2	15	ND (6.58)	*0.007*	*0.005*	*0.055*	**727**	0.06	ND (2)	0.3
9/24/2014	**9.4**	10	ND (5.81)	*0.018*	*0.021*	*0.254*	**1986**	0.07	3	0.9
4/24/2014	6.6	**68**	ND (4.76)	*ND (0.005)*	*0.002*	*0.048*	**579**	ND (0.05)	ND (2)	NA
2/18/2014	6	**58**	ND (4.81)	*0.006*	*0.009*	*0.066*	3	0.06	ND (2)	NA
12/20/2013	7.1	**48**	ND (5.03)	*0.007*	*0.005*	*0.09*	50	0.11	ND (2)	NA

Abbreviations

NA - Not Analyzed

ND - Non Detect

W - Monitoring Waiver

Bold - exeeded regulatory benchmark/limit

italic - exceeded SLV

Notes:

1. Benchmarks and 303(d) Limits are based on the May 6, 2021 1200-Z permit letter issued by the City of Portland Environmental Services. Although 303(d) limits are noted for copper, lead, and zinc in the Columbia Slough under the 1200z permit, the Owens-Brockway facility discharges are only covered by the 303(d) listing for iron. These benchmarks were effective as of July 1, 2021.

2. For data prior to July 1, 2021, benchmarks from the previous version of the 1200Z permit were used. The previous benchmarks were slightly different as follows: pH 5.5 to 8.5, Total Oil and Grease 10 mg/L, Total Copper 0.02 mg/L, Total Lead 0.06 mg/L, BOD5 33 mg/L. In addition iron had a reference impairment concentration of 1 mg/L.

3 SLVs are screening level values from DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites for non-Portland Harbor sites.

Table 5.4. NPDES Stormwater Monitoring Data for Outfall 5
Owens Brockway Glass Container, Inc.
Portland Facility

	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD5	Iron
	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
Benchmarks	5.5-9.0	30	NA	0.017	0.1	0.24	406	0.16	24	
303(d) Limits										10
SLVs				0.0027	0.00054	0.036				
Sample Date	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
3/21/2022	6.8	3	NA	0.001	*0.001*	0.028	1	0.07	ND (2.00)	0.11
2/28/2022	7.5	**221**	NA	*0.003*	*0.003*	0.024	3	0.09	ND (2.00)	1.6
12/15/2021	8.1	ND (2.50)	NA	0.001	*0.001*	0.025	23	0.05	ND (2.00)	0.1
10/5/2021	7.5	19	NA	0.002	*0.001*	0.019	155	0.07	ND (2.00)	0.4
3/22/2021	W	W	W	W	W	W	W	W	W	W
2/3/2021	W	W	W	W	W	W	W	W	W	W
1/8/2021	W	W	W	W	W	W	W	W	W	W
12/21/2020	W	W	W	W	W	W	W	W	W	W
11/18/2020	W	W	W	W	W	W	W	W	W	W
4/1/2020	W	W	W	W	W	W	W	W	W	W
12/13/2019	W	W	W	W	W	W	W	W	W	W
11/19/2019	W	W	W	W	W	W	W	W	W	W
4/5/2019	7.4	W	W	W	W	W	W	W	W	0.4
2/14/2019	7.6	W	W	W	W	W	W	W	W	0.2
11/30/2018	8.3	W	W	W	W	W	W	W	W	0.2
11/2/2018	**8.5**	W	W	W	W	W	W	W	W	0.3
3/23/2018	7.9	6	ND (2.31)	ND (0.002)	*ND (0.0008)*	*0.052*	42	ND (0.05)	ND (2.00)	NA
1/25/2018	7.9	15	ND (6.17)	*ND (0.004)*	*0.002*	0.024	17	ND (0.05)	ND (2.00)	NA
12/19/2017	**8.9**	ND (2.00)	ND (5.32)	*ND (0.004)*	*0.001*	ND (0.02)	3	0.08	ND (2.00)	0.2
11/17/2017	6.8	8	ND (7.04)	*ND (0.004)*	*0.003*	*0.048*	4	0.09	ND (2.00)	0.2
5/5/2017	W	W	W	W	W	W	W	W	W	0.1
4/13/2017	W	W	W	W	W	W	W	W	W	0.1
12/20/2016	W	W	W	W	W	W	W	W	W	NA
11/9/2016	W	W	W	W	W	W	W	W	W	NA
6/23/2016	W	W	W	W	W	W	W	W	W	NA
2/18/2016	7.5	W	W	W	W	W	6	W	W	0.8
11/19/2015	6.8	W	W	W	W	W	27	W	W	**1**
9/2/2015	6.4	W	W	W	W	W	**649**	W	W	NA
5/12/2015	6.1	W	W	W	W	W	75	W	W	NA
2/2/2015	6.1	W	W	W	W	W	5	W	W	NA
10/31/2014	6.3	6	ND (5.52)	*0.004*	*ND (0.004)*	*0.085*	121	ND (0.05)	ND (2)	0.2
9/24/2014	5.6	13	ND (5.56)	*0.005*	*0.001*	*0.053*	**2420**	0.1	ND (2)	0.6
4/24/2014	6.8	11	ND (5.62)	*ND (0.005)*	*0.001*	*0.075*	172	0.14	ND (2)	NA
2/18/2014	6.9	18	ND (5.03)	*ND (0.005)*	*0.002*	*0.045*	1	ND (0.05)	ND (2)	NA
12/20/2013	6.8	**60**	ND (4.98)	*ND (0.005)*	*0.002*	*0.04*	59	0.12	ND (2)	NA

Abbreviations
NA - Not Analyzed
ND - Non Detect
W - Monitoring Waiver
Bold - exeeded regulatory benchmark/limit
italic - exceeded SLV

Notes:
1. Benchmarks and 303(d) Limits are based on the May 6, 2021 1200-Z permit letter issued by the City of Portland Environmental Services. Although 303(d) limits are noted for copper, lead, and zinc in the Columbia Slough under the 1200z permit, the Owens-Brockway facility discharges are only covered by the 303(d) listing for iron. These benchmarks were effective as of July 1, 2021.

2. For data prior to July 1, 2021, benchmarks from the previous version of the 1200Z permit were used. The previous benchmarks were slightly different as follows: pH 5.5 to 8.5, Total Oil and Grease 10 mg/L, Total Copper 0.02 mg/L, Total Lead 0.06 mg/L, BOD5 33 mg/L. In addition iron had a reference impairment concentration of 1 mg/L.

3 SLVs are screening level values from DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites for non-Portland Harbor sites.

Table 5.5. NPDES Stormwater Monitoring Data for Outfall 6
Owens Brockway Glass Container, Inc.
Portland Facility

	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5	Iron
	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
Benchmarks	5.5-9.0	30	NA	0.017	0.1	0.24	406	0.16	24	
303(d) Limits										10
SLVs				0.0027	0.00054	0.036				
Sample Date	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
3/21/2022	6.6	22	NA	*0.004*	*0.002*	*0.058*	472	0.1	ND (2.00)	0.7
2/28/2022	6.8	**257**	NA	***0.023***	*0.018*	***0.268***	12	**0.33**	2	9.6
12/15/2021	8.9	**64**	NA	*0.007*	*0.004*	*0.12*	**770**	0.13	3	2.2
10/5/2021	7.6	29	NA	*0.009*	*0.003*	*0.076*	**1120**	0.11	4	1.2
3/22/2021	W	26	W	W	W	W	10	W	W	W
2/3/2021	W	19	W	W	W	W	46	W	W	W
1/8/2021	W	8	W	W	W	W	23	W	W	W
12/21/2020	W	10	W	W	W	W	25	W	W	W
11/18/2020	W	21	W	W	W	W	62	W	W	W
4/1/2020	W	10	W	W	W	W	7	W	W	0.9
12/13/2019	W	18	W	W	W	W	88	W	W	0.8
11/19/2019	W	21	W	W	W	W	238	W	W	0.7
4/5/2019	7.6	**71**	W	W	W	W	15	W	W	**2.8**
2/14/2019	8	**88**	W	W	W	W	57	W	W	**4.1**
12/18/2018	7.6	**84**	W	W	W	W	214	W	W	**3.1**
3/23/2018	8	**42**	ND (1.36)	*0.007*	*0.003*	*0.067*	66	0.09	ND (2.00)	NS
1/25/2018	8.2	22	ND (5.10)	*0.005*	*0.002*	*0.051*	**980**	0.05	ND (2.00)	1
12/19/2017	**8.8**	**91**	ND (5.26)	*0.015*	*0.007*	*0.136*	**921**	**0.21**	2	NS
10/20/2017	7.9	8	ND (3.55)	*0.006*	*0.002*	*0.058*	**2420**	0.08	2	0.8
5/5/2017	7.6	W	W	W	W	W	W	W	W	**6.8**
2/23/2017	W	W	W	W	W	W	W	W	W	NS
12/20/2016	W	W	W	W	W	W	W	W	W	NS
11/9/2016	W	W	W	W	W	W	W	W	W	NS
6/23/2016	W	W	W	W	W	W	W	W	W	NS
2/18/2016	7.4	**56**	W	W	W	W	71	0.13	W	**2.3**
11/19/2015	6.9	**32**	W	W	W	W	291	0.1	W	**1.1**
9/2/2015	6.4	ND (20.0)	W	W	W	W	**2420**	**0.18**	W	NS
5/12/2015	6.3	15	W	W	W	W	326	0.06	W	NS
2/2/2015	5.6	**262**	W	W	W	W	147	0.05	W	NS
10/31/2014	6.3	**79**	ND (6.13)	***0.138***	*0.007*	*0.087*	**921**	**0.26**	ND (2.00)	**5.5**
9/24/2014	6.2	**63**	ND (5.68)	***0.101***	*0.002*	*0.06*	**2420**	**0.31**	6	**2.1**
4/24/2014	8.3	**96**	ND	*0.006*	*0.01*	*0.05*	**1300**	ND	ND (2.00)	NS
2/18/2014	6.9	**45**	ND	*0.011*	*0.01*	*0.09*	210	0.15	ND (2.00)	NS

Abbreviations
NA - Not Analyzed
ND - Non Detect
W - Monitoring Waiver
Bold - exeeded regulatory benchmark/limit
italic - exceeded SLV

Notes:
1. Benchmarks and 303(d) Limits are based on the May 6, 2021 1200-Z permit letter issued by the City of Portland Environmental Services. Although 303(d) limits are noted for copper, lead, and zinc in the Columbia Slough under the 1200z permit, the Owens-Brockway facility discharges are only covered by the 303(d) listing for iron. These benchmarks were effective as of July 1, 2021.

2. For data prior to July 1, 2021, benchmarks from the previous version of the 1200Z permit were used. The previous benchmarks were slightly different as follows: pH 5.5 to 8.5, Total Oil and Grease 10 mg/L, Total Copper 0.02 mg/L, Total Lead 0.06 mg/L, BOD5 33 mg/L. In addition iron had a reference impairment concentration of 1 mg/L.

3 SLVs are screening level values from DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites for non-Portland Harbor sites.

Table 5.6. NPDES Stormwater Monitoring Data for Outfall 8
Owens Brockway Glass Container, Inc.
Portland Facility

	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5	Iron
	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
Benchmarks	5.5-9.0	30	NA	0.017	0.1	0.24	406	0.16	24	
303(d) Limits										10
SLVs				0.0027	0.00054	0.036				
Sample Date	(s.u.)	mg/L	mg/L	mg/L	mg/L	mg/L	org./100 ml	mg/L	mg/L	mg/L
3/21/2022	8.6	ND (2.00)	NA	0.002	*0.002*	*0.041*	ND (1)	ND (0.05)	ND (2.00)	ND (0.05)
2/28/2022	7.4	4	NA	0.001	*0.002*	0.011	1	ND (0.050)	ND (2.00)	0.1
12/15/2021	8.6	7	NA	0.001	*0.003*	*0.04*	1	ND (0.050)	ND (2.00)	0.1
10/5/2021	7.2	ND (2.00)	NA	0.002	*0.002*	0.027	20	ND (0.050)	ND (2.00)	0
3/22/2021	8.4	7	ND (2.70)	*0.003*	*0.003*	0.018	1	ND (0.05)	3	0.4
2/3/2021	8.8	10	ND (2.69)	*0.003*	*0.007*	0.018	<1	ND (0.05)	ND (2.00)	0.5
1/8/2021	7.9	3	NS	ND (.002)	*0.004*	0.014	1	ND (0.05)	ND (2.00)	0.1
12/21/2020	7.1	ND (2.00)	NS	ND (.002)	*0.003*	0.013	1	ND (0.05)	ND (2.00)	0.1
11/18/2020	7	3	ND (2.70)	0.002	*0.004*	0.017	10	ND (0.05)	ND (2.00)	0.3
4/1/2020	7.6	9	2.77	*0.012*	*0.006*	0.084	2	ND (.05)	4	0.3
12/20/2019	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
12/13/2019	7.6	2	ND (1.3)	ND (.002)	*0.002*	0.019	2	ND (.05)	ND (2.0)	NA

Abbreviations
NA - Not Analyzed
ND - Non Detect
W - Monitoring Waiver
Bold - exeeded regulatory benchmark/limit
italic - exceeded SLV

Notes:
1. Benchmarks and 303(d) Limits are based on the May 6, 2021 1200-Z permit letter issued by the City of Portland Environmental Services. Although 303(d) limits are noted for copper, lead, and zinc in the Columbia Slough under the 1200z permit, the Owens-Brockway facility discharges are only covered by the 303(d) listing for iron. These benchmarks were effective as of July 1, 2021.

2. For data prior to July 1, 2021, benchmarks from the previous version of the 1200Z permit were used. The previous benchmarks were slightly different as follows: pH 5.5 to 8.5, Total Oil and Grease 10 mg/L, Total Copper 0.02 mg/L, Total Lead 0.06 mg/L, BOD5 33 mg/L. In addition iron had a reference impairment concentration of 1 mg/L.

3 SLVs are screening level values from DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites for non-Portland Harbor sites.

Table 6.1 Sample results from fire suppression water taken 9/10/2018.

Owens Brockway Glass Container, Inc.
Portland Facility

	Screening Value[1]	MP-002	Upstream OF 2
		9/10/2018	9/10/2018
Metals	**ug/l**	**ug/l**	**ug/l**
Aluminum	87	NA	NA
Antimony	640	<2	<2
Arsenic	0.14	**5.8**	<2
Arsenic III	190	NA	NA
Cadmium	0.094	<0.8	<0.8
Chromium, total	--	<6	<6.0
Chromium, hexavalent	11	NA	NA
Copper	2.7	**16.1**	**9.2**
Lead	0.54	**4**	**7.7**
Manganese	100	NA	NA
Mercury	0.77	<0.2	<0.2
Methyl Mercury	0.0028	NA	NA
Nickel	16	5	<4
Selenium	5	<20	<20
Silver	0.12	<2	<2
Zinc	36	29.1	**56.9**
Perchlorate	--	NA	NA
Cyanide	5.2	NA	NA

Abbreviations

NA - Not analyzed

< - less than detection limit

Bold - exeeded regulatory benchmark/limit

Notes

1) SLV screening values for stormwater for non-Portland Harbor sites
DEQ Guidance for Evaluating the Stormwater Pathway at Upland Sites

DOF DALTON OLMSTED FUGLEVAND

Figures

NOTE:
1. Aerial Background Image from Google Earth Pro, dated 08/13/2021. Use for visual reference only.

0 1000
Scale in Feet

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

VICINITY MAP

DALTON OLMSTED FUGLEVAND

FIGURE 2.1

08/18/2022

PLOT TIME: 8/18/2022 2:57 PM MOD TIME: 8/18/2022 2:46 PM USER: Kelley Begley DWG: P:\Johnson Lake\CAD\Figures\2022-08\2022-08 JL SWPCP Fig 2.1 VicMap.dwg

City of Portland Swale
O-I Swale
O-I Swale Centerline
Division Between Two Separate Swales
City of Portland Containment Valve (SC-P1)
City of Portland Sedimentation Vault
Spill Containment Valve (SC-A1)
Pipe Decommissioned (Overflow Only)
Sedimentation Vault
Open pipe through hillside
005
004
006
Rock Check Dams
O-I Swale
Conc Weir
Portland Swale
Sediment Trap
Spill Containment valves
JOHNSON LAKE
NE 92nd Dr
NE Glass Plant Rd
Former Outfall 3, abandoned in 2010 and stormwater rerouted to Outfall 2
Garbage Dumpster
Building 28
Building 25
002
Rock Check Dams
Discharge point 007 is not a regular compliance monitoring point. Stormwater discharge only occurs at this location when containment valve is manually opened, as detailed in Section 2.1.5 of the SWPCP
Truck Loading Dock
Building 37
Building 31
Abandoned Pipe
Spill Containment Valve (SC-B1)
Sedimentation Vault (StormGate SG816)
Former Outfall 1 Now Overflow Only
Former Outfall 8 Now Rerouted to Bio-Swale
007
To City MS4
Building 30
Drainage Basin A
Paper Truck Dock
Building 3
Drainage Basin B
Transformer Yard
Truck Scale
Covered Cullet Storage, Approximate Footprint (115'x70')
Cullet Bunkers
LPG Tanks
Recycling Storage
Drainage Basin C
Spill Containment Valve (SC-C1)
Garbage Dumpster
Transformer #26
Oily Waste Container
Metal Scrap Bin
Building 2
Concrete Conveyance Structure
Building 8
Building 38
Stormwater Treatment System
Road Run-on Infiltration
008
NE Columbia Blvd
Hazardous Waste Room
Building 1
Building 5
Transformer Yard
Anhydrous Ammonia
Building 6
Soda Ash
Old Caustic Tank (Contains H_2O)
Sand
Limestone
Metal Scrap Bin
Building 20
Building 7A
Building 7B
Waste/Raw Dust Container
205
Spill Drain (drains to containment)

Approximate Drainage Areas

Outfall 2	494,000 sq.ft.
Outfalls 4, 5, 6, & 8	761,500 sq.ft.
Outfall 7	39,000 sq.ft.

Legend

- 007 Outfall Sampling Location
- Catch Basin
- Catch Basin with Cleanway Filter
- Catch Basin with Filter Sock
- Catch Basin with Debris Screen
- Catch Basin - Decommissioned
- Stormwater Manhole
- Industrial Wastewater Manhole
- Manhole - Truck Scale Access
- RD Roof Drain
- Approximate Drainage Basin Boundary
- Approximate Overflow Pipe Location
- Approximate Conveyance Pipe Location
- Swale (Area Approx.)
- Sheet Runoff Flow Direction
- Pervious Area
- Oil/Solids Separator
- Bulk Diesel Tank
- Oil Storage/Spill Kit
- Aboveground Storage Tank (AST)
- Wattle
- Bio-bag
- Sorbent Boom

SPCC Report Locations

- TX Aboveground Storage Tank
- OX Oil-Filled Operational Equipment
- MX Mobile Container
- EX Oil-Filled Operational Equipment-Transformer

NOTES:
1. This map recreated from figure titled "Owens-Illinois Brockway Glass - Stormwater Site Specific Map" in July 21, 2009 report by StormwaterRx, LLC. All piping and basins approximate, based on Owens Site Stormwater Map, 8/21/01 and Weddle Surveying, Inc. September 24, 2009 investigative survey.
2. Aerial Background Image from Google Earth Pro, dated 08/13/2020. Use for visual reference only.

0 40 80 120 160
Scale in Feet

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

STORMWATER SITE SPECIFIC MAP

DALTON OLMSTED FUGLEVAND

FIGURE 2.2

08/18/2022

PLOT TIME: 8/18/2022 2:58 PM MOD TIME: 8/18/2022 2:56 PM USER: Kelley Begley DWG: P:\Johnson Lake\CADFigures\2022-08\2022-08 JL SWPCP Fig 2.2 Site Specific SW.dwg

Legend

- Temporary Covering (long-term storage)
- Approximate Location of Permanent Structure (short-term storage) (under construction)
- Approximate Location of Underground Modular Wetland

0 60 120
Scale in Feet

NOTE:
1. Aerial Background Image from Google Earth Pro, dated 08/13/2021. For visual reference only.

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

SOURCE CONTROL AND TREATMENT

DALTON OLMSTED FUGLEVAND

FIGURE 4.1

08/18/2022

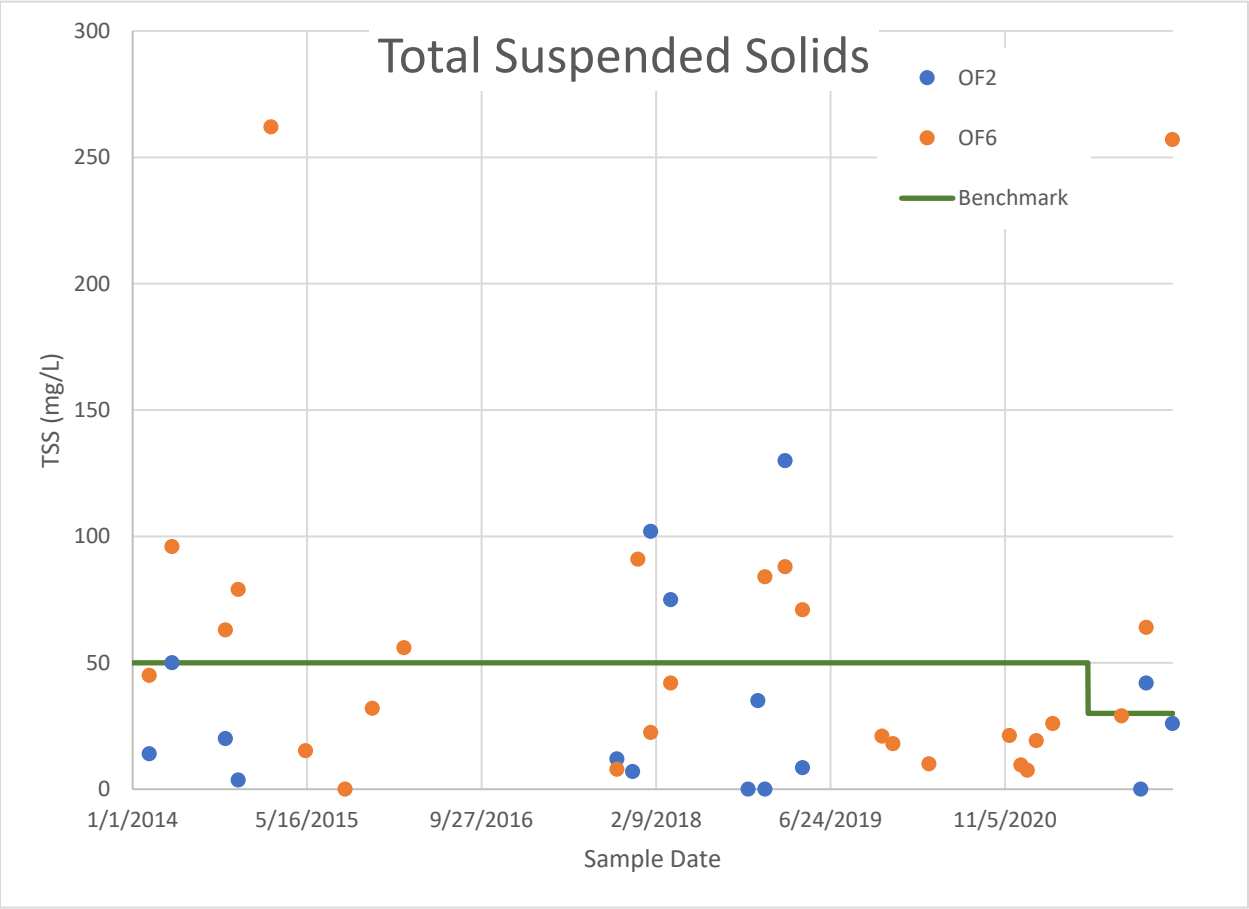

Figure 5.1 Total Suspended Solids from Outfalls 2 and 6 from NPDES monitoring data compared to statewide benchmarks.

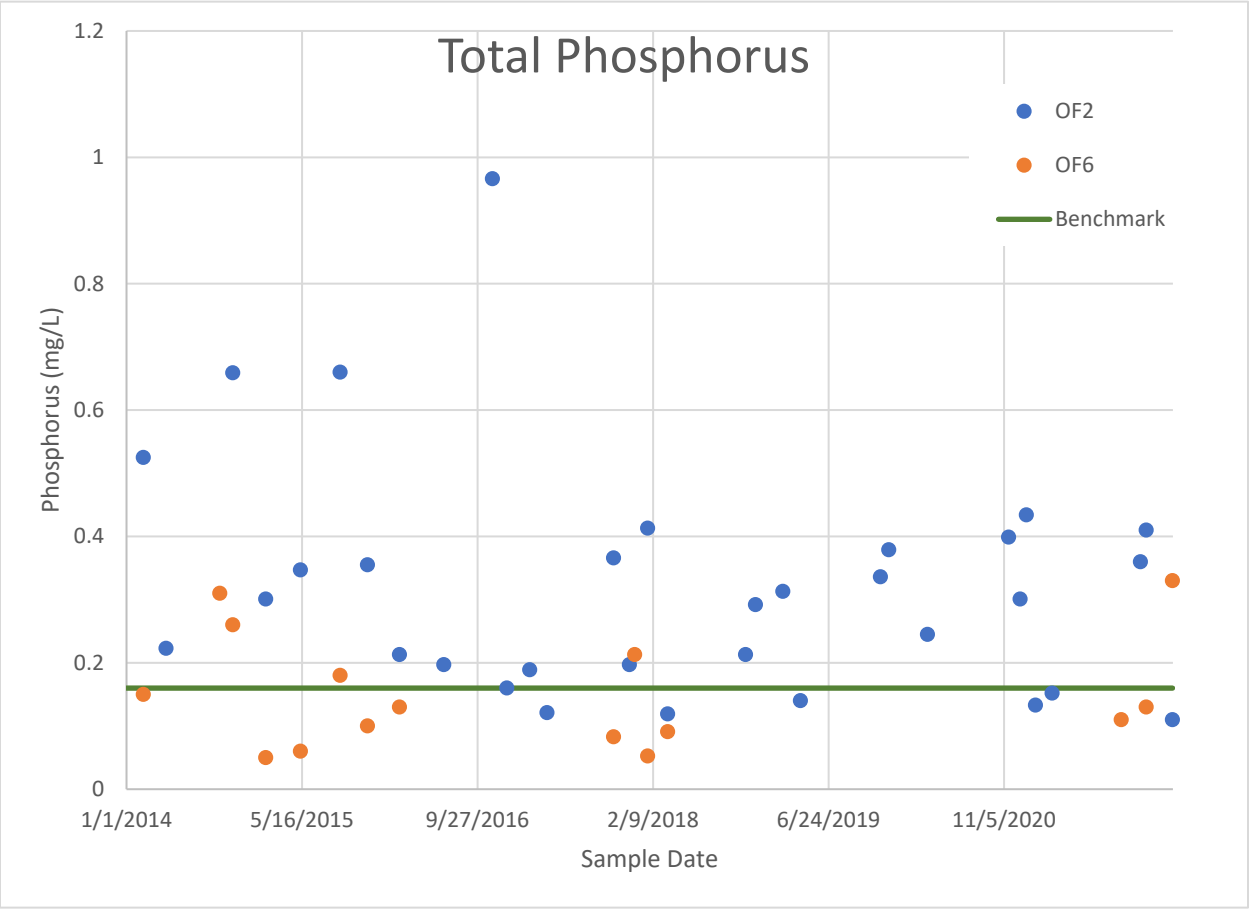

Figure 5.2 Phosphorus from Outfalls 2 and 6 from NPDES monitoring data compared to statewide benchmarks.

DOF DALTON OLMSTED FUGLEVAND

Attachment A

This memorandum chronologically documents the removal of potentially impacted sediments from the storm water culvert that discharges into the east end of Johnson Lake (JL). This culvert is referred to as Outfall #1. This work was started on Nov 1, 2012 and completed on Nov 7, 2012. The work was performed by Bravo Environmental (Bravo). DOF personnel were onsite during this work to observe the work on behalf of Owens.

The purpose of cleaning the storm water culvert was to remove potentially impacted sediments that were located in the culvert. Sediment from the culvert were previously observed by DOF personnel (as a turbid plume) being transported into Johnson Lake during and after rain events. DOF personnel issued a memorandum dated Feb 27, 2012 that documented sampling and analysis of sediments located within the Johnson Lake end of the culvert.

November 1, 2012

DOF representative arrived at the site during an ongoing storm event and observed a large sediment plume entering Johnson Lake from the culvert as shown in Figure P-1. Sediment plume persisted for several hours until storm event was finished. Bravo arrived onsite and mobilized a 25 yard roll-off box that was staged on Glass Plant Rd. No other work performed by Bravo this day.

November 2, 2012

Rain for Rent mobilized a water treatment plant (WTP) onto Myers Container property near the culvert inlet, east of I-205. Bravo mobilized a vac-truck and jet-truck to Glass Plant Rd near the west end of the culvert where it discharges into Johnson Lake. Laborers constructed a sandbag berm, approximately three feet downstream of the culvert, to help control sediment flowing out of the culvert during the sediment removal process. A four inch pump was then used to pump the standing water out of the area upstream of the sand bag berm and the culvert. Discharge from this pump was directed into JL. During this time a turbidity plume was observed entering JL from the pumps discharge pipe. The dewatering process took approximately two minutes after which the pump was turned off. A sump, approximately a foot deep and two feet in diameter, was constructed between the sandbag berm and the culvert. The sump was constructed by using a shovel to loosen the soil while the vac-truck removed the material for disposal. A jet hose was then used to suspend the sediment within the culvert. The vac-truck removed the sediment and water from the culvert through the 25 yard roll-off sediment box staged on Glass Plant Rd until the vac-truck tank was full. The vac-truck discharged the water in its tank into the WTP for processing. When the vac-truck returned the four inch pump was again used to remove standing water from the culvert and discharged the water into JL. The pump was run for approximately 60 seconds. A turbidity plume was again observed entering JL from the pump discharge pipe during this time. The culvert cleanout continued until early afternoon when work was stopped due to the inability to process any more water for the day through the WTP. DEQ representative, Tom Gainer, was onsite to observe cleanout process in the afternoon prior to the shutdown. The sandbag berm was removed at the end of the shift. A turbidity plume and oil sheen (shown in Figure P-2) was observed entering JL after the sandbag berm was removed.

November 5, 2012

Bravo reconstructed the sandbag berm. Similar to the previous day, the standing water in the culvert was then pumped into JL (see Figure P-3) using the four inch pump. The dewatering process took approximately 7 minutes during which time a turbidity plume was again observed entering the lake from the pumps discharge pipe as shown in Figure P-4. DOF representative was informed that WTP not plumbed correctly; reducing the plant's capacity. The WTP was replumbed prior to the restart of the culvert cleanout. Culvert cleanout continued throughout the morning. Work was stopped to empty the sediment box and to refill the jet-truck's water tank. Prior to the restart of the culvert cleanout in the afternoon the four inch pump was again used to remove standing water that had collected in the culvert by again pumping the water into JL. The dewatering process took approximately 60 seconds during that time a plume was again observed entering the lake. At the end of the shift the berm was removed and an oil sheen was again observed entering JL from the outfall. This completed cleaning of the western portion of the culvert (pending video inspection).

November 6, 2012

DOF representative arrived onsite and observed oil sheen was still present near the JL end of the outfall. The eastern half of the culvert was reported by Bravo to be angled slightly downward towards the inlet on Myers Container property. To clean this half of the culvert Bravo moved the vac-truck and jet-truck onto Myers' property. The sediment was then suspended using the water jet and the vac-truck removed from the sediment at the culvert inlet. During this time the west end of the culvert was checked for flow by the DOF representative. Turbid water was observed entering JL from the culvert at that time. No significant turbidity was observed prior to the start of the cleanout. Figure P-5 is a photo of the west end of the culvert prior to the cleanout and Figure P-6 is the same location after the cleanout had started. No berm was constructed between JL and the culvert outlet prior to the start of the clean out to prevent turbid water from entering JL during the clean out of the eastern portion of the culvert. The removal of sediment from the culvert was completed at approximately 19:00 (pending video inspection of culvert).

November 7, 2012

DOF representative arrived onsite and noted that little to no water coming from the west end of the culvert. Bravo constructed a berm between the culvert and JL. The four inch pump was again used to dewater the culvert by pumping the standing water from behind the berm and from within the culvert into JL. No plume was observed entering JL from the pump discharge. A lateral launch pipeline closed circuit video camera with transponder was placed in the culvert at the outfall (see Figure P-10) to inspect and record the condition of the culvert after the cleanup was complete. The video inspection verified that the bulk of the sediment within the culvert had been removed with only trace amounts of sediment remaining. Upon completion of the video inspection Bravo demobilized their equipment and personnel.

Figures:

P-1: Turbidity plume observed extending approximately 75 feet out into Johnson Lake from storm water outfall.

P-2: Sheen was observed at the outfall entering Johnson Lake.

P-3: Water pump discharge from the storm water outfall into Johnson Lake.

P-4: Turbidity plume observed in Johnson Lake after water in culvert was pumped into the lake from the culvert.

P-5: Stormwater runoff into Johnson Lake before the clean out of the eastern portion of the culvert had started.

P-6: Highly turbid water observed entering Johnson Lake during the clean out of the eastern portion of the culvert.

P-7: Storm water culvert inlet located on Myers Container property east of I205.

P-8: Storm water runoff on Myers Container property to culvert inlet observed during a rain event.

P-9: Vac-truck, jet-truck, and sediment roll-off box staged on Glass Plant Rd east of Johnson Lake.

P-10: Remote controlled wheel camera unit enters the culvert to perform post cleanup inspection.

DOF DALTON OLMSTED FUGLEVAND

Attachment B

Oregon
Kate Brown, Governor

Department of Environmental Quality
Northwest Region
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5263
FAX (503) 229-6945
TTY 711

September 11, 2018

Ashleigh Henry
Owens-Illinois Glass Plant
9710 NE Glass Plant Road
Portland, Oregon 97220

Re: Oil Spill
OERS No. 2018-2097

Dear Ms. Henry:

On September 10, 2018 the Department of Environmental Quality (DEQ) received a report of a spill of machine oil from the Owens-Illinois Glass facility in Portland, Oregon. Therefore, you are requested to take and/or continue all containment and cleanup actions possible to prevent the spread of the spill to public waters, groundwater or soils beyond the original spill site.

In accordance with Oregon Administrative Rules (OAR) 340-142-0090 (copy attached), you are required to submit a written report describing the spill and subsequent clean-up efforts. Pursuant to our discussion on-site today, please submit a copy of the internal report you will be generating to meet that requirement. We ask you to submit this information no later than October 11, 2018. Please submit the report to:

Please note that the DEQ email system cannot handle files larger than 8mb in size. Files in excess of that size should be split into smaller ones, or the information can be sent to me by regular mail to:

Mike Greenburg, DEQ, 700 NE Multnomah Street, Suite 600, Portland, OR, 97232-4100

Please note that responsible parties are required to pay costs incurred by DEQ for oversight of the investigation and cleanup of the spill or release (Oregon Revised Statutes 465.255). DEQ oversight costs include direct and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ allocable to oversee this cleanup and not charged as direct, site-specific costs.

If you have any questions about this request, please contact me at (503) 229-5153.

Sincerely,

Michael Greenburg
State On-Scene Coordinator

Enclosures: OAR 340-142

Owens-Brockway Glass Container Inc.
Environmental, Health and Safety
9710 NE Glass Plant Rd
Portland, OR 97220
+1 567-336-3429 tel
+1 567-336-3434 fax

September 14, 2018

Mike Greenburg
Oregon Department of Environmental Quality
Northwest Region Emergency Response
700 NE Multnomah Street, Suite 600
Portland, OR 97232-4100

Re: Owens-Brockway Glass Container Inc. – Portland, Oregon plant ("Owens")
September 10, 2018 Fire and Water Discharge

Dear Mr. Greenburg:

On Monday, September 10, 2018 at about 6:00 AM, Owens' Portland plant ('Owens') experienced a fire at its electrical substation located outside of the manufacturing buildings. The Portland Fire Department responded and quickly extinguished the fire. Also, the utility company responded and cut the electrical power to Owens' entire facility. Owens' employees and other responders acted quickly to prevent injuries and avoid serious damage to the plant's glass melting furnaces and other equipment. The plant power outage lasted until about 2:15 PM.

With no electrical power to the plant for about 8 hours, the normal cooling water recirculation pumps were inoperable. So, in order to cool the glass melting furnaces and other critical equipment, one-pass city water was used. This one-pass cooling water was discharged into the plant's basement. However, since the recirculating system was inoperable, water eventually filled the containment systems and flowed out of the building, where it mixed with firefighting water from the substation fire. This combined water flowed into open exterior utility trenches for the current construction project, as well as into storm drains leading to the bioswale above Outfall 002. Owens had placed absorbent booms around these storm drains to remove oil from the water prior to entering the drains.

NRC Environmental Services responded and removed approximately 60,000 gallons of water from the construction trenches. Owens estimates that approximately 320,000 gallons of water flowed into the bioswale; and a portion of this water discharged from Outfall 002 into Johnson Lake. Water samples were taken at the head of the bioswale and at the Outfall 002 discharge point. These water sample analytical results are expected by the end of next week and will be forwarded upon receipt.

Before 12:00 noon on September 10th, reports were made to the Oregon Emergency Response System (OERS report number 2018-2097), the City of Portland Stormwater Permit Manager Joshua Ernst, and a voicemail message was left with the City of Portland Industrial Waste Water Discharge Permit Manager Biola Cruse. Also, a report was made to the City Duty Officer hotline.

If you have any questions, please call me at 567-336-3429.

Ashleigh Henry
EHS Manager

cc: Mr. Biola Cruse, City of Portland
Mr. Joshua Ernst, City of Portland

Owens-Brockway Glass Container Inc.
Environmental, Health and Safety
9710 NE Glass Plant Rd
Portland, OR 97220
+1 567-336-3429 tel
+1 567-336-3434 fax

October 8, 2018

Mike Greenburg
Oregon Department of Environmental Quality
Northwest Region Emergency Response
700 NE Multnomah Street, Suite 600
Portland, OR 97232-4100

Re: Owens-Brockway Glass Container Inc. – Portland, Oregon plant ("Owens")
Analytical Results from September 10, 2018 Fire and Water Discharge

Dear Mr. Greenburg:

Attached please find analytical results for samples collected at Storm Water Outfall 2 during the September 10, 2018 event that was described in the September 14, 2018 letter to you from EHS Manager Ashleigh Henry.

If you have any questions or require additional information, please contact Ms. Henry at 567-336-3429 or by email at Ashleigh.Henry@o-i.com.

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 fines and imprisonment for knowing violations.

Sincerely,

Daniel Steele
Plant Manager

PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007711
Report Date: 09/18/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name: OF2
Project No:

Cover Letter

Owens-Brockway
9710 NE Glass Plant Road
Portland Oregon 97220
United States

Dear Ashleigh Henry,

Enclosed please find Pixis Labs analytical report for samples received as order number 18-007711 on 09/12/2018. Should you have any questions about this report or any other matter, please do not hesitate to contact us. We are here to help you.

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAP unless otherwise noted. This report shall not be reproduced, except in full, without the written consent of this laboratory. Samples will be kept a maximum of 15 days from the report date unless prior arrangements have been made.

Thank you for allowing Pixis to be of service to you, we appreciate your business.

Sincerely,
Reviewed and Signed

Derrick Tanner
General Manager

Columbia Food Laboratories
Pixis Labs
Member of Tentamus Group

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www.columbiafoodlab.com
customerservice@pixislabs.com

Company registered
in the United States of America
Tax ID: 93-1227941

PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007711
Report Date: 09/18/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name: OF2
Project No:

Sample Results

Sample: OF2 | Collected: 9/10/18 11:30 | Temp: 15 °C | Matrix: General Water
Lab ID: 18-007711-0001 | Received: 9/12/18 11:05 | Evidence of Cooling: Y

Method: EPA200.8

Analyte	Result	Units	LOQ	Dil.	Batch	Start/Extract	Analyzed	Notes
Antimony	< LOQ	mg/l	0.0020	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Arsenic	0.0058	mg/l	0.0020	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Beryllium	< LOQ	mg/l	0.0008	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Cadmium	< LOQ	mg/l	0.0008	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Chromium	< LOQ	mg/l	0.0060	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Copper	0.0161	mg/l	0.0020	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Lead	0.0040	mg/l	0.0008	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Nickel	0.0050	mg/l	0.0040	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Selenium	< LOQ	mg/l	0.0200	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Silver	< LOQ	mg/l	0.0020	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Thallium	< LOQ	mg/l	0.0008	10.00	1805487	09/14/18 10:00	09/17/18 16:25	
Zinc	0.0291	mg/l	0.00800	10.00	1805487	09/14/18 10:00	09/17/18 16:25	

Method: EPA245.1

Analyte	Result	Units	LOQ	Dil.	Batch	Start/Extract	Analyzed	Notes
Mercury	< LOQ	mg/l	0.0002	1.00	1805457		09/14/18 16:08	

Units of Measure

mg/l = milligram per liter

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Job Number: 18-007711
Report Date: 09/18/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name: OF2
Project No:

Laboratory Quality Control Results

EPA245.1 **Units:** mg/l **Batch ID:** 1805457

Method Blank

Analyte	Blank Result		Limits	Notes
Mercury	< LOQ		0.0002	

EPA200.8 **Units:** mg/l **Batch ID:** 1805487

Method Blank

Analyte	Blank Result		Limits	Notes
Antimony	< LOQ		0.0020	
Arsenic	< LOQ		0.0020	
Beryllium	< LOQ		0.0008	
Cadmium	< LOQ		0.0008	
Chromium	< LOQ		0.0060	
Copper	< LOQ		0.0020	
Lead	< LOQ		0.0008	
Nickel	< LOQ		0.0040	
Selenium	< LOQ		0.0200	
Silver	< LOQ		0.0020	
Thallium	< LOQ		0.0008	
Zinc	< LOQ		0.00800	

EPA245.1 **Units:** mg/l **Batch ID:** 1805457

Laboratory Control Sample

Analyte	LCS Result	Spike		LCS % Rec	Limits	Notes
Mercury	0.0010	0.00		100.00	90-110	

EPA200.8 **Units:** mg/l **Batch ID:** 1805487

Laboratory Control Sample

Analyte	LCS Result	Spike		LCS % Rec	Limits	Notes
Antimony	0.0552	0.05		110.32	85-115	
Arsenic	0.0514	0.05		102.88	85-115	
Beryllium	0.0548	0.05		109.60	85-115	
Cadmium	0.0545	0.05		108.96	85-115	
Chromium	0.0510	0.05		102.00	85-115	
Copper	0.0498	0.05		99.68	85-115	
Lead	0.0541	0.05		108.16	85-115	
Nickel	0.0517	0.05		103.44	85-115	
Selenium	0.0516	0.05		103.20	85-115	
Silver	0.0544	0.05		108.88	85-115	
Thallium	0.0532	0.05		106.40	85-115	
Zinc	1.02	1.10		92.80	85-115	

EPA245.1 **Units:** mg/l **Batch ID:** 1805457

Matrix Spike/Matrix Spike Duplicate Recoveries **SampleID:** 18-007713-0001

Analyte	Result	MS Res	MSD Res	Spike	RPD%		MS% Rec	MSD% Rec	Limits	Notes
Mercury	< LOQ	0.0019	0.0018	0.002	1.82	< 20.00	103.20	101.20	70-130	

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PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007711
Report Date: 09/18/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name: OF2
Project No:

Laboratory Quality Control Results

EPA200.8 **Units:** mg/l **Batch ID:** 1805487

Matrix Spike Recoveries **SampleID:** 18-007652-0001

Analyte	Result	MS Result	Spike		MS% Rec	Limits	Notes
Antimony	< LOQ	0.0104	0.01		104.29	70-130	
Arsenic	0.0034	0.0127	0.01		93.17	70-130	
Beryllium	< LOQ	0.0097	0.01		96.57	70-130	
Cadmium	< LOQ	0.0103	0.01		102.71	75-125	
Chromium	< LOQ	0.0093	0.01		89.24	70-130	
Copper	0.0027	0.0115	0.01		88.24	70-130	
Lead	< LOQ	0.0098	0.01		96.44	70-130	
Nickel	< LOQ	0.0090	0.01		88.98	70-130	
Selenium	< LOQ	0.0094	0.01		94.26	70-130	
Silver	< LOQ	0.0098	0.01		98.11	70-130	
Thallium	< LOQ	0.0097	0.01		96.73	70-130	
Zinc	0.0143	0.0236	0.01		93.00	70-130	

Matrix Spike Recoveries **SampleID:** 18-007791-0001

Analyte	Result	MS Result	Spike		MS% Rec	Limits	Notes
Antimony	0.0271	0.108	0.08		96.66	70-130	
Arsenic	0.0036	0.0852	0.08		97.94	70-130	
Beryllium	< LOQ	0.0863	0.08		103.42	70-130	
Cadmium	0.0024	0.0874	0.08		102.00	75-125	
Chromium	0.0285	0.104	0.08		90.96	70-130	
Copper	0.2810	0.3500	0.08		83.47	70-130	
Lead	0.0420	0.1230	0.08		97.23	70-130	
Nickel	0.0428	0.119	0.08		91.41	70-130	
Selenium	< LOQ	0.0798	0.08		94.17	70-130	
Silver	< LOQ	0.0837	0.08		98.79	70-130	
Thallium	< LOQ	0.0783	0.08		93.89	70-130	
Zinc	0.749	2.54	1.83		97.46	70-130	

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PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007711
Report Date: 09/18/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name: OF2
Project No:

Laboratory Quality Control Results

EPA200.8 **Units:** mg/l **Batch ID:** 1805487

Sample Duplicates **SampleID:** 18-007652-0001

Analyte	Org. Result	Result	LOQ		RPD	Limits	Notes
Antimony	< LOQ	< LOQ	0.0005		< LOQ	< 20.00	
Arsenic	0.0034	0.0034	0.0005		0.20	< 20.00	
Beryllium	< LOQ	< LOQ	0.0002		< LOQ	< 20.00	
Cadmium	< LOQ	< LOQ	0.0000		< LOQ	< 20.00	
Chromium	< LOQ	< LOQ	0.0015		< LOQ	< 20.00	
Copper	0.0027	0.0026	0.0005		2.08	< 20.00	
Lead	< LOQ	< LOQ	0.0002		< LOQ	< 20.00	
Nickel	< LOQ	< LOQ	0.0001		< LOQ	< 20.00	
Selenium	< LOQ	< LOQ	0.0050		< LOQ	< 20.00	
Silver	< LOQ	< LOQ	0.0005		< LOQ	< 20.00	
Thallium	< LOQ	< LOQ	0.0002		< LOQ	< 20.00	
Zinc	0.0143	0.0141	0.00200		1.34	< 20.00	

Sample Duplicates **SampleID:** 18-007791-0001

Analyte	Org. Result	Result	LOQ		RPD	Limits	Notes
Antimony	0.0271	0.0275	0.0033		1.74	< 20.00	
Arsenic	0.0036	< LOQ	0.0033		< LOQ	< 20.00	
Beryllium	< LOQ	< LOQ	0.0013		< LOQ	< 20.00	
Cadmium	0.0024	0.0023	0.0002		5.00	< 20.00	
Chromium	0.0285	0.0292	0.0100		2.16	< 20.00	
Copper	0.2810	0.2750	0.0033		1.86	< 20.00	
Lead	0.0420	0.0406	0.0013		3.60	< 20.00	
Nickel	0.0428	0.0424	0.0007		0.75	< 20.00	
Selenium	< LOQ	< LOQ	0.0333		< LOQ	< 20.00	
Silver	< LOQ	< LOQ	0.0033		< LOQ	< 20.00	
Thallium	< LOQ	< LOQ	0.0013		< LOQ	< 20.00	
Zinc	0.749	0.729	0.0133		2.69	< 20.00	

Abbreviations
LOQ Limit of quantification

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503-254-1794

Job Number: 18-007711
Report Date: 09/18/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name: OF2
Project No:

OWENSBROCK 18-007711

PIXIS Labs
A Tentamus Company

Owens-Brockway

Page 1 of 1

In of Custody Record

12423 NE Whitaker Way
Portland, OR 97230
Phone: (503) 254-1794 Fax: (503) 254-1452
www.pixislabs.com

Please inform us if you know or suspect that your sample contains hazardous chemicals

Some or all of this analyses may be subcontracted to an ORELAP accredited lab

Company: OWENS-ILLINOIS GLASS
Contact: ASHLEIGH HENRY
Address: 9710 NE GLASS PLANT ROAD PORTLAND, OR 97220
Email: ASHLEIGH.HENRY@O-I.COM
Phone: (971) 336 3429 Fax (971) 336 3434
Billing (if different):

X Analysis Requested

Purchase Order Number:
Project Number:
Project Name:
[ ] Report Instructions:
[ ] State Compliance Format
[ ] Email Final Results
[ ] Fax Final Results
[ ] Cash/Check/CC/Net 30
Other:

Field ID	Date/Time Collected	NWTPH-Dx	PCBs	PAH (8270C SIM)	PPM 13	Matrix	Comments
OF2	9-10-18 11:30AM	X	X	X	X	W	pH = 8.4

Unable to analyze due to insufficient sample volume and improper preservation
MW 9/12/18

Collected By:
[ ] Standard
[ ] Rush (1.5 Times Standard)
[X] Priority Rush (2 Times Standard)
Ask About Availability

Relinquished By:	Date	Time	Received By:	Date	Time
Ashleigh Henry	9-12-18		[illegible]	9-12-18	11:00

Lab Use Only:
Client Alias: Owens-Brockway
Order Number: 18-007711
[ ] Proper Container
[ ] Sample Condition
[ ] Temperature 4L 2°C 14.7
[ ] Shipped Via: Client
Evidence of cooling: [ ] Yes [ ] No

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO PIXIS WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH T CONDITIONS LISTED ON THE BACK OF THIS FORM. Please ask for a copy of conditions

B Client gave permission w/ temp B
JU 9-12

PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name:
Project No:

Owens-Brockway
9710 NE Glass Plant Road
Portland Oregon 97220
United States

Dear Ashleigh Henry,

Enclosed please find Pixis Labs analytical report for samples received as order number 18-007712 on 09/12/2018 at 11:05 AM. Should you have any questions about this report or any other matter, please do not hesitate to contact us. We are here to help you.

The samples listed below were received in good condition at 15 °C.

Laboratory Sample ID	Field Identification	Matrix	Collection Date	Collection Time
18-007712-0001	OF2 Up	General Water	09/10/2018	04:30 AM

Test results relate only to the parameters tested and to the samples as received by the laboratory. Test results meet all requirements of NELAP unless otherwise noted. This report shall not be reproduced, except in full, without the written consent of this laboratory. Samples will be kept a maximum of 15 days from the report date unless prior arrangements have been made.

NOTE: This analysis was subcontracted to Specialty Analytical in Clackamas, OR. Specialty Analytical is not an ORELAP accredited laboratory.

Thank you for allowing Pixis to be of service to you, we appreciate your business.

Sincerely,
Reviewed and Signed

Derrick Tanner
General Manager

Columbia Food Laboratories
Pixis Labs
Member of Tentamus Group

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www.columbiafoodlab.com
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Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

September 19, 2018

Mark Leed
Pixis Labs, LLC
12423 NE Whitaker Way
Portland, OR 97230
TEL: (503) 254-1794
FAX (503) 254-1454
RE: 18-007712

Dear Mark Leed: Order No.: 1809078

Specialty Analytical received 1 sample(s) on 9/13/2018 for the analyses presented in the following report.

REVISED REPORT: Please see case narrative for information on revision.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name:
Project No:

Case Narrative

WO#: **1809078**
Date: **9/19/2018**

Specialty Analytical

CLIENT: Pixis Labs, LLC
Project: 18-007712

Revision 1-

This report has been revised to correct the time of sample collection.

Columbia Food Laboratories
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PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name:
Project No:

Specialty Analytical

Date Reported: 19-Sep-18

CLIENT: Pixis Labs, LLC
Collection Date: 9/10/2018 4:30:00 AM
Project: 18-007712
Lab ID: 1809078-001
Client Sample ID: OF2 UP
Matrix: WASTE WATER

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
NWTPH-DX - RBC		**NWTPH-DX**				Analyst: **JH**
Diesel	1.38	0.0829	K	mg/L	1	9/17/2018 11:51:29 PM
Lube Oil	2.72	0.207		mg/L	1	9/17/2018 11:51:29 PM
Surr: o-Terphenyl	121	50-150		%REC	1	9/17/2018 11:51:29 PM

Page 1 of 1

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Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name:
Project No:

QC SUMMARY REPORT

WO#: **1809078**
19-Sep-18

Specialty Analytical

Client: Pixis Labs, LLC
Project: 18-007712 **TestCode:** **NWTPHDXLL_W**

Sample ID **CCV**	SampType: **CCV**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date:	RunNo: **27459**
Client ID: **CCV**	Batch ID: **12609**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **9/17/2018**	SeqNo: **368039**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	6.85	0.0800	6.000	0	114	85	115				
Lube Oil	3.26	0.200	3.000	0	109	85	115				

Sample ID **MB-12609**	SampType: **MBLK**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date: **9/17/2018**	RunNo: **27459**
Client ID: **PBW**	Batch ID: **12609**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **9/17/2018**	SeqNo: **368040**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	ND	0.0800									
Lube Oil	ND	0.200									
Surr: o-Terphenyl	0.256		0.2000		128	50	150				

Sample ID **LCS-12609**	SampType: **LCS**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date: **9/17/2018**	RunNo: **27459**
Client ID: **LCSW**	Batch ID: **12609**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **9/17/2018**	SeqNo: **368041**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	1.03	0.0800	1.000	0	103	60.7	121				
Lube Oil	1.10	0.200	1.000	0	110	64	126				

Sample ID **CCV**	SampType: **CCV**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date:	RunNo: **27459**
Client ID: **CCV**	Batch ID: **12609**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **9/18/2018**	SeqNo: **368164**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSD limit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

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A Tentamus Company

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Job Number: 18-007712
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Project Name:
Project No:

QC SUMMARY REPORT

WO#: **1809078**
19-Sep-18

Specialty Analytical

Client: Pixis Labs, LLC
Project: 18-007712 **TestCode:** **NWTPHDXLL_W**

Sample ID **CCV**	SampType: **CCV**	TestCode: **NWTPHDXLL**	Units: **mg/L**	Prep Date:				RunNo: **27459**			
Client ID: **CCV**	Batch ID: **12609**	TestNo: **NWTPH-Dx**	**SW 3510C**	Analysis Date: **9/18/2018**				SeqNo: **368164**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel	6.28	0.0800	6.000	0	105	85	115				
Lube Oil	3.22	0.200	3.000	0	107	85	115				

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSD limit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

Page 2 of 2

Columbia Food Laboratories
Pixis Labs
Member of Tentamus Group

info@columbiafoodlab.com
www.columbiafoodlab.com
customerservice@pixislabs.com

Company registered
in the United States of America
Tax ID: 93-1227941

PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name:
Project No:

KEY TO FLAGS

Rev. May 12, 2010

A	This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards
A1	This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards.
A2	This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard.
A3	The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
A4	The product appears to be aged or degraded diesel.
B	The blank exhibited a positive result great than the reporting limit for this compound.
CN	See Case Narrative.
D	Result is based from a dilution.
E	Result exceeds the calibration range for this compound. The result should be considered as estimate.
F	The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
G	Result may be biased high due to biogenic interferences. Clean up is recommended.
H	Sample was analyzed outside recommended holding time.
HT	At clients request, samples was analyzed outside of recommended holding time.
J	The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration.
K	Diesel result is biased high due to amount of Oil contained in the sample.
L	Diesel result is biased high due to amount of Gasoline contained in the sample.
M	Oil result is biased high due to amount of Diesel contained in the sample.
MC	Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.
MI	Result is outside control limits due to matrix interference.
MSA	Value determined by Method of Standard Addition.
O	Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements.
Q	Detection levels elevated due to sample matrix.
R	RPD control limits were exceeded.
RF	Duplicate failed due to result being at or near the method-reporting limit.
RP	Matrix spike values exceed established QC limits; post digestion spike is in control.
S	Recovery is outside control limits.
SC	Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.
*	The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit.

PIXIS Labs
A Tentamus Company

12423 NE Whitaker Way
Portland, OR 97230
503-254-1794

Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
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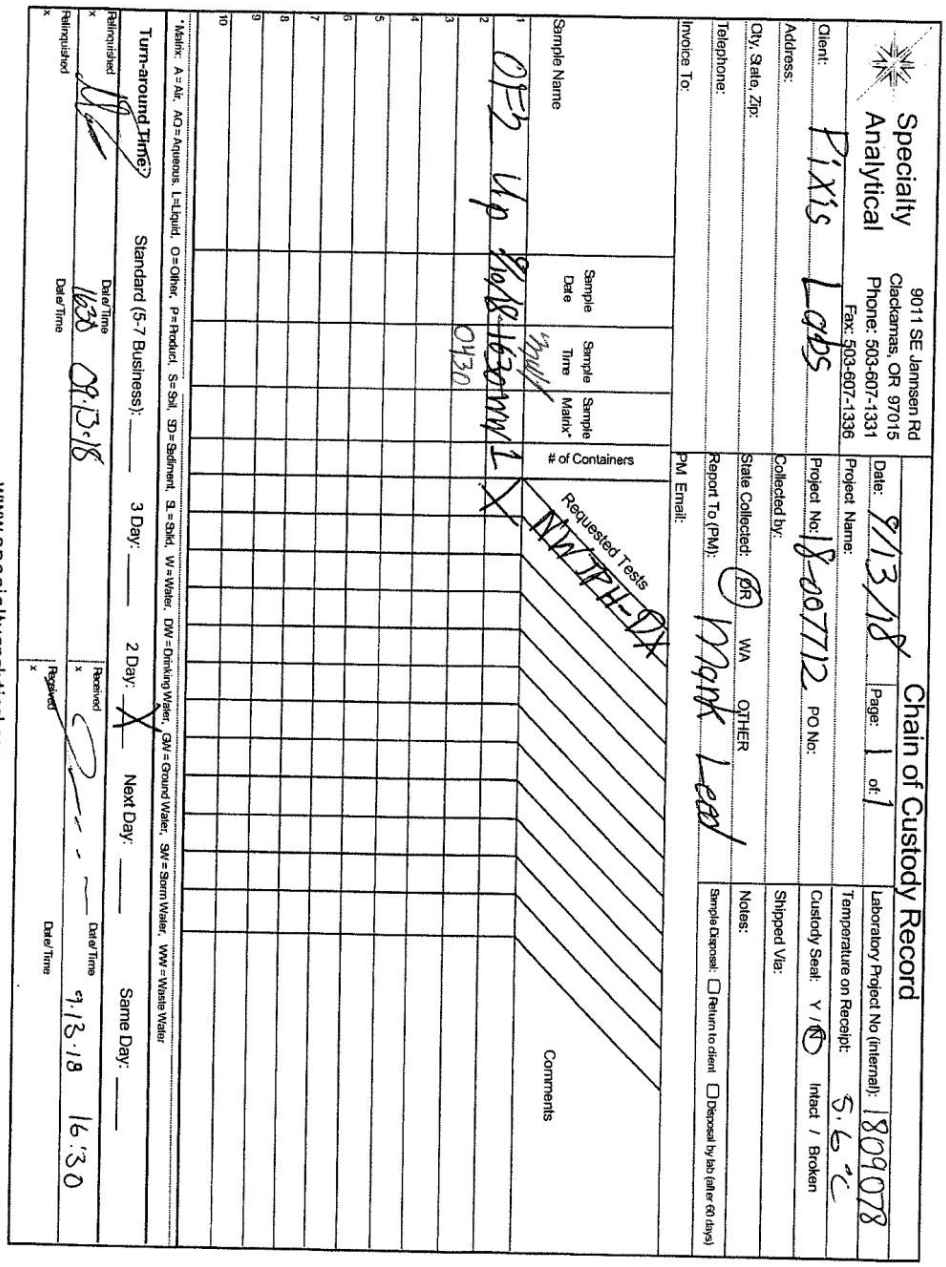
Project No:



Specialty Analytical
9011 SE Jannsen Rd
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Chain of Custody Record

Date: 8/13/18 | Page: 1 of 1 | Laboratory Project No (internal): 1809078

Client: PIXIS Labs | Project Name: | Temperature on Receipt: 5.6°C

Address: | Project No: 18-007712 | PO No: | Custody Seal: Y / (N) | Intact / Broken

City, State, Zip: | Collected by: | Shipped Via:

Telephone: | State Collected: (OR) WA OTHER | Notes:

Invoice To: | Report To (PM): Mark Lee | Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

PM Email:

	Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests: NWTPH-DX	Comments
1							
2	OF2 up	8/8/18	0930	W	1	X	
3			0430				
4							
5							
6							
7							
8							
9							
10							

*Matrix: A=Air, AQ=Aqueous, L=Liquid, O=Other, P=Product, S=Soil, SD=Sediment, SL=Solid, W=Water, DW=Drinking Water, GW=Ground Water, SW=Storm Water, WW=Waste Water

Turn-around Time: Standard (5-7 Business): ___ 3 Day: ___ 2 Day: X Next Day: ___ Same Day: ___

	Relinquished	Date/Time	Received	Date/Time
x		8/13/18 1630	x	8/13/18 16:30
x	Relinquished	Date/Time	Received	Date/Time

www.specialtyanalytical.com

Columbia Food Laboratories
Pixis Labs
Member of Tentamus Group

info@columbiafoodlab.com
www.columbiafoodlab.com
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Company registered
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12423 NE Whitaker Way
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503-254-1794

Job Number: 18-007712
Report Date: 09/19/2018
ORELAP#: OR100028
Purchase Order: 4500016205
Project Name:
Project No:

OWENSBROCK 18-007712

PIXIS Labs
A Tentamus Company

Owens-Brockway

Page 1 of 1

n of Custody Record

12423 NE Whitaker Way
Portland, OR 97230
Phone: (503) 254-1794 Fax: (503) 254-1452
www.pixislabs.com

Please inform us if you know or suspect that your sample contains hazardous chemicals.

Some or all of this analyses may be subcontracted to an ORELAP accredited lab

Company: OWENS - ILLINOIS GLASS
Contact: ASHLEIGH HENRY
Address: 9710 NE GLASS PLANT ROAD PORTLAND, OR 97220.
Email: ASHLEIGH.HENRY@O-I.COM
Phone: (561) 336-3424 Fax: (561) 336-3134
Billing (if different):

Analysis Requested

Purchase Order Number:
Project Number:
Project Name:
☐ Report Instructions:
☐ State Compliance Format
☐ Email Final Results
☐ Fax Final Results
☐ Cash/Check/CC/Net 30
Other:

Field ID	Date/Time Collected		NWTPH - Dx	PCBs X	PAH (3270 - D-SIM)	PPM 13	Matrix	Comments
OF2 UP	9-10-18	4:30PM	X	X	X	X	W	pH = 8.8
								* Unable to analyze due to insufficient sample volume. LMW 9/12/18

Collected By:	Relinquished By:	Date	Time	Received By:	Date	Time
☐ Standard ☐ Rush (1.5 Times Standard) ☒ Priority Rush (2 Times Standard) Ask About Availability	Ashleigh Henry	9-12-18			9-12-18	11:05

Lab Use Only:
Client Alias: OWNS Brock
Order Number: 18-007712
☐ Proper Container
☐ Sample Condition
☐ Temperature 4± 2°C 14.7
☐ Shipped Via: Client
Evidence of cooling: ☐ Yes ☐ No

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO PIXIS WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH T CONDITIONS LISTED ON THE BACK OF THIS FORM. Please ask for a copy of conditions

* Client gave permission w/ Temp # JV 9-12

General Information

OERS # 2018-2097

OERS Staff Fawcett, Keelyn

File Name Owens-Illinois Glass

Incident Status Closed

Incident Report Required ☐

Report

Reported On Date 09/10/2018

Reported On Time 1535

DEQ Contact Kimberlee Van Patten

Reporting Party Ashleigh Henry - Owens-Illinois Glass ≠

Reporting Party Phone 503-849-3112

Fund Code

Fund Code 46125

Spill Location

Enter the information known regarding the location of the incident.

Address 9710 NE Glass Plant Rd

City Portland

State OR

Zip Code 97220

County Multnomah

Latitude (Decimal Degrees) 45.564086

Longitude (Decimal Degrees) -122.566222

Release

Material	Release Source	Quantity Released	Unit of Measure	Media Affected	Edit
Wastewater (Non-Sewage)	Business	Unknown	Gallons	Surface Water	

Add Release Details

Release Date 09/10/2018

Release Time 0630

Activity Material Storage

Cause Equipment Failure

Weather

Description of Release

Owens-Illinois Glass reported an unknown amount of process water discharged to Johnson Lake/Columbia Slough due to power outage. The majority of the water is clean city water and then mixed with oily discharge. The discharge will be ongoing until the oil water separator can catch up. They will be contacting a contractor for remediation, which they intend to collect the water in containers until it can be processed and returned to the system. Ashley can also be reached at the office/567-336-6429

Responsible Party

Organization Owens Illinois Glass Plant

Name Henry, Ashleigh,,Portland,OR

Work Phone: 567-336-3429
Cellular Phone: 503-849-3112
Primary Email: ashleigh.henry@o-i.com
Other:

Incident Notifications

Performed By	Contact Method	Time of Contact	Date of Contact	Contact Organization	Phone Number	Edit

Add Incident Notifications

Tracking Tasks

This section reflects any Tracking Tasks related to this Incident.

Task Date	Task Time	Reporting Organization	Person Reporting Tracking Task	Tracking Task Description	Edit
11/19/2018	1440	Oregon Department of Environmental Quality	Greenburg	Discussed the incident with Tiffany YELTON-BRAM w/ NWR Water Quality. They are not considering any enforcement action due to the event being beyond reasonable control.	
11/19/2018	1000	Oregon Department of Environmental Quality	Greenburg	From: Jeremy Buck Sent: Monday, November 19, 2018 9:55 AM To: GREENBURG Michael J Subject: RE: [EXTERNAL] Owens Illinois Fire - Analytical Results Ok that's good to know that no transformers with fluids were involved in the fire. No need to analyze for PCBs unless there's a reason for it. Thanks for the update, I greatly appreciate it. -Jeremy From: GREENBURG Michael J Sent: Monday, November 19, 2018 9:17 AM To: 'Jeremy Buck' Subject: RE: [EXTERNAL] Owens Illinois Fire - Analytical Results The fire was in the rigging in their old substation (in the wood supports and suspension insulators), and caused them to shut down the electricity to the plant, but there were no transformers or other electrical equipment with fluids involved and no firefighting water or other discharge from the substation. With the power off the cooling water (city water) from the glass furnaces could no longer be processed by their treatment system and eventually built up and flowed out of the glass processing area and to the swale and lake. The next time I talk about sampling for a response I will make certain to discuss parameters and collection methods in more detail. From: Jeremy Buck Sent: Thursday, November 15, 2018 5:47 PM To: GREENBURG Michael J Subject: RE: [EXTERNAL] Owens Illinois Fire - Analytical Results Thanks Mike. Probably no PAHs unless it got heated, and with the fire I wasn't sure. Also, I think it was a transformer fire, so the PCBs were a potential but maybe it was mostly a non-PCB transformer. This certainly seems to be a small incident and not much got into the lake, so I don't think it's worth pursuing for us, but there were plenty of waterbirds using the lake so just wanted to have a chemical backup to confirm what I saw. I'm also just thinking of how I can be more helpful next time around. -Jeremy From: GREENBURG Michael J Sent: Thursday, November 15, 2018 3:44 PM To: 'Jeremy Buck' Subject: RE: [EXTERNAL] Owens Illinois Fire - Analytical Results The samples were collected by Ashleigh Henry, Owens Illinois' environmental staff-person. She collected them using her regular surface water monitoring methods, which included acidification of the sample. I was not aware of the limitations of the samples at the time, and my on-scene presence was well after the flow had been stopped. We tried later to see if there was enough residual sample to run additional tests on despite the acidification, but there was not sufficient volume. The oil is food-grade that is applied to the melted glass conveyances to keep the glass from sticking. It would not be expected to contain PAHs or PCBs. The contractor did not collect additional samples since they did not need them for waste profiling (based on knowledge of process). I would have preferred to have the data regardless just to be able to close this without a data gap. From: Jeremy Buck Sent: Wednesday, November 14, 2018 12:11 PM To: GREENBURG Michael J Subject: RE: [EXTERNAL] Owens Illinois Fire - Analytical Results Hmmm…I expected they would collect enough water for PAHs and PCBs, the key components we were interested in. Are there any data on those constituents available? That would be a serious gap in data quality objectives if those data were missing solely because the samples were collected incorrectly. I assume contractors collected the samples? Thanks -Jeremy From: GREENBURG Michael J Sent: Friday, November 9, 2018 2:12 PM To: 'Jeremy Buck' Subject: [EXTERNAL] Owens Illinois Fire - Analytical Results Jeremy, I was unable to navigate your agency's phone system when I tried to call you regarding this. Attached are the results for metals analysis from this incident. There was some light sheen observed entering Johnson Lake and NRC had contained that with boom and picked it up with	

Add a Tracking Task

Attachments

This section contains any files that are attached to this form. For example, these could include recovery plans, images, floor plans, and any other type of file related to this form. The file must be viewable with a web browser..

Attachment Name	Attachment Description	Delete
Metals Analytical Results		
Events Summary Letter		
Photolog for site visit 9-11-18		
Q-Time		

Spill Letter

NRC 1224220

OERS Report

Add Attachment

System Supplied Information

Last Updated By Michael Greenburg (mgreenburg) ≠

Last Updated 11/19/2018 3:20:14 PM ≠

DOF DALTON OLMSTED FUGLEVAND

Attachment C

STORMWATER POLLUTION CONTROL PLAN

Owens-Brockway Glass Container Inc.
Plant No. 21
Portland, Oregon

Oregon DEQ 1200-Z Permit
File No. 65610

ECSI Site ID: 1311

Prepared For:
Owens-Brockway Glass Container Inc.

Prepared by:
Dalton, Olmsted & Fuglevand, Inc.

Site Address:
9710 NE Glass Plant Road
Portland, Oregon 97220
Multnomah County

Contact Person:
Todd De Bow
(567) 336-3467

Date:
Revised July 2022

Project Number:
08012-500005.01

SIC Code:
3221

DOF DALTON OLMSTED FUGLEVAND

July 28, 2022

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

BMP	Best management practices
BOD	Biological oxygen demand
BES	Bureau of Environmental Services
DEQ	Department of Environmental Quality
DOF	Dalton, Olmsted & Fuglevand, Inc.
DOT	Department of Transportation
ft^2	Square feet
MSDS	Material Safety Data Sheet
MS/MSD	Matrix spike/matrix spike duplicate
NPDES	National Pollution Discharge Elimination System
Owens	Owens-Brockway Glass Container Inc.
SOP	Standard operating procedure

SPCC	Spill Prevention, Control and Countermeasure
SWPCP	Stormwater Pollution Control Plan
TSS	Total suspended solids

1 INTRODUCTION

On behalf of Owens-Brockway Glass Container Inc. ("Owens"), Dalton, Olmsted & Fuglevand, Inc. (DOF) has prepared this Stormwater Pollution Control Plan (SWPCP) for the Owens (Plant No. 21) facility located at 9710 NE Glass Plant Road, Multnomah County, in Portland, Oregon (Figure 1 Owens Facility Map). This Plan has been developed to satisfy the requirements of the 1200-Z National Pollution Discharge Elimination System (NPDES) Industrial Stormwater General Permit, as issued by Oregon Department of Environmental Quality (DEQ) for industrial stormwater discharges to surface waters or conveyance systems that discharge to surface waters of the state (Attachment 1). Revisions from the previous plan have been made in accordance with the NPDES 1200-Z Industrial Stormwater General Permit, which was effective July 1, 2021, and expires June 30, 2026.

1.1 SITE DESCRIPTION

The Owens facility is a glass manufacturing plant occupying approximately 43 acres on the eastern side of Portland, Oregon. Johnson Lake lies to the north of the facility, with a buffer area of trees and shrubs lying between the plant and the Lake. Johnson Lake is an 18-acre lake which is part of the Whitaker Slough/Columbia Slough drainage system. The Owens facility is bounded to the south by railroad tracks and NE Columbia Boulevard, to the west by NE 92nd Drive and light industries, and to the east by Interstate 205 (see Figure 2). The Owens facility was established in 1956 on previously undeveloped or agricultural land.

1.2 PREVIOUS REMEDIATION

Elevated levels of PCBs were identified in Johnson Lake (ECSI Site ID 1311) in the 1994-1995 sediment investigation of the Columbia Slough. Johnson Lake is located immediately north of and partially owned by Owens-Brockway Glass Container Inc. Subsequent investigations identified PCBs in adjacent soil on the Owens property and elevated levels of PCBs throughout the lake sediment with higher concentration locations on the southern shoreline. Elevated concentrations of metals and PAHs were also detected in the portion of the lake receiving stormwater runoff and historical settling pond overflow from the Owens facility.

In 2009-2010 Owens removed PCB-contaminated soil and created a swale for stormwater detention in the impacted area. In 2011/2012 Owens placed a minimum 6-inch cap of clean sand/sediment over the majority of the lake sediment. As part of Owens' Consent Judgment with DEQ, they settled their liability for the site's contribution to sediment contamination in the Whitaker Slough.

A Certification of Completion was filed with the court in January 2014. DEQ issued a no further action determination for this site in February 2014. Annual monitoring is ongoing.

1.3 FACILITY DESCRIPTION AND OPERATIONS

The facility consists of 16 major buildings including five large structures (three warehouses and two buildings housing glass manufacturing operations) as depicted in Figure 2. The construction material of the buildings is described in Table 1. The facility also includes an exterior process yard containing the transformer yard, batch house (Building 6), compressor room (Building 5), and cooling towers; recycled glass processing storage center northeast of Building 1; surrounding

asphalt parking; service and storage areas; and landscaped areas (including a baseball field north of Building 1). Material handling locations include the Redemption Center (Building 34), multiple outdoor storage bunkers, and the batch house (Building 6).

All glass manufacturing, inspecting, and packaging operations take place under cover. The glass manufacturing process involves the melting of sand, limestone, soda ash, and reclaimed crushed glass (cullet) to form new glass containers. Raw materials are measured and mixed in the batch house (Building 6) and are then conveyed (under cover) to one of two large furnaces (melters) in Building 1. The unmelted batch initially floats in a pool of molten glass and gradually melts as it moves through the furnace at approximately 2,700°F. After melting, the glass is conditioned in refiners and distributed to individual forming machines, which mold the glass into containers. The containers then pass through a Lehr oven for annealing. Various quality control tests are performed on the finished product before it is packaged for shipment or storage in warehouses. The Owens facility produces up to a million containers per day.

1.4 IMPERVIOUS AREAS

The Owens facility occupies approximately 43 acres. Approximately 62 percent of this area is impervious as it is covered by buildings or pavement (see Section 1.2). Stormwater in these impervious areas is divided among three primary drainage areas (Figure 3):

1.4.1 DRAINAGE BASIN A

The largest drainage area (approximately 762,000 square feet) occupies the western portion of the facility and includes Buildings 3, 27, 30, 31, and 37, truck loading docks, a 1000-gallon liquefied petroleum gas (LPG) aboveground storage tank (AST), and the surrounding paved surfaces. Three undefined sub-drainage areas within the larger drainage area direct stormwater from roof drains and catch basins to a series of on-site stormwater lines. Three stormwater lines exit the drainage area and discharge stormwater to either one of two outfall aprons or to a bioswale. The outfall aprons associated with Outfalls 4 and 5 ultimately discharge to Johnson Lake. The bioswale associated with Outfall 6 increases stormwater retention time and soil infiltration, thereby reducing the potential for discharge to Johnson Lake. Therefore, stormwater is not expected to discharge from the Outfall 6 bioswale to Johnson Lake except during significant storm events. Outfall 8 collects a small amount of stormwater from pavement and drains a portion of the Building 3 and Building 30 roof runoff.

1.4.2 DRAINAGE BASIN B

A large drainage area (approximately 487,000 square feet) occupies the mid-eastern portion of the facility and includes Buildings 1, 2, 5, 6, 7A, 7B, 8, 20, 34, and 38, the recycling storage areas, multiple cullet bunkers, two 21,500-gallon LPG ASTs, and the surrounding paved surfaces (including two parking lots and portions of Glass Plant Road). This drainage area surrounds a gravel lined transformer yard (approximately 7,000 square feet). This drainage area directs stormwater from catch basins to a series of on-site stormwater lines. Stormwater lines exit the drainage area and discharge stormwater to a bioswale. The bioswale associated with Outfall 2 increases stormwater retention time and soil infiltration, thereby reducing the potential for discharge to Johnson Lake. Therefore, stormwater is not expected to discharge from the Outfall 2 bioswale to Johnson Lake except during significant storm events.

1.4.3 DRAINAGE BASIN C

A small drainage area (approximately 39,000 square feet) occupies the far eastern portion of the facility and includes the 126,000-gallon diesel fuel AST (and surrounding containment berm) and the surrounding paved surfaces. This drainage area directs stormwater from catch basins to a series of on-site stormwater lines. A spill containment valve restricts stormwater collected within the AST containment berm from these stormwater lines until it passes a visual inspection for surface sheen. A single stormwater line exits the drainage area to Outfall 7 and links to an Oregon Department of Transportation (ODOT) stormwater line discharging ultimately to the Columbia Slough at NE Clark Street near the I-205 overpass. This location only discharges water to the stormwater system when the spill containment valve is opened due to high volume in the containment berm; this usually happens a few times per year during the spring, as reported by facility staff.

Locations and descriptions of stormwater outfalls are described further in Section 2. Each drainage area is summarized in Table 2 and the discharge points for each drainage basin are summarized in Table 3.

1.5 POTENTIAL POLLUTANTS

Potential pollutants on site that could reach and contaminate stormwater discharge are described below. Table 4 summarizes the potential pollutants at the site relative to the stormwater drainage basin (see Section 2). Figure 4 indicates the storage and loading/unloading areas that could adversely affect the stormwater runoff.

- Metals include copper, lead, and zinc. These metals are present in and may become available from sources such as buildings, fencing, vehicles, equipment, and paint.
- Industrial chemicals include anhydrous ammonia (used as a delivery mechanism for emissions control of a manufacturing process).
- Raw components include those used in the manufacturing of glass such as sand, limestone, soda ash (i.e., sodium carbonate), and reclaimed crushed glass (cullet).
- Petroleum hydrocarbons may become available from vehicle/equipment refueling or lubricating oils and grease.
- Nutrients and organic material, such as phosphorus and nitrogen may become available from food and beverage debris among the cullet stockpiles.
- Gross pollutants generally consist of litter (e.g., human derived trash, such as, paper, plastic, metal, and glass), debris (e.g., organic material including leaves, branches, seeds, twigs and grass clippings), and coarse sediments (inorganic breakdown products from soils, pavement or building materials).

1.6 SIGNIFICANT MATERIALS

The Owens facility requires the on-site storage of various materials used as the raw components of manufactured glass (e.g., sand, limestone, cullet, and soda ash) in addition to materials used or wastes generated during the manufacturing, processing, storage, and shipping operations. Table 5 presents a summary of the significant materials stored on site including the source/purpose, storage/use location, type of containment, and maximum quantities maintained on site. All significant materials are used in the manufacturing process, recycled or disposed of in a manner consistent with local, state, and federal regulations.

1.7 RECEIVING BODIES OF WATER

The receiving bodies of water for Owens stormwater include Johnson Lake, Johnson Lake Slough, and Columbia Slough, all located north of the facility. Johnson Lake is an 18-acre lake which is part of the Whitaker Slough/Columbia Slough drainage system. The slough system is a naturally occurring system of lakes, wetlands, and channels that once dominated the floodplain of the Columbia River. The City of Portland and Oregon DEQ generally divide Columbia Slough into three reaches: the Lower Columbia Slough (Willamette River to Peninsula Drainage Canal), the Middle Columbia Slough (Peninsula Drainage Canal to NE 148th Avenue), and the Upper Columbia Slough (NE 148th Avenue to Fairview Lake). Under this classification, Johnson Lake is located in the Middle Columbia Slough. Johnson Lake is fed by groundwater discharge and

stormwater runoff (including runoff from I-205). The lake drains via a short connecting stream, identified as the Johnson Lake Slough, into Whitaker Slough, which flows into Columbia Slough, a tributary to the lower Willamette River. The Multnomah County Drainage District (MCDD) maintains water levels within the Columbia Slough through a series of tidegates and levees, minimizing water elevation fluctuations in Johnson Lake.

2 STORMWATER MONITORING

The Owens facility stormwater drainage system consists of an underground stormwater system, outfall aprons, and bioswales. A description of each outfall and the monitoring point is presented below (as shown in Figure 3).

2.1 STORMWATER OUTFALLS

2.1.1 OUTFALL 2

Outfall 2 is located in the eastern portion of the facility, east of Outfall 4 and west of Outfall 7 (see Figure 3). Outfall 2 includes facility drainage from former Outfalls 1, 2, 3, and 8. Outfall 2 has been modified over time to more effectively manage stormwater at the facility. Specifically, in October 2005, a diversion manhole was installed to join former Outfall 1 flow to a shared sediment manhole and sediment vault (StormGate Separator by Contech Stormwater Solutions). In January 2009, approximately 300 feet of pipe and three catch basins were installed to join former Outfall 3 flow with the Outfall 2 sediment manhole and sedimentation vault. In late Spring/early Summer 2010, the construction of a vegetated bioswale (approximately 540 feet long) was completed below the combined discharge point of former Outfalls 1, 2, and 3. During construction, conveyance of former Outfall 8 was also redirected along the path of the Outfall 2 bioswale. The bioswale terminates at Johnson Lake with a swale apron (constructed Fall 2010) to prevent scouring in the discharge area. The combined discharge point of former Outfalls 1, 2, 3, and 8 has been redefined as Outfall 2. The potential for stormwater discharge to Johnson Lake at Outfall 2 is reduced by the bioswale due to increased stormwater retention and soil infiltration, and is only expected during significant storm events. *The monitoring point for Outfall 2 is the edge of the bio-swale apron immediately prior to Johnson Lake.*

The Outfall 2 emergency containment valve is tested twice per year to ensure it is properly functioning (performed by outside consultant and documented in biannual swale inspection report.

2.1.2 OUTFALL 4

Outfall 4 is located in the central portion of the facility, east of Outfall 5 and west of Outfall 2 (see Figure 3). Outfall 4 drains a portion of the facility through a stormwater line to an outfall apron (constructed Fall 2010) before discharging to Johnson Lake. *The monitoring point for Outfall 4 is at the discharge pipe just north of NE Glass Plant prior to the swale that discharges to Johnson Lake.*

2.1.3 OUTFALL 5

Outfall 5 is located on the western portion of the facility, west of Outfall 4 and east of Outfall 6 (see Figure 3). Outfall 5 drains a portion of the facility through a stormwater line to an outfall apron (constructed Summer 2010) before discharging to Johnson Lake. *The monitoring point for Outfall 5 is at the discharge pipe just north of NE Glass Plant Road prior to the swale that discharges to Johnson Lake.*

2.1.4 OUTFALL 6

Outfall 6 is located on the western edge of the facility, west of Outfall 5 (see Figure 3). Outfall 6 drains a portion of the facility through a stormwater line to a vegetated bioswale (constructed in

December 2007) before discharging into the Johnson Lake Slough[1]. As stated in Section 1.3, the potential for stormwater discharge to Johnson Lake at Outfall 6 is reduced by the bioswale due to increased stormwater retention and soil infiltration, and is only expected during significant storm events. *The monitoring point for Outfall 6 is the edge of the bioswale immediately prior to Johnson Lake.*

The Outfall 6 emergency containment valve is tested twice per year to ensure it is properly functioning (performed by outside consultant and documented in biannual swale inspection report.

2.1.5 OUTFALL 7

Outfall 7 is located on the eastern edge of the facility, east of Outfall 2 (see Figure 3). Outfall 7 drains a portion of the facility through a stormwater line before linking to an ODOT stormwater line and ultimately to the Columbia Slough. This outfall only connects with the stormwater system when the spill containment valve is manually opened (typically happens once a year). *Outfall 7 is no longer a monitoring point for compliance sampling, as approved by the City of Portland on the November 20, 2014 Site Inspection. Instead, this outfall will be monitored for oil and grease sheen prior to discharging when opening the release valve. The valve will not be opened unless it is required to alleviate high water levels within the secondary containment berm. An Outfall 7 discharge form is included in Appendix B and will be completed when the valve is opened.*

2.1.6 OUTFALL 8

Outfall 8 is located in the southwest area of the property, directly south of building 30 (see Figure 3). Outfall 8 is not an industrial area, but stormwater in this area may come into contact with industrial activity via air deposits on the roof of the building from the furnace activity onsite. This water is conveyed to the City's Municipal Separate Storm Sewer System (MS4).

2.2 MONITORING AND SAMPLING PROCEDURES

Owens will conduct stormwater sampling and monitoring to evaluate the effectiveness of control measures implemented in compliance with this SWPCP. The monitoring period is from July 1st to June 30th.

2.2.1 VISUAL MONITORING

Monthly inspections are required to be performed on a monthly basis while stormwater discharge is occurring. The inspection is to take place while the facility is in operation and conducted by personnel that have completed employee training and are familiar with all aspects of the SWPCP.

Inspection will take place where industrial material or activities are exposed to stormwater and areas where stormwater control measures, including infiltration devices, catch basins, and treatment facilities are located. Inspections will include an evaluation of control measures and observations of all discharge points as well as the following:

[1] Adjacent to the Outfall 6 bioswale, a second swale was constructed for the City of Portland to direct stormwater from the public streets and rights-of-way in the 92nd Avenue drainage sub basin to the Johnson Lake Slough. Although the City bioswale and Owens Outfall 6 bioswale were constructed at the same time, the respective stormwater discharge is managed separately.

- Industrial materials, residue, or trash that may have or could come into contact with stormwater
- Leaks or spills from industrial equipment, drums, tanks, and other containers
- Offsite and internal tracking of industrial or waste materials, or sediment where vehicles enter or exit the site
- Tracking or blowing of raw, final, or waste materials that results in exposure of stormwater falling on the site
- Evidence of, or the potential for, pollutants entering the drainage system;
- Evidence of pollutants discharging to receiving waters at all discharge points
- Visual observation for the presence of floating and suspended solids, color, odor, foam, visible oil sheen, or other obvious indicators of pollution in the stormwater discharge at all discharge points
- Stormwater control measures, including treatment, infiltration devices and mass reduction measures, to ensure they are functioning properly, and maintained on designed schedules.

Visual observations for floating solids associated with industrial activities and oil/grease sheen will be made monthly during a storm event at Outfalls 2, 4, 5, 6, and 8 at the identified monitoring points (see Section 2.2) during the months when at least one storm event produces runoff. Visual observations will be conducted of a sample in a clean, colorless glass or plastic container in a well-lit area during regular business hours of operation and safe conditions. All observations will be recorded on a Monthly Visual Monitoring Inspection Log (Appendix B). Monitoring logs will be maintained on file at the Owens facility with a copy of this Plan.

In the event that an apparent pollutant is discharging from the facility, personnel will immediately take all reasonable steps to temporarily minimize or prevent the discharge of pollutants until permanent correction action is complete.

2.2.2 GRAB SAMPLING

Stormwater grab samples will be collected and analyzed at least four times per year from each outfall monitoring point. Two samples will be collected before December 31st and two grab samples will be collected after January 1st, with all samples collected at least 14 calendar days apart.

The facility will monitor the discharge during the first 12 hours of the discharge event, which is a measurable storm event resulting in an actual discharge from a site. If it is not practicable to collect the sample within this period, the facility will collect the sample as soon as practicable and provide documentation with the Discharge Monitoring Report form (Appendix D) why it was not practicable to take samples within the period. The facility is not required to sample outside of regular business hours or during unsafe conditions. Regular business hours are from 8 am to 5 pm on weekdays.

The analytical parameters for benchmark sampling per Schedule B.2. of the permit include total suspended solids (TSS), pH, Escherichia coli (E. coli), biological oxygen demand (BOD), total phosphorus, and metals (total copper, lead, and zinc). The measurement of pH will be conducted in the field, upon sample collection for real time data. Test methods, detection limits, holding times, and preservation requirements are summarized in Table 6. Sample collection and processing procedures are described in Standard Operating Procedure (SOP) 1039 (Appendix C).

DEQ has identified in the permit assignment letter that the impairment pollutant for the facility is iron, which must be sampled from each outfall four times per permit year, since the Columbia Slough is a Category 5: 303(d) listed water for iron. Per Schedule B.4. of the permit, for discharges unable to meet the impairment concentration, the facility must comply with narrative water quality-based effluent limits and continue monitoring discharge.

2.3 MONITORING LOCATIONS

Monitoring and sampling procedures will take place at the following five locations as shown on Figure 3 and described in Table 3:

- Discharge Point 002 at Outfall 2 is located in the eastern portion of the facility, east of Outfall 4 and west of Outfall 7. The monitoring point for Outfall 2 is the edge of the bioswale apron immediately prior to Johnson Lake.
- Discharge Point 004 at Outfall 4 is located in the central portion of the facility, east of Outfall 5 and west of Outfall 2. The monitoring point for Outfall 4 is at the discharge pipe just north of NE Glass Plant Road prior to the swale that discharges to Johnson Lake.
- Discharge Point 005 at Outfall 5 is located on the western portion of the facility, west of Outfall 4 and east of Outfall 6. The monitoring point for Outfall 5 is at the discharge pipe just north of NE Glass Plant Road prior to the swale that discharges to Johnson Lake.
- Discharge Point 006 at Outfall 6 is located on the western edge of the facility, west of Outfall 5. The monitoring point for Outfall 6 is the end of the bioswale immediately prior to Johnson Lake Slough.
- Discharge Point 008 is located in the manhole at the southwestern corner of the facility, directly west of Catch Basin 25

2.4 STORMWATER BENCHMARKS AND EXCEEDANCES

Stormwater benchmarks, presented in Table 7, are guideline concentrations to be used to determine the effectiveness of stormwater source controls.

2.4.1 TIER II CORRECTIVE ACTION RESPONSE FOR 2ND YEAR GEOMETRIC MEAN BENCHMARK EVALUATION (2014)

Sampling results from July 1, 2013 through June 30, 2014, the second year of coverage under the previous 1200-COLS permit which expired in 2016, were evaluated to determine if the geometric mean of the samples collected at each monitored outfall exceeded any benchmark in Schedule A.9 of that permit (Schedule A.12). The following parameters that exceeded benchmarks in the 2nd year geometric mean benchmark evaluation, and also previously triggered Tier II corrective actions from the 4th year Benchmark Compliance Evaluation in 2011, (Schedule A.11) were exempt from the Tier II corrective action requirements in Schedule A.12 of the previous permit:

- Outfall 2 – Phosphorus
- Outfall 6 – TSS, E. coli

The following additional parameter exceeded the permit benchmarks for this evaluation:

- Outfall 4 – TSS

Due to this additional exceedance, Owens was required to update its SWPCP and contract a Professional Engineer (PE) to perform an engineering evaluation of additional stormwater

treatment controls. This evaluation, performed by DOF, is included as Attachment 2. The following are the recommendations from the evaluation:

- The Facility should insert proper filtration media (similar to those used on the west side of Building 31) into the three catch basins northeast of Building 31 and the three catch basins east of Building 31. The Facility will have to periodically remove sediment that collects in the filtration media.

All requirements and recommendations from the engineering evaluation were implemented by June 30th of the 4th year of permit coverage (June 30, 2016).

2.4.2 2ND YEAR GEOMETRIC MEAN BENCHMARK EVALUATION (2019)

Sampling results from July 1, 2018 through June 30, 2019, the second year of coverage under the previous 1200-Z permit, which has since been replaced by the current permit, were evaluated to determine if the geometric mean of the samples collected at each monitored outfall exceeded any benchmark in Schedule A.9 of the permit (Schedule A.12). The following parameter exceeded the benchmarks:

Outfall 2:

- Phosphorus
- E. coli

Outfall 6:

- Total Suspended Solids

The facility retained an engineering firm (DOF) to perform an engineering evaluation and design additional treatment controls for the facility to address these parameters. The following treatment/source control measures were selected for the facility:

- Temporary covering of the long-term cullet storage piles during the wet season using tarps
- Permanent structure over the short-term cullet storage area
- A Modular Wetland system installed at Catch Basin 11

It was determined that no additional corrective actions needed to take place at Outfall 6 since the facility had already modified the swale to add additional check dams and a rock apron, which helped to reduce TSS concentrations at MP-006. Details are provided in the 2019 Tier II Report provided in Attachment 3.

2.4.3 TIER 2 CORRECTIVE ACTION RESPONSE BASED ON GEOMETRIC MEAN BENCHMARK

Per Schedule A.12 of the current permit, effective July 1st, 2021, the facility is not required to conduct Tier 2 evaluations for the following parameters during the cycle of the permit, since Tier 2 corrective actions were triggered under the previous permit:

- Phosphorus and E. coli at Outfall 2
- TSS at Outfall 6

Each reporting year, the facility must compute the geometric mean for all qualifying samples at each monitoring point to determine if a Tier 2 response is triggered. A triggering event includes the following:

- The geometric mean of qualifying sample results collected at any monitoring point exceeds any applicable statewide benchmark(s) during each full reporting year
- For the pH benchmark, if 50 percent or more of qualifying sample results collected at any monitoring point during two full reporting years, are outside of the pH benchmark range

If a triggering event occurs, corrective actions and reporting must occur as detailed in Schedule A.12.f. of the permit.

2.4.4 TIER 1 CORRECTIVE ACTION RESPONSE BASED ON EXCEEDANCES OF BENCHMARKS AND VISUAL OBSERVATIONS THAT SHOW SIGNS OF POLLUTION

Per Schedule A.11 of the permit, if qualifying sample results exceed any applicable statewide benchmark(s) or if visual observations show signs of pollution in the discharge, the facility must complete a Tier 1 corrective action. Tier 1 corrective action and reporting must include:

- Investigate the cause of the elevated pollutant levels
- Review of the SWPCP to ensure it is implemented properly
- Evaluate treatment measures to ensure they have been properly installed, maintained, and implemented; and determine whether maintenance, corrections, or modifications are necessary

A Tier 1 report must summarize the results of the assessment, corrective actions taken or planned to be taken, and whether SWPCP revisions are necessary. This report must be kept onsite and copies made available to DEQ or the City upon request.

Tier 1 corrective actions should be implemented before the next storm event, if possible, or no later than 30 calendar days after receiving the monitoring results or completing the monthly visual inspection.

2.5 MONITORING REPORTING REQUIREMENTS

The facility must submit the sampling and visual monitoring results for the previous monitoring period quarterly, per the following schedule:

Reporting Quarters	Monitoring Months	DMR Due Dates
1st	July-September	November 15
2nd	October-December	February 15*
3rd	January-March	May 15
4th	April-June	August 15*

*Monitoring Variance request may ONLY be submitted semi-annually, as applicable.

This information is submitted to the City of Portland BES (DEQ's agent) in the quarterly stormwater monitoring report, which must include the Discharge Monitoring Report (DMR) form (Appendix D). The quarterly report will include the site name (Owens-Brockway Glass Container Inc.), the file number (65610), the complete date of each sampling event, the sampling point(s) as named in this SWPCP, and the analysis results for the parameters in the permit. The minimum detection levels and analytical methods for the analyzed parameters must also be included.

All reporting under this section (including the DMR, laboratory results sheets and QA/QC documentation) must be submitted to:

City of Portland
Bureau of Environmental Services
Industrial Stormwater Section
Water Pollution Control Laboratory
Attn: Jess Aloisio
6543 N Burlington Avenue
Portland OR 97203-5452

3 SITE CONTROLS

Site controls are in place to reduce the exposure of pollutants to stormwater or remove pollutants from stormwater before it discharges to surface water. Four control strategies are employed in this SWPCP: (1) stormwater best management practices (BMPs), (2) spill prevention and response procedures; (3) preventative maintenance; and (4) employee education.

3.1 STORMWATER BEST MANAGEMENT PRACTICES

A general description of stormwater BMPs required under the 1200-Z permit is presented below. Table 8 details these BMPs / site controls for the Owens facility.

3.1.1 CONTAINMENT

Hazardous substance containment practices have been applied throughout the Owens facility. Generally, any generated hazardous waste is stored indoors and is equipped with secondary containment. These storage locations do not drain to the stormwater system. Containers not equipped with secondary containment are located in areas of the building where a release would not leave the building. Such spills within the building would be directed towards an API Separator and Heil Separator for containment and treatment before release to the city sanitary sewer system. As an additional measure, a concrete curb is in place adjacent to the Heil separator on the north side of Building 1 to prevent any seepage into the parking lot.

Outside the facility's buildings, secondary containment is utilized around the diesel fuel AST and the transformer yard. The diesel fuel AST is surrounded by an earthen berm with the capacity to capture the maximum volume of the tank with sufficient freeboard for precipitation. Release of stormwater contained within the berm to Outfall 7 is only permitted following satisfaction of a visual inspection for surface sheen. The transformer yard utilizes curbs and a gravel lined surface. The curbing provides sufficient containment volume to capture more than six times the capacity of the largest transformer. Additionally, the gravel surrounding the equipment provides additional containment volume until a spill cleanup (i.e., soil and gravel removal) can take place.

3.1.2 OIL AND GREASE

Sorbent material is maintained at the Owens facility to respond to and contain potential releases. These materials include booms, floor dry, "pigs," sponge particulate, absorbent pillows, plastic sheet (for covering catch basins), soda ash, and sand. Additionally, equipment is maintained at the facility for releases including fork-lifts, fire extinguishers, barricades, portable sumps, shovels, brooms, two-way radios, and front-end loaders.

3.1.3 WASTE CHEMICALS AND MATERIAL DISPOSAL

At the Owens facility, various waste chemical and material disposal BMPs are utilized. Used oil, parts washing solvents (degreasers), and waste anti-freeze are stored indoors in labeled drums and transported off site for disposal or recycling. Used drums are returned to vendors when possible; if not accepted for return, the drums are rinsed into the API separator and crushed for metal scrap recycling.

3.1.4 EROSION AND SEDIMENT CONTROL

Generally, the ground surface at the Owens facility is vegetated, graveled, or paved which minimizes soil erosion on site. Sediment control measures, designed to capture debris and pollutants carried by stormwater, include the use of pre-sedimentation basins, wood chip wattles, absorbent socks, catch basin inserts, sedimentation vaults, boxes, manholes, and bioswales along the stormwater drainage system. Bio bags may also be used as necessary. Maintenance of these measures is described in Section 3.3.

3.1.5 DEBRIS CONTROL

At the Owens facility, control measures, designed to capture debris and pollutants carried by stormwater, include the use of pre-sedimentation basins, wood chip wattles, catch basin filter inserts, and sedimentation vaults, boxes, and manholes along the stormwater drainage system. Maintenance of these measures is described in Section 3.3.

3.1.6 DUST GENERATION AND VEHICLE TRACKING OF INDUSTRIAL MATERIALS

The Owens facility paved a sand/gravel truck traffic area just north of Building 37 with recycled asphalt. The recycled asphalt reduces dust generated from trucks driving to the loading dock on the west side of Building 31. Additionally, Glass Plant Road is closed to non-Owens traffic to reduce impact from additional vehicle traffic.

3.1.7 STORMWATER DIVERSION

Generally, topography at the Owens facility directs stormwater towards Johnson Lake. From the impervious surfaces, stormwater is diverted to the north away from fueling, manufacturing, treatment, storage, and disposal areas via the stormwater drainage system (see Section 2).

3.1.8 COVERING ACTIVITIES

At the Owens facility, all glass manufacturing operations occur within buildings. Hazardous materials are stored under cover in designated storage areas. Maintenance areas (including the forklift maintenance area) are covered with roofs. Outdoor batch storage hoppers are covered with tarps to contain loose material.

Galvanized materials are generally stored indoors, but any galvanized material stored outdoors will be covered to help prevent contaminants from entering the stormwater system.

Additionally, as part of the 2019 Tier 2 corrective actions, a portion of the long-term cullet storage is tarped during the wet season and a permanent structure is being built to cover a portion of the short-term cullet storage area.

3.1.9 HOUSEKEEPING

At the Owens facility, site sweeping operations are carried out near the batch house (Building 6), soda ash storage area, cullet storage areas, and raw materials unloading areas. Onsite staff typically sweep outdoor work areas weekly, and an outside contractor performs site sweeping of designated quadrants of the facility typically every two weeks. Onsite staff weekly sweeping now includes the trucking area in the Outfall 6 drainage basin.

The facility manages its cullet inventory to limit the tons of cullet stored on site to reduce exposure.

3.1.10 NON-STORMWATER DISCHARGES

Owens discharges authorized non-stormwater from fire-fighting activities, fire hydrant flushing's, potable water, uncontaminated condensate from air conditioners, landscape watering, and incidental windblown mist from cooling towers. External building washdown is limited to the main buildings (Building 1 and 2) and occurs about once every five years. The locations of these nonstormwater discharges are identified on Figure 3 Stormwater Site Specific Map.

3.2 SPILL PREVENTION AND RESPONSE PROCEDURES

Spill prevention and response procedures are in place at the Owens facility to reduce the potential of spills and to quickly take action in the event of spills. Fuels, oils, and other bulk liquid materials are handled in such a manner as to avoid spills.

All oil storage areas, with the exception of the 126,000 gallon diesel fuel AST and the transformers, are located inside the buildings and therefore not exposed to rainwater. The exception to this would be if flooding occurs, which is most likely to happen in the basement where the API and Heil Separators are located and would only be an issue if the systems weren't running due to a power failure. In the event that the basement floods during a power outage with either non-contact cooling water or rainwater, the water would enter storm drains in the Outfall 2 drainage basin and the following measures would be taken:

- An oil-absorbing boom would be placed across the Outfall 2 swale in order to avoid oil from being discharged to Johnson Lake.
- Visual monitoring would occur to ensure that no sheen is observed on Johnson Lake, and this would be documented on a Spill Response form.
- All stormwater would be treated in the stormwater vault and the OF2 swale prior to being discharged to Johnson Lake.

Designated staff person responsible for spill prevention: Victor Muscia, Plant Engineer

Emergency Telephone Numbers:

Notification Contacts:

1. Plant Engineer Victor Muscia	(419) 936-4367 or (567)336-3430
2. EHS Manager Todd De Bow	(503) 839-2598 or (567)336-3467
3. National Response Center	(800) 424-8802
4. Portland Fire Department	(503) 823-3700 or 911
5. Portland Police Department	(503) 823-5700 or 911
6. Sanitary Wastewater Treatment Plant	(503) 823-2530
7. City Spill Protection and Citizen Response	(503) 823-7180
8. Oregon Emergency Response System	800-452-0311

Emergency Response Contractor:

1. River City Environmental	1-503-252-6144

In general, if a spill occurs onsite, the following procedures will be followed:

1. The employee who discovers the oil spill should attempt to identify the source of the leak and stop it, if it can be done without risk.
2. Notify the Shift Chief (Shift Foreman). The Shift Chief will evacuate and contact local rescue service (Fire Department), if necessary, and contact the Emergency Response Team.
3. Depending upon the severity of the situation, the Shift Chief should immediately notify the Team Leader/Spill Coordinator or the Plant Manager of the situation.
4. The Spill Coordinator will determine the size and extent of the spill and mobilize the appropriate facility personnel (those personnel who have completed the spill response training), equipment, and materials to stop and contain the spill.
5. If the Spill Coordinator determines that the spill cannot be contained by facility personnel, an emergency response contractor (River City Environmental) will be notified to assist in the containment and cleanup of the spill. No pre-arrangement agreement with the emergency response contractor is necessary.
6. The Spill Coordinator will also notify the Fire Department, if not already done so, for any spill that is not readily contained by Owens-Brockway personnel or if the spill enters a storm sewer or city sanitary sewer system. The Fire Department will provide fire protection and potentially assist in the containment of the oil spill until the cleanup can be accomplished by either the facility personnel and/or Owens-Brockway's emergency response contractor.
7. The Plant Manager will communicate any spill situation to the appropriate authorities, after consulting with O-B Environmental Affairs.
8. Should a spill impact navigable waters; potentially violate water quality standards; cause a film, "sheen", discoloration, or a sludge emulsion, the EHS Manager must call the National Response Center at:
   National Response Center (800)-424-8802

3.3 PREVENTATIVE MAINTENANCE PROGRAM

A preventive maintenance program ensures the effective operation of materials management facilities and structural and non-structural controls. The program includes (1) the inspection and maintenance of the stormwater conveyance system, (2) the inspection and testing of facility equipment and systems that could fail and result in the discharge of pollutants to stormwater, (3) regular sweeping of storage areas to minimize exposure of cullet to stormwater runoff, and (4) maintenance of buildings and removal or repair of severely corroded sections that may impact stormwater runoff.

The preventive maintenance program at the Owens facility includes:

Weekly

- Pick up of solid waste typically twice a week; and
- Onsite staff sweeping operations of industrial areas exposed to stormwater.

Monthly

- Mechanical sweeping when weather permits (typically twice per month);
- Inspection of areas where potential spills of significant materials or industrial activities that could impact stormwater runoff; and

- Inspection of stormwater BMPs (control measures, structures, catch basins, and treatment facilities); and
- Monitoring of sediment accumulation in the shared sedimentation manhole at Outfall 2. Cleaning frequency is 6 to 12 months depending on accumulation.
- Inspection of the Bioclean Treatment Unit in the cullet storage area (for the first year of operation)

Semi- Annually

- Hazardous waste is retained onsite in accordance with regulatory accumulation times. The frequency of shipping wastes offsite is dependent upon waste generation, but hazardous waste is typically disposed offsite twice a year.
- Inspection of sedimentation vaults, swales, spill control valves, and manufactured Treatment BMPs

Annually

- Inspection and maintenance of facility buildings for repair and/or removal of sections that may have potential to adversely affect stormwater runoff;
- Cleaning of sumps, sedimentation vaults, and storm drain catch basins (this is done at minimum annually, but as often as needed based on findings from the monthly visual inspection); and
- Refresher training for all personnel (see Section 3.4);

A summary schedule of source control and treatment BMP maintenance is provided on Table 9. Additionally, the Outfall 2 bioswale and the Owens' portion of Outfall 6 is regularly inspected and maintained by Owens in accordance with the O&M Plan (Attachment 4).The City side of Outfall 6 is maintained by the City of Portland BES. Manufacturer details on operation and maintenance are provided in Attachment 5.

3.4 EMPLOYEE EDUCATION PROGRAM

Owens provides an SWPCP Employee Training Program to inform personnel of the components and goals of this SWPCP. This training addresses:

- Requirements of the SWPCP;
- Spill response and reporting procedures;
- Good housekeeping practices; and
- Material management practices.

The SWPCP training is provided initially to new employees (within 30 days of hire) who handle hazardous materials or contractors that require handling or contact with materials that may contribute to stormwater pollution, and annually thereafter.

Owens also provides a separate annual training program which addresses hazardous wastes, stormwater pollution prevention, hazard communication, and material safety data sheets (MSDSs).

4 RECORD KEEPING AND PLAN UPDATES

4.1 RECORD KEEPING

Owens will maintain records onsite and keep them for a minimum of 3 years. These records will be made available to DEQ or the City of Portland upon request:

- A copy of the SWPCP and any revisions, including revised stamped SWPCP from Tier 2 corrective action;
- A copy of this permit;
- DEQ's notice of permit coverage under the current permit term;
- Documentation of maintenance and repairs of control measures, treatment systems and mass reduction measures;
- Tier 1 reports, including industrial-specific checklist(s);
- All inspection reports;
- Documentation of any benchmark exceedance and corrective action taken;
- All copies of any reports or corrective action submitted to DEQ or agent;
- Spills or leaks of significant materials that impacted or had the potential to impact stormwater or surface waters. Include the corrective actions to clean up the spill or leak as well as measures to prevent future problems of the same nature;
- Documentation to support a claim that a facility has changed its status from active to inactive and unstaffed with respect to the requirements to conduct routine facility inspections;
- Discharge Monitoring Reports, laboratory reports, pH calibration and field sampling notes;
- Compliance schedule reports as specified in Schedule C;
- Numeric limits exceedance reports;
- Water Quality Standards Report; and
- Employee education materials and records of training.

4.2 SWPCP UPDATES

SWPCP revisions should be submitted if there is a change in site contact(s), site or control measures that may significantly change the nature of pollutants present in stormwater discharge, the monitoring locations or outfalls, or if the revision is in response to a corrective action or inspection. If a revision is necessary, Owens will submit the revised pages of the SWPCP or site map, to Oregon DEQ and City of Portland BES within 30 days of making the revisions and implementation unless it is awaiting a review for revisions of monitoring locations. The revisions will be considered final and approved if Oregon DEQ or the City of Portland BES does not comment within 30 days of receiving the revisions.

5 CORPORATE 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 ensure that qualified personnel properly gathered and evaluated 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, 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.

Jacob Wendler
Printed Name

/Owens-Brockway Glass Container Inc.
Title/Company

Signature

7/15/22
Date

6 REFERENCES

Oregon DEQ. March 2021. General Permit National Pollutant Discharge Elimination System Industrial Stormwater Discharge Permit No. 1200-Z. Effective July 1, 2021. Expires June 30, 2026.

TABLES

Table 1. Description of Major Facility Buildings
Owens-Brockway Glass Container Inc.

Building	Common Name/Function	Construction Materials
1	Houses furnace and forming operations	Corrugated metal siding and roof
2	Houses selecting operations	Concrete and transite walls with composition and EPDM rubber roof
3	Warehouse	Concrete walls with EPDM rubber roof
5	Houses air compressors and electrical switch gear	Concrete and transite walls with composition roof
6	Round batch house	Concrete walls with metal roof
7A	N Raw material unloading shed	Metal
7B	S Raw material unloading shed	Metal
8	Houses medium voltage electrical equipment	Metal
20	Storage shed	Metal
25	Clubhouse	Wooden walls with composition roof
28	Refractory storage	Metal
30	Warehouse	Concrete walls with composition roof
31	Warehouse	Concrete walls with EPDM rubber roof
34	Redemption Center	Metal
37	Storage shed	Metal
38	Storage shed	Metal

Notes:

EPDM - Ethylene Propylene Diene Monomer

Table 2. Stormwater Drainage Basins
Owens-Brockway Glass Container Inc.

Drainage Basin	Associated Outfalls	Approximate Drainage Area (ft^2)	Percentage of Facility Area (%)
A	4, 5, & 6	637,000	34%
B	2	487,000	26%
C[1]	7	39,000	2%
	Total Impervious Area	1,163,000	62%
	Total Facility Area	1,873,080	

Notes:

[1] Stormwater from Drainage Basin C only discharges when a spill containment valve is manually opened, as detailed in Section 1.3.3 of the SWPCP

Table 3. Stormwater Discharge Points
Owens-Brockway Glass Container Inc.

Discharge Point ID	Drainage Basin	Location Description
002	B	At the end of the Outfall 2 swale, which is located on the eastern portion of the facility, north of the recycling storage areas.
004	A	At the end of the Outfall 4 discharge apron; located on the northeast side of Drainage Basin A
005	A	At the end of the Outfall 5 discharge apron; located on the north central portion of Drainage Basin A
006	A	At the end of the Outfall 6 swale; located on the northwest side of Drainage Basin A
007[1]	C	Located on the eastern edge of the facility, just east of the diesel AST
008	A	Behind building 30 in a manhole on the southwester portion of the facility

Notes:

[1] Discharge Point 007 is not a regular compliance monitoring point. Stormwater discharge only occurs at this location when a spill containment valve is manually opened, as detailed in Section 2.1.5 of the SWPCP

Table 4. Potential Pollutants
Owens-Brockway Glass Container Inc.

Drainage Basin	Outfall	Potential Pollutants	Source/Activity
A	4	Metals	Truck loading docks
		Petroleum Hydrocarbons	Vehicle traffic/parking
		Gross Pollutants	Building roofs
			Galvanized surfaces
	5	Metals	Vehicle traffic/parking
		Gross Pollutants	Building roofs
			Galvanized surfaces
	6	Metals	Truck loading docks
		Petroleum Hydrocarbons	Vehicle traffic/parking
		Gross Pollutants	Building roofs
			Galvanized surfaces
B	2	Metals	Vehicle traffic/parking
		Industrial chemicals	Building roofs
		Raw components	Galvanized surfaces
		Petroleum Hydrocarbons	Loading/unloading of bulk materials
		Nutrients and organic material	Equipment storage
		Gross Pollutants	Waste storage
			Cullet storage
			Industrial chemical storage
C	7	Metals	Bulk diesel storage
		Petroleum Hydrocarbons	Vehicle/equipment fueling and maintenance
		Gross Pollutants	Vehicle traffic

Table 5. Description of Significant Materials
Owens-Brockway Glass Container Inc.

Material	Source/Purpose	Storage/Use Location	Containment	Maximum Quantity Stored
Sand	Raw component of manufactured glass	Building 6	Storage tank	800 tons
Limestone	Raw component of manufactured glass	Building 6	Storage tank	400 tons
Cullet	Raw component of manufactured glass	Building 6	Open storage	350 tons in silo; 2500 tons in tanks
Soda ash	Raw component of manufactured glass	Building 6	Storage tank	400 tons
Caustic soda	Raw component of manufactured glass	Building 6	Storage tank	
Diesel fuel	Fuel for mobile equipment and portable compressors	East end of property	Storage tank	40,000 gallons
Waste	Waste		Covered container	20 tons
Brick/concrete	Waste byproduct generated from furnace maintenance		Covered container	10 cubic yards
Batch	Waste		Covered container	20 cubic yards
Wood	To be recycled		Outdoor storage	5 tons
LPG	Fuel	Building 3	Storage tank	<20,000 gallons
Anhydrous ammonia	Coating used in manufacturing process	Caustic area	Storage tank	6,000 pounds
Used oil	Waste byproduct	Building 1	Within building	2,500 gallons
Hazardous waste	Waste byproduct of manufacturing and furnace maintenance	Building 2	Within building	500 pounds

Table 6. Laboratory Analytical Methods, Sample Containers, and Holding Times
Owens-Brockway Glass Container Inc.

Parameter	Test Method	Detection Limits	Sample Container	Preservative	Holding Time
Total Copper	USEPA 200.8	5 µg/L	500 mL HDPE	HNO_3, 4°C	180 days
Total Lead	USEPA 200.8	5 µg/L	500 mL HDPE	HNO_3, 4°C	180 days
Total Zinc	USEPA 200.8	5 µg/L	500 mL HDPE	HNO_3, 4°C	180 days
pH	USEPA 150.1	-	1 L HDPE	4°C	Immediate
TSS	USEPA 160.2	1 mg/L	1 L HDPE	4°C	7 days
Oil & Grease	USEPA 1664 HEM	5 mg/L	500 L Amber Glass	HCl, 4°C	28 days
Total Phosphorus	USEPA 365.1-365.2-365.4	4 µg/L	1 L HDPE	H_2SO_4, 4°C	28 days
E. coli	USEPA 1103	100 CFU/L	Sterile Container	4°C	1 day
BOD_5	USEPA 405.1	5 mg/L	1 L HDPE	4°C	2 days
Total Iron	USEPA 200.7	8 µg/L	500 mL HDPE	HNO_3, 4°C	180 days

Notes:

BOD_5 - biological oxygen demand (5 days, 20°C)
CFU/L - colony forming units per liter
E. coli - *Escherichia coli*
HCl - hydrochloric acid
HDPE - high density polyethylene
HNO_3 - nitric acid
H_2SO_4 - sulfuric acid
L - liter
mg/L - miligrams per liter
TSS - total suspended solids
USEPA - United States Environmental Protection Agency
µg/L - micrograms per liter

Table 7. Stormwater Benchmarks
Owens-Brockway Glass Container Inc.

Parameter	1200-Z Benchmark	Unit
Total Copper	0.017	mg/L
Total Lead	0.10	mg/L
Total Zinc	0.24	mg/L
pH	5.5-9	SU
TSS	30	mg/L
Total Phosphorus	0.16	mg/L
E. coli	406	counts/100 mL
BOD_5	24	mg/L

Notes:

BOD_5 - biological oxygen demand (5 days, 20°C)

E. coli - *Escherichia coli*

TSS - total suspended solids

mg/L - miligrams per liter

Table 8. Best Management Practices
Owens-Brockway Glass Container Inc., Plant No. 21

BMP Type		Control
Containment	1	Concrete curb in place at the unused overhead door opening on the north side of Building 1 near the Heil separator to prevent seepage onto the parking lot.
	2	126,000 gallon fuel oil tank (averages less than 40,000 gallons, stored) is completely contained with in an 8-foot high earthen berm designed to adequate capacity.
	3	Hazardous waste accumulation is indoors and has double containment.
	4	Secondary containment on liquid caustic soda tank.
Oil & Grease	1	Compressor blow down water and minor leakage from compressed air piping is controlled by a containment area east of the compressor room which pumps water to oil/water separator in the furnace basement.
	2	Rental compressors are filled from fuel nozzle located on south compressor room wall eliminating the fuel transfer in drums and inherent spillage. A supply of absorbent pads is maintained in the compressor room for use in the event of a spill.
	3	Sedimentation manholes and sediment vaults servicing the Outfall 2 drainage basins has oil separation capabilities.
	4	Absorbent pads or booms service the fuel oil tank area to remove oil sheen from strormwater (if present) before it is manually discharged.
Waste Chemicals and Material Disposal	1	Used oil and waste anti-freeze are accumulated in properly labeled drums, stored indoors, and transported for off-site disposal or recycling by a vendor.
	2	Used drums are returned to vendors whenever possible. Drums not returnable are rinsed in the basement where the water goes into the furnace basement oil/water separator and crushed for scrap metal recycling.
	3	Parts washing solvents (degreasers) are recycled using a contract service.
	4	Use of cleaning agents is restricted to prevent discharge to storm water.
	5	Diverted non-contact cooling water bleed to cullet/sanitary waste water system.
	6	Discontinued use of non-contact cooling water chemicals which contained zinc or chlorine.
Debris Control	1	An acrylic coating over the galvanized roof over Building 20 reduces zinc debris runoff.
	2	Galvalume® roofing replaces the galvanized NE end of the Robinson Ventilator and a portion of the galvanized roof over Building 1 to reduce zinc debris runoff.
Erosion and Sediment Control	1	Catch basin filters are used to remove sediment and debris from entering storm system.
	2	Sedimentation manholes and sediment vaults servicing the Outfall 2 and Outfall 6 drainage basins are designed to remove heavy metals and large size particles prior to discharge. System maintained every 6-12 months.
	3	Gate valves servicing the Outfall 2 and Outfall 6 drainage basins are designed to control flow in case of hazardous spills.
	4	Sedimentation boxes at the Outfall 2 discharge points capture additional heavy particles.
	5	Bio-swales servicing the Outfall 2 and Outfall 6 drainage basins are designed to trap pollutants through infiltration
	6	Wood chip wattles are used to divert sediment from catch basins
Stormwater Diversion	1	The factory cullet water system has been modified to minimize potential contact with stormwater. Factory cullet is transferred into hoppers with drainage holes to allow all cullet water to drain to the cullet basement prior to storing cullet outdoors on the pile.
	2	Installed Water Quality Facility to retain runoff from Outfall 6.
	3	Diverted runoff from Outfall #3 to StormGate Separator on Outfall 2.
Covering Activities	1	Feed hopper for trash compactor is covered.
	2	Glass manufacturing operations are conducted indoors.
	3	Hazardous materials are stored under roof in designated storage areas.
	4	Forklift maintenance area is covered with a roof.
	5	The truck batch unloading area is covered with a roof.
	6	The tin recovered material mixing operation is contained indoors.

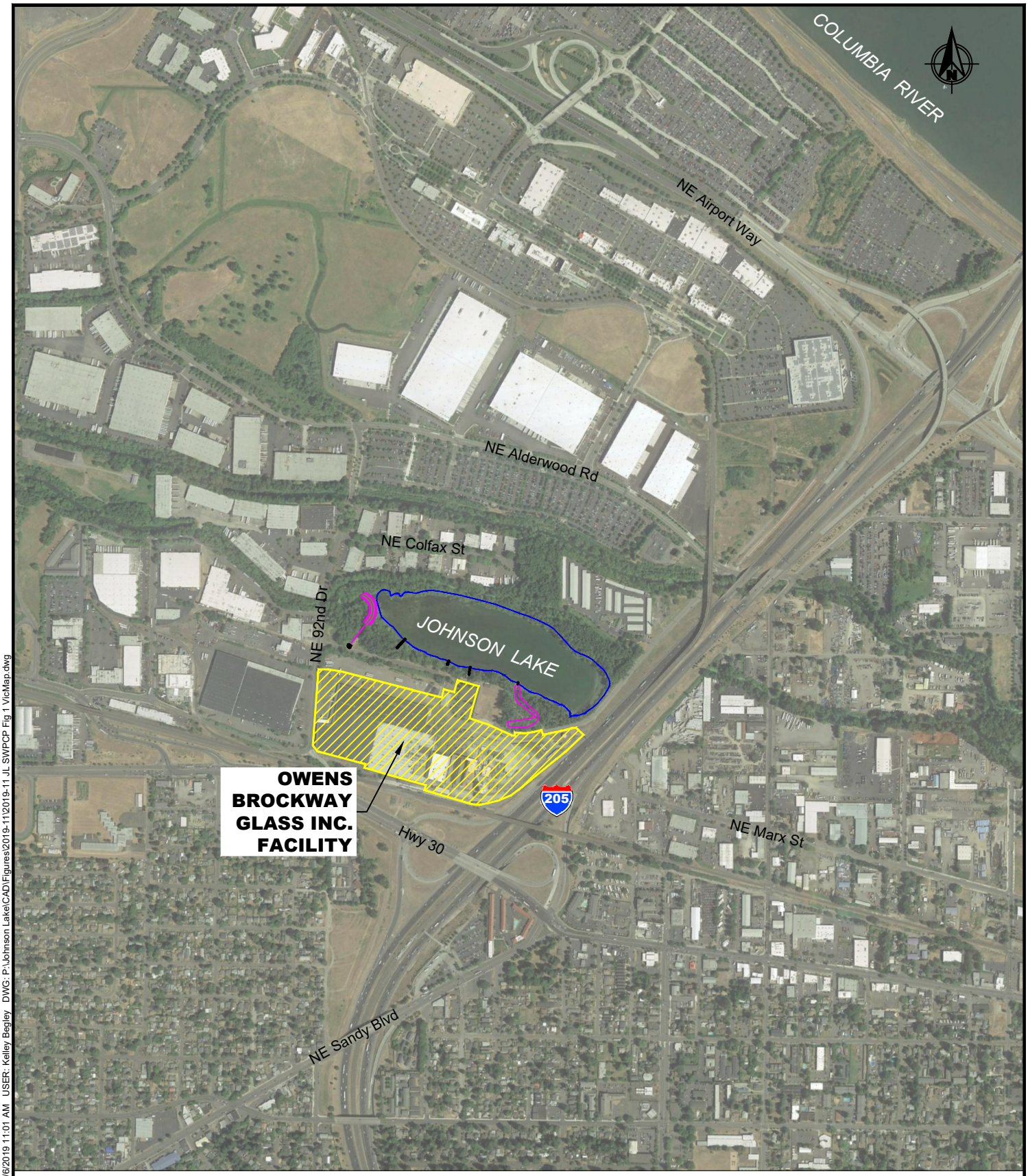
Table 8. Best Management Practices
Owens-Brockway Glass Container Inc., Plant No. 21

BMP Type		Control
Covering Activities	7	Tin recovered material is stored indoors until shipped for reclamation.
	8	Outdoor vehicle washing is prohibited.
Housekeeping	1	Site sweeping operations, including area near the batch house, soda ash storage area, cullet sorage area, and raw material unloading areas.
	2	Outdoor batch storage hoppers covered with tarps to contain loose material.
	3	Glass Plant Road is closed to traffic unrelated to Owens-Brockway.
	4	Outdoor uncovered trash hoppers have been eliminated.
	5	Waste profile developed at Hillsboro Land fill for oily debris and have covered drop box on site to handle this waste stream more effectively. This drop box contains a lining to prevent seepage.
	6	Central vacuum system installed for improved housekeeping in the Batch House.
	7	The Facility manages its cullet inventory to minimize the tons of cullet stored on site to minimize exposure.

Table 9. Source Control and Treatment BMP Maintenance Schedule
Owens-Brockway Glass Container Inc., Plant No. 21

BMP Unit/Type		Maintenance Detail Summary and Schedule
Catch Basin Insert (Filter Fabric)	1	Inspect monthly, service at minimum semi-annually (see manufacturer guidance attached)
	2	Filter elements should be changed when the unit is heavily fouled and water is routinely over flowing through the bypass (or for units with no bypass, when water is routinely ponding at surface of catch basin)
Catch Basin Insert (Clean Way)	1	Inspect monthly, service at minimum semi-annually (see manufacturer guidance attached)
	2	Filter elements should be changed when the unit is heavily fouled at the surface and sedimentation has built up, impeding flow of water (see manufacturer guidance attached)
Catch Basin Protection (Straw Wattle or BioBag)	1	Inspect Monthly, replace at minimum annually.
	2	Replace wattles/biobags more frequently if any of the following conditions occur: a) if wattle/biobag mesh is deteriorating and breaking apart b) if wattle/biobag is degrading (UV degradation, plant growth, compaction, etc.) c) if sediment has blocked pore space and stormwater is bypassing filtration (flowing over, under, or around wattle/biobag)
Catch Basin (Sorbent Boom)	1	Inspect Monthly, replace at minimum annually.
	2	Replace boom more frequently if any of the following conditions occur: a) if sorbent boom is deteriorating or falling apart b) if staining indicates sorbent capacity has been significantly reduced c) if stormwater is bypassing filtration
PRF Stormwater Sedimentation Vault	1	Visual inspection monthly and immediately after a spill
	2	Measure sediment level semi-annually.
	3	Remove sediment every 12 to 24 months, sediment should not exceed 24 inches in depth.
StormGate SG816	1	Visual inspection monthly and immediately after a spill
	2	Perform full inspection per O&M manual semi-annually. Measure sediment level once in mid-winter (December/January), once in the dry season (June to September).
	3	Remove sediment every 6 to 12 months, sediment should not exceed 9 inches in depth.
	4	Remove any trapped debris in high flow bypass or outlet pipe.
Cullet Area Stormwater Bioclean Treatment Unit (MWS-L-8-8-2'-10"-C-UG)	1	Inspect Monthly for first year to determine loading and set future inspection schedule and immediately after a spill.
	2	Remove sediment at minimum annually (see attached Bioclean Guidance)
	3	Replace cartridge filters every 12 to 24 months (see attached Bioclean Guidance for how to evaluate cartridge clogging and exhaustion).
Spill Control Valves	1	Inspect Semi-annually, maintain as per Table 4 of 2010 O&M Manual (attached)
Outfall 6 PRF Swale (Eastern Side)	1	Inspect Semi-annually, maintained as per Table 8 of 2010 O&M Manual (attached)
	2	Remove accumulated sediment when it exceeds 4 inches in depth.
Outfall 2 Bio-Swale	1	Inspect Semi-annually, maintained as per Table 8 of 2010 O&M Manual (attached)
	2	Remove accumulated sediment when it exceeds 4 inches in depth.

FIGURES



NOTE:
1. Aerial Background Image from Google Earth Pro, dated July 16, 2018. Use for visual reference only.

0 1000
Scale in Feet

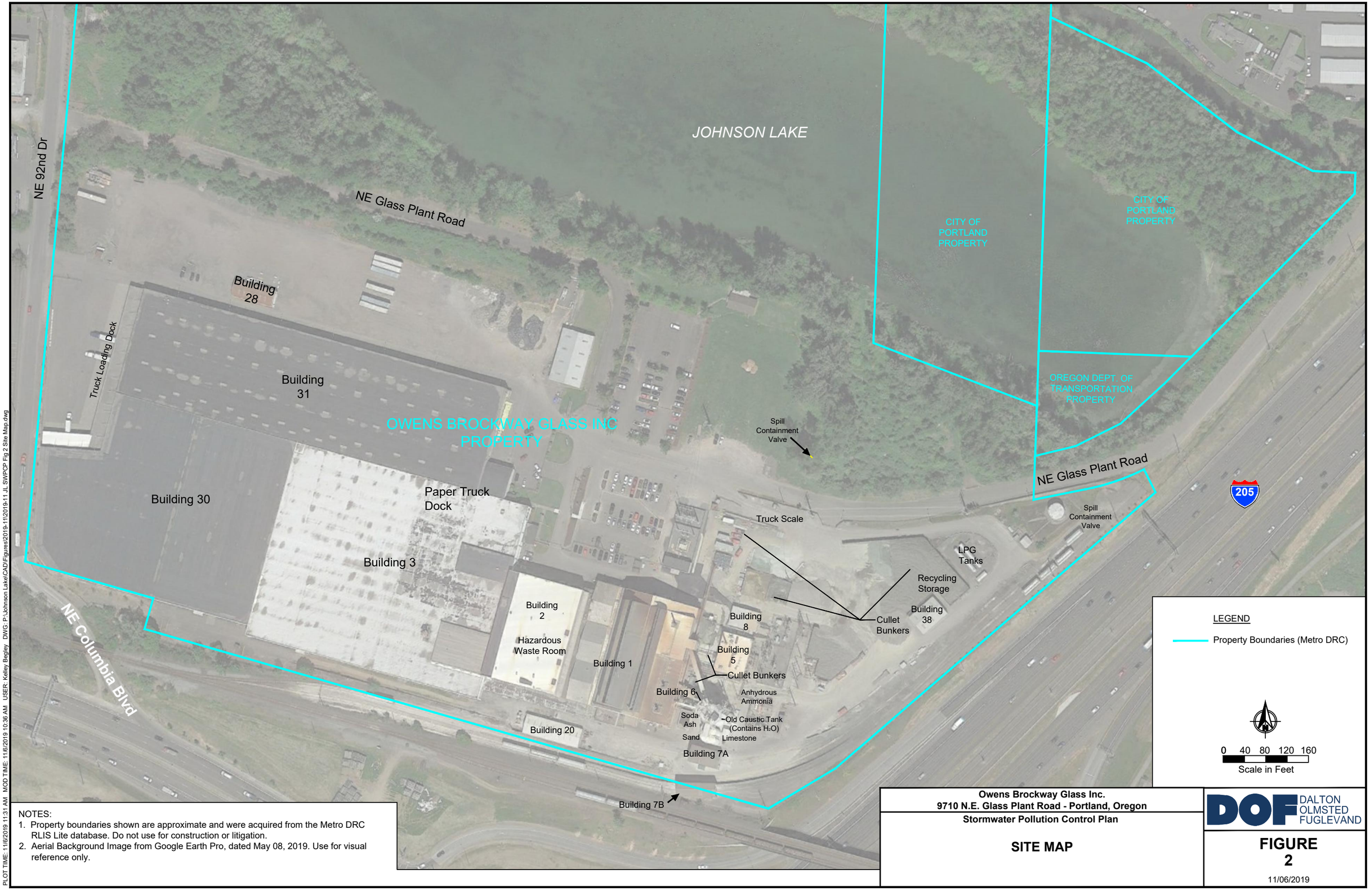
Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon
Stormwater Pollution Control Plan

VICINITY MAP

DALTON OLMSTED FUGLEVAND

FIGURE 1

11/06/2019



NOTES:
1. Property boundaries shown are approximate and were acquired from the Metro DRC RLIS Lite database. Do not use for construction or litigation.
2. Aerial Background Image from Google Earth Pro, dated May 08, 2019. Use for visual reference only.

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon
Stormwater Pollution Control Plan

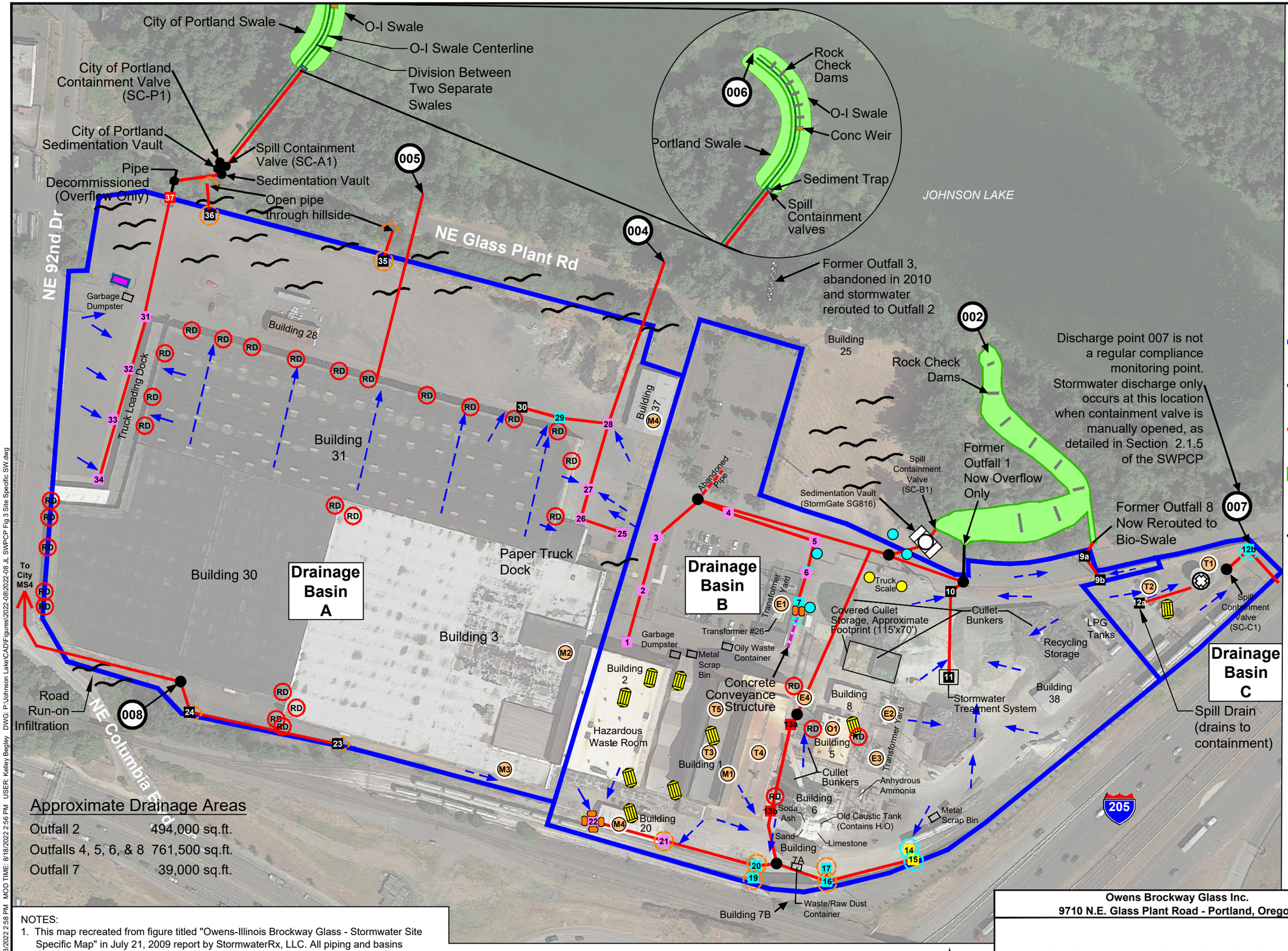
SITE MAP

DALTON OLMSTED FUGLEVAND

FIGURE 2

11/06/2019

PLOT TIME: 11/6/2019 11:31 AM MOD TIME: 11/6/2019 10:36 AM USER: Kelley Begley DWG: P:\Johnson Lake\CAD\Figures\2019-11\2019-11 JL SWPCP Fig 2 Site Map.dwg



NOTES:
1. This map recreated from figure titled "Owens-Illinois Brockway Glass - Stormwater Site Specific Map" in July 21, 2009 report by StormwaterRx, LLC. All piping and basins approximate, based on Owens Site Stormwater Map, 8/21/01 and Weddle Surveying, Inc. September 24, 2009 investigative survey.
2. Aerial Background Image from Google Earth Pro, dated 08/13/2020. Use for visual reference only.

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

STORMWATER SITE SPECIFIC MAP

DALTON OLMSTED FUGLEVAND

FIGURE 3

08/18/2022

PLOT TIME: 8/18/2022 2:58 PM MOD TIME: 8/18/2022 2:56 PM USER: Kelley Begley DWG: P:\Johnson Lake\CADFigures\2022-08\2022-08 JL SWPCP Fig 3 Site Specific SW.dwg

City of Portland Swale
Conc Weir
O-I Swale
O-I Swale Centerline
Sediment Trap
Division Between Two Separate Swales
Spill Containment valves
City of Portland Containment Valve (SC-P1)
City of Portland Sedimentation Vault
Spill Containment Valve (SC-A1)
Pipe Decommissioned (Overflow Only)
Sedimentation Vault
Open pipe through hillside
005
004
NE 92nd Dr
NE Glass Plant Rd
JOHNSON LAKE
006
Rock Check Dams
O-I Swale
Conc Weir
Portland Swale
Sediment Trap
Spill Containment valves
Former Outfall 3, abandoned in 2010 and stormwater rerouted to Outfall 2
Garbage Dumpster
Building 28
Truck Loading Dock
Building 31
Building 30
Paper Truck Dock
Building 3
Building 25
Building 37
Abandoned Pipe
Spill Containment Valve (SC-B1)
Sedimentation Vault (StormGate SG816)
002
Rock Check Dams
Former Outfall 1 Now Overflow Only
Discharge point 007 is not a regular compliance monitoring point. Stormwater discharge only occurs at this location when containment valve is manually opened, as detailed in Section 2.1.5 of the SWPCP
007
Former Outfall 8 Now Rerouted to Bio-Swale
To City MS4
Road Run-on Infiltration
008
NE Columbia Blvd
Truck Scale
Transformer Yard
Transformer #26
Garbage Dumpster
Metal Scrap Bin
Oily Waste Container
Building 2
Hazardous Waste Room
Concrete Conveyance Structure
Building 1
Covered Cullet Storage, Approximate Footprint (115'x70')
Cullet Bunkers
Recycling Storage
LPG Tanks
Building 8
Building 5
Stormwater Treatment System
Building 38
Cullet Bunkers
Anhydrous Ammonia
Building 6
Soda Ash
Old Caustic Tank (Contains H_2O)
Metal Scrap Bin
Sand
Limestone
Building 7A
Building 7B
Waste/Raw Dust Container
Spill Containment Valve (SC-C1)
Spill Drain (drains to containment)
Drainage Basin C
205

SPCC Report Locations
- TX Aboveground Storage Tank
- OX Oil-Filled Operational Equipment
- MX Mobile Container
- EX Oil-Filled Operational Equipment-Transformer

Legend
- 007 Outfall Sampling Location
- Catch Basin
- Catch Basin with Cleanway Filter
- Catch Basin with Filter Sock
- Catch Basin with Debris Screen
- Catch Basin - Decommissioned
- Stormwater Manhole
- Industrial Wastewater Manhole
- Manhole - Truck Scale Access
- RD Roof Drain
- Approximate Drainage Basin Boundary
- Approximate Overflow Pipe Location
- Approximate Conveyance Pipe Location
- Swale (Area Approx.)
- Sheet Runoff Flow Direction
- Pervious Area
- Oil/Solids Separator
- Bulk Diesel Tank
- Oil Storage/Spill Kit
- Aboveground Storage Tank (AST)
- Wattle
- Bio-bag
- Sorbent Boom
- Cullet Storage Areas
- Raw Material Storage
- Loading Areas

Approximate Drainage Areas

Outfall 2	494,000 sq.ft.
Outfalls 4, 5, 6, & 8	761,500 sq.ft.
Outfall 7	39,000 sq.ft.

NOTES:
1. This map recreated from figure titled "Owens-Illinois Brockway Glass - Stormwater Site Specific Map" in July 21, 2009 report by StormwaterRx, LLC. All piping and basins approximate, based on Owens Site Stormwater Map, 8/21/01 and Weddle Surveying, Inc. September 24, 2009 investigative survey.
2. Aerial Background Image from Google Earth Pro, dated May 08, 2019. Use for visual reference only.

0 40 80 120 160
Scale in Feet

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon
Stormwater Pollution Control Plan

MATERIAL STORAGE, LOADING AND ACCESS AREAS

DALTON OLMSTED FUGLEVAND

FIGURE 4
08/18/2022

PLOT TIME: 8/18/2022 2:58 PM MOD TIME: 8/18/2022 2:45 PM USER: Kelley Begley DWG: P:\Johnson Lake\CADFigures\2022-08\2022-08 JL SWPCP Fig 4 MAT Load Storage Access Areas.dwg

Abandoned Pipe
Spill Containment Valve (SC-B1)
Rock Check Dams
Discharge point 007 is not a regular compliance monitoring point. Stormwater discharge only occurs at this location when containment valve is manually opened, as detailed in Section 2.1.5 of the SWPCP
Former Outfall 8 Now Rerouted to Bio-Swale
Former Outfall 1 Now Overflow Only
Drainage Basin B
Truck Scale
Transformer Yard
Cullet Bunker
Transformer #26
Garbage Dumpster
Metal Scrap Bin
Oily Waste Container
Concrete Conveyance Structure
Covered Cullet Storage, Approximate Footprint (115'x70')
Stormwater Treatment System
Building 8
Building 5
Building 1
Cullet Bunkers
Anhydrous Ammonia
Bldg 6
Soda Ash
Old Caustic Tank (Contains H_2O)
Sand
Limestone
Building 7A
Building 7B
Waste/Raw Dust Container
Metal Scrap Bin
Cullet Bunker
LPG Tanks
Recycling Storage
Building 38
Spill Drain (drains to containment)
Drainage Basin C
Spill Containment Valve (SC-C1)
205
0 40 80
Scale in Feet

Legend

- Outfall Sampling Location
- Catch Basin
- Catch Basin with Cleanway Filter
- Catch Basin with Filter Sock
- Catch Basin with Debris Screen
- Catch Basin - Decommissioned
- Stormwater Manhole
- Industrial Wastewater Manhole
- Manhole - Truck Scale Access
- Roof Drain
- Approximate Drainage Basin Boundary
- Approximate Overflow Pipe Location
- Approximate Conveyance Pipe Location
- Swale (Area Approx.)
- Sheet Runoff Flow Direction
- Pervious Area
- Oil/Solids Separator
- Bulk Diesel Tank
- Oil Storage/Spill Kit
- Aboveground Storage Tank (AST)
- Wattle
- Bio-bag
- Sorbent Boom
- Cullet Storage Areas
- Raw Material Storage
- Loading Areas

SPCC Report Locations

- TX Aboveground Storage Tank
- OX Oil-Filled Operational Equipment
- MX Mobile Container
- EX Oil-Filled Operational Equipment-Transformer

NOTES:
1. This map recreated from figure titled "Owens-Illinois Brockway Glass - Stormwater Site Specific Map" in July 21, 2009 report by StormwaterRx, LLC. All piping and basins approximate, based on Owens Site Stormwater Map, 8/21/01 and Weddle Surveying, Inc. September 24, 2009 investigative survey.
2. Aerial Background Image from Google Earth Pro, dated May 08, 2019. Use for visual reference only.

Approximate Drainage Areas

Outfall 2	494,000 sq.ft.
Outfalls 4, 5, 6, & 8	761,500 sq.ft.
Outfall 7	39,000 sq.ft.

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon
Stormwater Pollution Control Plan

MATERIAL STORAGE, LOADING AND ACCESS AREAS DETAIL

DALTON OLMSTED FUGLEVAND

FIGURE 5

08/18/2022

PLOT TIME: 8/18/2022 2:58 PM MOD TIME: 8/18/2022 2:45 PM USER: Kelley Begley DWG: P:\Johnson Lake\CAD\Figures\2022-08\2022-08 JL SWPCP Fig 5 MAT West Detail.dwg

APPENDIX A: DEQ INDUSTRIAL STORMWATER PERMIT STORMWATER POLLUTION CONTROL PLAN CHECK LIST

Appendix II

DEQ Industrial Stormwater Permit Stormwater Pollution Control Plan (SWPCP) Check List

Instructions: Complete this form and submit with SWPCP. Fill in the appropriate page number(s) indicating the location of information in the SWPCP. New requirements are italicized. At a minimum, the SWPCP must include the components below and describe how the permit registrants intends to comply with the narrative technology-based effluent limit to eliminate or reduce the potential to contaminate stormwater and prevent any violation of instream water quality standards.

Site Name:	Owens-Brockway Glass Container Inc	**File No.:**	65610

Permit Schedule		**Requirement**	**Page #**	**Comments (For official use only)**
New Discharger	Permit Cover and Exclusion	A new discharger to an impaired water without a TMDL must meet one of the conditions in this section of the permit to obtain coverage		
Tier II Status	A.3	*Facility triggered Tier II under previous permit term* ■ *Yes* *Facility triggered Tier II under current permit term* □ *Yes* *Provide a description of treatment controls or source control or mass load reduction waivier, including low impact development, in response to corrective action requirements and operation and maintenance procedures.*	9	
Signature	A.6.b	Signed and certified in accordance with 40 CFR 122.22	20	
Title Page	A.7.a	*Plan date*	Cover	
		Name of the site	Cover	
		Name of the site operator or owner	Cover	
		The name of the person(s) preparing the SWPCP	Cover	
		File No. and *EPA permit No.*	Cover	
		Primary SIC code and any co-located SIC codes	Cover	
		Contact person(s) name, telephone number and *email*	Cover	
		Physical address, including county	Cover	
		Mailing address if different	Cover	
Site Description*	A.7.b.ii	A description of industrial activities conducted at the site and significant materials stored, used, treated or disposed of in a manner which exposes those activities or materials to storm-water. Include in the description the methods of storage, usage, treatment or disposal	1-3	
	A.7.b. iii	*Location and description, with any available characterization data, of areas of known or discovered significant materials from previous operations*		
	A.7.b.iv	*Regular business hours of operation*	1	
General Location Map	A.7.b.i	General location of the site in relation to surrounding properties, transportation routes, surface waters and other relevant features	F1	
Site Map* (please identify clearly)	A.7.b.i	2. Drainage patterns	F3-F5	
		3. Conveyance and discharge structures, such as piping or ditches	F3-F5	
		4. All discharge points assigned a unique three-digit identifying number starting with 001, 002 used for electronic reporting	F3-F5	
		5. Outline of the drainage area for each discharge point	F3-F5	

Permit Schedule		Requirement	Page #	Comments (For official use only)
Site Map* (please identify clearly)	A.7.b.i	6. Paved areas and buildings within each drainage area	F3-F5	
		7. Areas used for outdoor manufacturing, treatment, storage, or disposal of significant materials	F3-F5	
		8. Existing structural control measures for minimizing pollutants in stormwater runoff	F3-F5	
		9. Structural features that reduce flow or minimize impervious areas	F3-F5	
		10. Material handling and access areas	F3-F5	
		11. Hazardous waste treatment, storage and disposal facilities	F3-F5	
		12. Location of wells including waste injection wells, seepage pits, drywells	F3-F5	
		13. Location of springs, wetlands and other surface waterbodies both on-site and adjacent to the site	F3-F5	
		14. Location of groundwater wells	F3-F5	
		15. Location and description of authorized non-stormwater discharges	F3-F5	
		16. Exact location of monitoring points, indicating if any discharge points are "substantially similar" and not being monitored	F3-F5	
		17. Location and description of spill prevention and cleanup materials	F3-F5	
		18. Locations of the following materials and activities if they are exposed to stormwater and applicable:		
		A. *Fueling stations*	F3-F5	
		B. *Vehicle and equipment maintenance cleaning areas*	F3-F5	
		C. *Loading/unloading areas*	F3-F5	
		D. *Locations used for the treatment, storage, or disposal of wastes*	F3-F5	
		E. *Liquid storage tanks*	F3-F5	
		F. *Processing and storage areas*	F3-F5	
		G. *Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;*	F3-F5	
		H. *Transfer areas for substances in bulk*	F3-F5	
		I. *Machinery*	F3-F5	
		J. *Locations and sources of run-on to your site from adjacent property*		
Potential Pollutants	A.7.b.v	For each area of the site where a reasonable potential exists for contributing pollutants to stormwater runoff, a description of the potential pollutant sources that could be present in stormwater discharges *and if associated with a co-located SIC code*	2-3	
Impervious Area	A.7.b.viii	An estimate of the amount of impervious surface area (including paved areas and building roofs) and the total area drained by each stormwater discharge point to be reported in area units	2	
Receiving Waters	A.7.b.ix	The name(s) of the receiving water(s) for stormwater drainage. If drainage is to a municipal storm sewer system, the name(s) of the ultimate receiving waters and the name of the municipality	3	
Monitoring Locations*	A.7.b.x	The identification of each discharge point and the location(s) where stormwater monitoring will occur as required by Schedule B.2. The monitoring location must also be labeled in the SWPCP as "monitoring location"	4, 6	
		Existing discharge points excluded from monitoring must include a description of the discharge point(s) and data or analysis	4	

Permit Schedule		Requirement	Page #	Comments (For official use only)
		supporting that the discharge point(s) are substantially similar as described in Schedule B.2.c.ii of this permit SWPCP as "monitoring location"		
Site Controls*	A.7.b.vi	A description of the control measures installed and implemented to meet the technology and water quality based requirements below and any applicable sector specific requirements (Sch.E)	14-17	
		a. Minimize Exposure	14	
		b. Oil and Grease	14	
		c. Waste chemicals and material disposal	14	
		d. Erosion and sediment control	15	
		e. Debris control	15	
		f. Dust generation and vehicle tracking	15	
		g. Housekeeping	15	
		h. Spill prevention and response	16	
		i. Preventative maintenance	16	
		j. Employee education	17	
		k. Non-stormwater discharges	15	
Procedures and Schedules	A.7.c.i	**Spill Prevention and Response Procedures.** Procedures for preventing and responding to spills and cleanup and notification procedures. *Indicate who is responsible for on-site management of significant materials and include their contact information.* Spills prevention plans required by other regulations may be substituted for this provision if the spill prevention plan addresses stormwater management concerns and the plan is included with the SWPCP	16	
		Indicate how spill response will be coordinated between the permit registrant and otherwise unpermitted tenants. The permit registrant is ultimately responsible for spills of the tenant and appropriate response	16	
	A.7.c.ii	**Preventative Maintenance Procedures.** Procedures for conducting inspections, maintenance and repairs to prevent leaks, spills, and other releases from drums, tanks and containers exposed to stormwater and the scheduled regular pickup and disposal of waste materials. Include the schedule or frequency for maintaining all control measures and waste collection	16	
	A.7.c.iii	**Operations and Maintenance Plan.** *Include an operation and maintenance plan for active treatment systems, such as electrocoagulation, chemical flocculation, or ion-exchange. The O&M plan must include, as appropriate to the type of treatment system, items such as system schematic, manufacturer's maintenance/operation specifications, chemical use, treatment volumes and a monitoring or inspection plan and frequency. For passive treatment and low impact development control measures, include routine maintenance standards*	ATT 4	
	A.7.c.iv	**Employee Education Schedule.** Orientation no later than 30 calendar days of hire or change in duties, education annually. *Include a description of the training content* and the required frequency	17	

* Some facilities must meet sector specific requirements (Schedule E) and include additional information in SWPCP, including the site map. If applicable, ensure that the SWPCP includes the sector specific information.

For Official Use Only			
New applicant:	☐ Yes ☐ No		
New discharger:	☐ Yes ☐ No	New discharger to impaired waters condition met:	☐ Yes ☐ No
Existing facilities:	☐ Yes ☐ No	SWPCP update per renewal:	☐ Yes ☐ No
		SWPCP update per Schedule A.8:	☐ Yes ☐ No
		Facility triggered Tier II under previous permit term:	☐ Yes ☐ No
		Facility triggered Tier II under current permit term:	☐ Yes ☐ No
Sector E Requirements:	☐ Yes ☐ No	Sch. E additional information in SWPCP and site plan	☐ Yes ☐ No
Date received:		Plan Accepted:	☐ Yes ☐ No

Reviewed by:

1._____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

APPENDIX B: MONITORING LOGS

Monthly Visual Monitoring Inspection

Site:	Owens-Brockway Glass Container/Portland	Weather Conditions:	
Date & Time:		Nature of Discharge:	
Inspector(s):		24-hr Rainfall (inches):	

This Inspection Must Occur During a Discharge

Area	Look For	Action Required (Y / N)	Comments	Date Corrected
Lift Shop	Drums, spills			
Batch House	Raw materials exposed			
Catch Basins	Debris accumulation		See O-I Catch Basin Maintenance Log	
Manholes / Vaults	Sediment accumulation		See O-I Vault & Manhole Maintenance Log	
Caustic Tank	Spills, containment			
Compressor	Spills, sheen			
Transformers	Spills, sheen			
Bone Yard	Spills, sheen			
Tin Storage	Spills, sheen			
Fuel Tank	Spills, sheen			
Cullet Piles	Spills, sheen			
Recycling Pit	Spills, sheen			
Bio Swale 2	Drainage, debris, wildlife, foliage			
Bio Swale 6	Drainage, debris, wildlife, foliage			
Outfall 2	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Outfall 4	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Outfall 5	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			

Outfall 6	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Outfall 8	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Shipping	Spills, sheen			
Receiving	Spills, sheen			

Corrective Actions:

Control measures needing cleaning, replacement, maintenance, reconditioning or repair:

_____

_____

Drainage system maintenance needed:

_____

_____

Previously unidentified sources of pollutants (a Tier I report is required if visual observation shows evidence of pollution):

_____

_____

Any other corrective actions, source control or maintenance taken or scheduled to remedy problems found:

_____

_____

O-I Catch Basin Maintenance Log

X= inspected, no immediate maintenance needed, V= vactor truck service, NI= Not yet installed F= Needs Filter

R= Repairs or replacement of BMPs needed M= Needs Maintenance

Date	CB-1	CB-2	CB-3	CB-4	CB-5	CB-6	CB-7	CB-8	CB-9A	CB-9B	CB-10	CB-11	CB-12	CB-13	CB-14	CB-15	CB-16	CB-17	CB-18	CB-19	CB-20	CB-21	CB-22	CB-23	CB-24	CB-25	CB-26	CB-27	CB-28	CB-29	CB-30	CB-31	CB-32	CB-33	CB-34	CB-35	CB-36
9/25/2018	X	X	X	V	V	V	NI	X	M	M	X	R	X	X	V,F	V,F	X	X	X	X	X	V,M		V, R		X	X	V	V,M	X	F	X	X	X	X	X	X
Inspector																																					
Date																																					
	Notes:																																				
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O-I Vault & Manhole Maintenance Log

X= inspected, no immediate maintenance needed, V= vactor truck service, NI= Not yet installed
R= Repairs or replacement of BMPs needed

F= Needs Filter
M= Needs Maintenance

Date	Initials	MH#1	MH#2	MH#3	MH#4	MH#5	MH#6	MH#7	Outfall #2 Spill Containment Vault	Notes

O/I Johnson Lake BMP Implementation Tracking

Proposed BMP Improvements	Reason for Action(s)	Schedule for Completion	Person Responsible for Action	Completion Date/Reason for

O-I Sweeping Log

Instructions: Document the date and area that sweeping occurred by plant personnel. All invoices from contractor sweeping should also be documented and invoices kept with this log.

Date	Area Swept	Performed by:	Comments

O-I Swale Maintenance Log

Instructions: Record date and comments for swale maintenance and retain contractor invoices with this log.

Date	Swale	Comments

Owens-Brockway Glass Container Inc

Outfall 7 Discharge Form

Outfall 7 is no longer a monitoring point for compliance sampling, as approved by the City of Portland on the November 20, 2014 Site Inspection. Instead, this outfall will be monitored for oil and grease sheen prior to discharging when opening the release valve. The valve will not be opened unless it is required to alleviate high water levels within the secondary containment berm. This form is to be filled out when the spill containment valve is manually opened.

Date/Time of Valve Opening: _____

Weather: _____

24-hr Rainfall (inches): _____

Outfall 7

Oil and Grease Sheen Observed? (Y / N)

Comments (presence of wildlife, recent maintenance, etc.): _____

_____

_____

APPENDIX C: STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE: OUTFALL SAMPLING

Prepared For:

Owens-Brockway Glass Container Inc.

DALTON OLMSTED FUGLEVAND

May 2021

TABLE OF CONTENTS

ATTACHMENTS

1.0 PURPOSE AND SCOPE

1.1 This standard operating procedure describes the methods to be followed to collect and process stormwater samples from storm water monitoring points at the Owens-Brockway Portland Facility.

1.2 The purpose of this SOP is to ensure a uniform method of stormwater collection for chemical and biological analysis. A field form for sampling is included as Attachment 1.

2.0 DEFINITIONS

2.1 **BOD_5:** Five day biological oxygen demand

2.2 **COC:** Chain of Custody.

2.3 **Grab Sample:** A sample collected during a very short time period at a single location.

2.4 **Intermediate Sampling Equipment:** Equipment other than the parameter-specific analytical sample bottle used to collect sample water. This equipment is typically used to collect sample water prior to pouring into the appropriate laboratory container and submitting the sample to the laboratory for analysis. Intermediate equipment can include Teflon or plastic water dippers, glass or plastic containers, Van Dorn samplers or Kemmerer Samplers. Note that equipment material must be compatible with the parameters sampled. Certain plastics should not be used when collecting some organic parameters, in particular, oil and grease. Consult your laboratory or refer to bottle type material listed for each parameter in 40 Code of Federal Regulations (CFR) part 136.

2.5 **O&G:** Total Oil & Grease

2.6 **PPE:** Personal protective equipment.

2.7 **SOP:** Standard operating procedure.

2.8 **SWPCP:** Stormwater pollution control plan.

2.9 **TSS:** Total Suspended Solids

3.0 HEALTH AND SAFETY

3.1 Wear appropriate PPE when working with potentially hazardous materials and/or potentially hazardous environments. For the Owens-Brockway site, PPE should include powder-free nitrile gloves, safety glasses, high-visibility vest, and appropriate footwear.

3.2 Use caution when opening and handling sample containers containing preservatives. Make sure none of the preservatives spill out of the bottles when sampling.

3.3 Some of the outfalls are in remote locations, and proper precautions should be taken. May want two people and/or have cell phone or check-in plan in case of emergency.

4.0 PERSONNEL QUALIFICATIONS/RESPONSIBILITIES

4.1 All field staff must be familiar with this SOP and/or trained to collect representative environmental samples. Staff must demonstrate a competency for sample collection using appropriate sampling equipment and methods.

5.0 POTENTIAL EQUIPMENT AND SUPPLIES

5.1 A set of sample bottles based on the specific parameters being collected and analyzed (determined by analytical service provider or refer to 40 CFR part 136). Bottles should be certified as pre-cleaned and include labels. A list of sample containers and holding times is included in Table 5 of the site SWPCP.

Bottles can be ordered from Pixis Labs, located at 12423 NE Whitaker Way, by emailing your order to customerservice@pixislabs.com. A sample bottle order is included as Attachment 2. For the 2021-2022 sampling year, the following bottles should be used at all monitoring points:

All sampling points should be sampled for pH, TSS, copper, lead, zinc, E. coli, phosphorus, BOD_5, and iron. The following bottles should be used:

- pH – collected in the field with pH meter, no bottle required
- Metals (copper, lead, iron, and zinc) – (1) 250 mL plastic bottle with nitric acid preservative
- TSS and BOD_5 – (1) 1-liter plastic bottle without any preservative
- Phosphorus – (1) 250 mL plastic bottle with sulfuric acid preservative
- E. coli – (1) sterile 120 mL bottle with sodium thiosulfate preservative filled above the 100 mL line but below the 120 mL line

5.2 Appropriate PPE (see section 3.1).

5.3 Clean, non-metallic ice chest with ice and Ziploc type bags for sample bottles (to prevent potential contamination from ice melt).

5.4 Waterproof pens/markers, clipboard, and field sheets or notebook.

5.5 pH meter (calibrated).

5.6 Intermediate sampling equipment, such as glass beaker (if necessary).

5.7 Monitoring Inspection Log and Field Form (Attachment 1).

5.8 Camera.

6.0 SAMPLE COLLECTION METHODS

6.1 Gather all necessary equipment and supplies.

6.2 Verify that sample containers containing preservatives have not leaked.

6.3 The following details the sampling location for each outfall that needs to be sampled for the 2021/2022 sample year. For outfalls 2 and 6, the sampling location is immediately prior to Johnson Lake. If there is no free-flowing water entering Johnson Lake from the sample location, the Monitoring Inspection Log should be marked "No Discharge", and no sample should be taken at that outfall.

6.3.1 Outfall 2

The Outfall 2 sampling monitoring point is located at the end of the swale, just prior to Johnson Lake. The sample should be taken from the concrete sample port, as shown in Photo 3.

6.3.2 Outfall 4

Due to safety issues with the steep slope where this outfall is located, the sampling location is the discharge pipe.

6.3.3 Outfall 5

The Outfall 5 sampling location is off the rock edge immediately prior to Johnson Lake.

6.3.4 Outfall 6

The Outfall 6 sampling monitoring point is located at the end of the swale, just prior to the discharge apron leading to Johnson Lake. The sample should be taken from the concrete sample port, as shown on Photo 4.

6.3.5 Outfall 8

The Outfall 8 sampling monitoring point is located at the manhole behind building 30, to the northwest of catch basin 24. The sample can either be taken at the lip of the manhole if water is flowing or with a pole sampler if the water is flowing deep enough inside the manhole. These locations are shown on Photos 5 and 6, though this location has not yet been sampled.

6.4 Label the container including client name (Owens), sample name (outfall number and date), sample location (outfall number), date, and time (i.e. military time). See photos 1 and 2 for example.

6.5 Grab Sample Collection Procedures for Direct Sampling of Stormater <u>without</u> the Use of Intermediate Equipment:

6.5.1 Remove lid from sample bottle just before sampling. Be careful not to contaminate the cap, neck, or the inside of the bottle with your fingers, wind-blown particles, etc.

6.5.2 Hold the container up to the sampling point (bottle facing upstream) and capture storm water stream before it enters Johnson Lake. Try not to have the bottle neck against the wall of the discharge outlet.

6.5.3 Fill the bottle to appropriate level depending on the analyte to be tested. Be careful not to overfill sample bottles, especially those containing preservatives. NOTE: Samples for E. coli must be filled to within the two lines shown on the bottle. The lab will not accept samples that are above or below the indicated lines.

6.5.4 Securely replace the lid of the container. Invert it several times to evenly mix if preservative is present.

6.5.5 Place and seal in Ziploc-type bag, and place in ice chest.

6.6 Grab Sample Collection Procedures Using Intermediate Equipment:

6.6.1 Use clean, decontaminated intermediate equipment and rinse equipment with site water prior to sampling. Intermediate sampling equipment, such as a glass beaker, can be useful when sampling from very small discharge streams, where it can be difficult to fill a sample bottle directly, especially one that contains preservatives. Do not use intermediate sampling equipment to sample for Oil & Grease or E. coli.

6.6.2 Reach the equipment to the mid steam column of the discharge stream and collect a water sample.

6.6.3 Remove the lid from each container, being careful not to contaminate the cap, neck, or the inside of the bottle with your fingers, wind-blown particles, etc.

6.6.4 Gently mix the water in the intermediate container by swirling before pouring it into the sample containers.

6.6.5 Fill the sample bottles to the appropriate level depending on the analyte to be tested, making sure to not overfill bottles.

6.6.6 Securely replace the lid of the container. Invert it several times to evenly mix if preservative is present.

6.6.7 Place and seal in Ziploc-type bag, and place in ice chest.

6.7 Take and record pH reading for each outfall. May be easiest to do using intermediate sampling equipment.

6.8 Take a picture of the sampling location to show whether discharge is occurring or not.

6.9 Record a brief description of stormwater at sample location in the Monthly Visual Monitoring Inspection Log, including color, sheen (if evident), and odor (if evident). If there is no discharge, simply put “No Discharge” on Monitoring Log.

7.0 SAMPLE TRANSPORT AND REPORTING PROCEDURES

7.1 Complete Chain of Custody Procedures

7.1.1 Complete a separate COC form or set of forms for each cooler. COC forms will vary, but generally have the following information:

- Project number and ID
- Laboratory identification
- Sampling personnel
- Sample identification
- Sample matrix
- Sample container material
- Sample preservation
- Date and time of collection
- Type and analysis to be performed
- Shipment method and carrier
- Associated FedEx air bill number, if shipped overnight

7.1.2 Sign, date, and note time on COC form. See Photo 7 for sample COC and Attachment 3 for COC form.

7.2 For immediate delivery to the laboratory after sampling:

7.2.1 Pack samples in regular cubed or crushed ice and deliver to the laboratory with chain of custody. Holding time for E. coli is only 8 hours, so samples must be delivered the same day as the sample event.

8.0 DECONTAMINATION

8.1 Intermediate equipment (or any other re-usable equipment used for sampling, such as pH meter) will be cleaned prior to use and after use using non-phosphorus detergents and rinsed with laboratory grade de-ionized water.

8.2 Do not decontaminate sample bottles prior to sample collection.

9.0 REFERENCES

Washington State Department of Ecology, Environmental Assessment Program, *Standard Operating Procedure for Collecting Grab Samples from Stormwater Discharges*. September 2009.

10.0 PHOTOS

PHOTO 1. SAMPLE BOTTLES FOR OUTFALL 6.

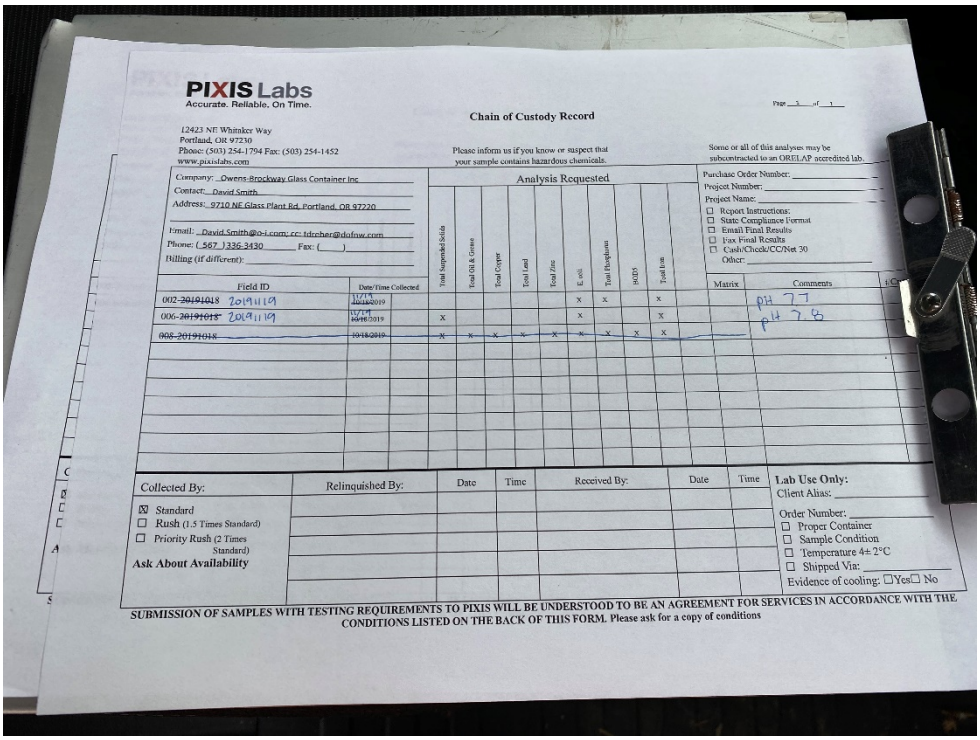
PHOTO 2. SAMPLE BOTTLES FOR OUTFALL 2.

PHOTO 3. SAMPLE LOCATION FOR OUTFALL 2.

PHOTO 4. SAMPLE LOCATION FOR OUTFALL 6.

PHOTO 5. MANHOLE FOR SAMPLING LOCATION 008.

PHOTO 6. POTENTIAL SAMPLE LOCATIONS FOR MONITORING POINT 008.



PIXIS Labs
Accurate. Reliable. On Time.

Chain of Custody Record

12423 NE Whitaker Way
Portland, OR 97230
Phone: (503) 254-1794 Fax: (503) 254-1452
www.pixislabs.com

Please inform us if you know or suspect that your sample contains hazardous chemicals.

Some or all of this analyses may be subcontracted to an ORELAP accredited lab.

Company: Owens-Brockway Glass Container Inc
Contact: David Smith
Address: 9710 NE Glass Plant Rd, Portland, OR 97220
Email: David.Smith@o-i.com; cc: fdreher@dofnw.com
Phone: (567) 336-3430 Fax: ( )
Billing (if different):

Analysis Requested

Field ID	Date/Time Collected	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	pH/DO	Total Iron
002-~~20191018~~ 20191119	11/19/~~2019~~						x	x		x
006-~~20191018~~ 20191119	11/19/~~2019~~	x					x			x
~~008-20191018~~	~~10/18/2019~~	x	x	x	x	x	x	x	x	x

Purchase Order Number:
Project Number:
Project Name:
☐ Report Instructions:
☐ State Compliance Format
☐ Email Final Results
☐ Fax Final Results
☐ Cash/Check/CC/Net 30
Other:

Matrix	Comments
	pH 7.7
	pH 7.8

Collected By:	Relinquished By:	Date	Time	Received By:	Date	Time
☒ Standard ☐ Rush (1.5 Times Standard) ☐ Priority Rush (2 Times Standard) **Ask About Availability**						

Lab Use Only:
Client Alias:
Order Number:
☐ Proper Container
☐ Sample Condition
☐ Temperature 4± 2°C
☐ Shipped Via:
Evidence of cooling: ☐Yes ☐ No

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO PIXIS WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THIS FORM. Please ask for a copy of conditions

PHOTO 7. SAMPLE CHAIN OF CUSTODY.

PIXIS Labs
Accurate. Reliable. On Time.

Chain of Custody Record

12423 NE Whitaker Way
Portland, OR 97230

Phone: (503) 254-1794 Fax: (503) 254-1452
www.pixislabs.com

Please inform us if you know or suspect that your sample contains hazardous chemicals.

Some or all of this analyses may be subcontracted to an ORELAP accredited lab.

Company: Owens-Brockway Glass Container, Inc.
Contact: David Smith
Address: 9710 NE Glass Plant Rd, Portland, OR 97220
Email: David.Smith@o-i.com; cc: tdreher@dofnw.com
Phone: (567) 336-3430 Fax: ( )
Billing (if different):

Purchase Order Number:
Project Number:
Project Name:
☐ Report Instructions:
☐ State Compliance Format
☐ Email Final Results
☐ Fax Final Results
☐ Cash/Check/CC/Net 30
Other:

Analysis Requested

Field ID	Date/Time Collected		Total Suspended Solids	Iron	Copper	Lead	Zinc	E. coli	Phosphorus	BOD5			Matrix	Comments	#Cnr
002 -			X	X	X	X	X	X	X	X			W		
004 -			X	X	X	X	X	X	X	X			W		
005 -			X	X	X	X	X	X	X	X			W		
006 -			X	X	X	X	X	X	X	X			W		
008 -			X	X	X	X	X	X	X	X			W		

Collected By:	Relinquished By:	Date	Time	Received By:	Date	Time
☐ Standard ☐ Rush (1.5 Times Standard) ☐ Priority Rush (2 Times Standard) **Ask About Availability**						

Lab Use Only:
Client Alias:
Order Number:
☐ Proper Container
☐ Sample Condition
☐ Temperature 4± 2°C
☐ Shipped Via:
Evidence of cooling: ☐Yes☐ No

SUBMISSION OF SAMPLES WITH TESTING REQUIREMENTS TO PIXIS WILL BE UNDERSTOOD TO BE AN AGREEMENT FOR SERVICES IN ACCORDANCE WITH THE CONDITIONS LISTED ON THE BACK OF THIS FORM. Please ask for a copy of conditions

Monthly Visual Monitoring Inspection

Site:	Owens-Brockway Glass Container/Portland	Weather Conditions:	
Date & Time:		Nature of Discharge:	
Inspector(s):		24-hr Rainfall (inches):	

This Inspection Must Occur During a Discharge

Area	Look For	Action Required (Y / N)	Comments	Date Corrected
Lift Shop	Drums, spills			
Batch House	Raw materials exposed			
Catch Basins	Debris accumulation		See O-I Catch Basin Maintenance Log	
Manholes / Vaults	Sediment accumulation		See O-I Vault & Manhole Maintenance Log	
Caustic Tank	Spills, containment			
Compressor	Spills, sheen			
Transformers	Spills, sheen			
Bone Yard	Spills, sheen			
Tin Storage	Spills, sheen			
Fuel Tank	Spills, sheen			
Cullet Piles	Spills, sheen			
Recycling Pit	Spills, sheen			
Bio Swale 2	Drainage, debris, wildlife, foliage			
Bio Swale 6	Drainage, debris, wildlife, foliage			
Outfall 2	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Outfall 4	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Outfall 5	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			

Outfall 6	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Outfall 8	Floating, suspended, or settleable solids; color; odor; foam; visible oil sheen; other obvious indicators of pollution in the stormwater discharge			
Shipping	Spills, sheen			
Receiving	Spills, sheen			

Corrective Actions:

Control measures needing cleaning, replacement, maintenance, reconditioning or repair:

_____

_____

Drainage system maintenance needed:

_____

_____

Previously unidentified sources of pollutants (a Tier I report is required if visual observation shows evidence of pollution):

_____

_____

Any other corrective actions, source control or maintenance taken or scheduled to remedy problems found:

_____

_____

APPENDIX D: DISCHARGE MONITORING REPORTS

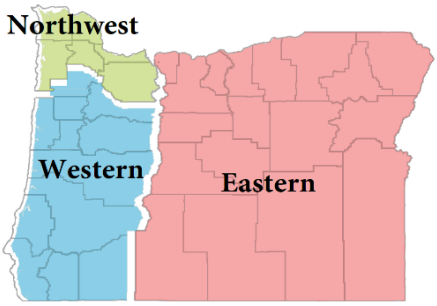
Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report
1200-Z Permit

National Pollutant Discharge Elimination System Permit
Industrial Stormwater Discharge General Permit

Instructions

Instructions: This report must be completed for each quarter and submitted by the 15th of February, May, August and November to the appropriate DEQ regional or agent office. The report must contain the results of all stormwater monitoring conducted during each quarter, and variance requests are due semi-annually, in February and August. Sample for the pollutants at monitoring location(s) specified in your SWPCP and use the monitoring location(s) number from your SWPCP. You must include the laboratory results, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed. You must also submit pH field notes and chain of custody.



DEQ Northwest Region Office
Stormwater Programs
700 Lloyd Building at 700 NE
Multnomah St., Suite 600
Portland, OR 97232

DEQ Western Region Office
Stormwater Program
165 East 7th Ave., Suite 100
Eugene, OR 97401

DEQ Eastern Region Office
Stormwater Program
475 NE Bellevue Drive, Suite 110
Bend, OR 97701

Clean Water Services
Industrial Stormwater
2550 SW Hillsboro Hwy.
Hillsboro, OR 97123

City of Portland
Industrial Stormwater Section
Water Pollution Control Lab
6543 N Burlington Ave.

City of Eugene
Industrial Source Control
410 River Ave.
Eugene, OR 97404

All Sections

- Organize data by monitoring location.
- Provide the data reported on the laboratory results sheets for each monitoring location.
- The excel spreadsheet will automatically calculate the geometric mean.
- Report “W” in the column(s) for any monitoring waiver. Pollutant(s) with a monitoring waiver will automatically generate a "W" in the geomean cell for that parameter.
- Report non-detect results as "ND" along with the applicable detection limit or minimum quantification limit in parentheses, for example ND (0.001).
- The spreadsheet will automatically use 1/2 the detection limit to calculate the geometric mean for non-detect results. The geometric mean is required in the second year of coverage.
- If a sampling event is missed or sampling frequency has been fulfilled, a sampling parameter is not analyzed, or if the sample result is not valid due to a qualifier on the laboratory report enter "NS" in each applicable column for that row. Report the resample for missed or invalidated parameters on a new row with the resample date.
- If "ERROR" appears in the geomean cell, recheck the data entry and the steps described in how reporting non-detects.
- For no discharge, report "No Discharge" in the row after the sampling date for any applicable monitoring location. Submit applicable documentation to support no discharge claim with February and August DMR.
- Use additional pages as needed for reporting extra monitoring events.
- Monitoring year is from July 1 of one year to June 30 of the following year. 1st quarter: July-Sept.; 2nd quarter: Oct.-Dec.; 3rd quarter: Jan.-March; 4th quarter: April-June

Statewide Benchmark Tabs

- At least one statewide benchmark tab is required for all permit holders. Only complete and print required pages.
- Sample 4 times per year, every year, unless granted a monitoring waiver or request a monitoring variance.
- Geometric mean is only required in the second year of permit coverage.

Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report
1200-Z Permit

National Pollutant Discharge Elimination System Permit
Industrial Stormwater Discharge General Permit

Sector Tab: Sector-Specific Benchmark Sampling

- If your facility does not have sector-specific benchmark requirements listed in your permit assignment letter, do not submit this section.
- Sample 4 times per year, every year, unless granted a monitoring waiver or request a monitoring variance.

Impairment Tab: Impairment Sampling

- If your facility does not have impairment sampling requirements, do not submit this page.
- Requirements are based on the receiving water body.
- Report “W” in the column(s) for any monitoring waiver or exemption from impairment monitoring due to non-detects.
- Sample 4 times per year, every year, unless granted a monitoring waiver or request a monitoring variance.
- PCBs should be reported as the sum of the following aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260. Do not use any value for any aloclor that is non-detect, If all Aloclors are non-detect, report the ND value for the highest non-detect value from the lab report, for example ND (0.002).

Numeric Effluent Limits Tab: Numeric Effluent Guidelines Sampling

- If your facility does not have effluent limits requirements, do not submit this page.
- Sample 2 times per year, every year, or as directed by permit conditions.

Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report
1200-Z Permit

National Pollutant Discharge Elimination System Permit
Industrial Stormwater Discharge General Permit

State of Oregon Department of Environmental Quality

Instructions: This report must be completed for each quarter and submitted by the 15th of February, May, August and November to the appropriate DEQ regional or agent office. The report must contain the results of all stormwater monitoring conducted during each quarter, and variance requests are due semi-annually, in February and August. Sample for the pollutants at monitoring location(s) specified in your SWPCP and use the monitoring location(s) number from your SWPCP. You must include the laboratory results, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed. You must also submit pH field notes and chain of custody.

Facility Information

Legal name: _____ DEQ File No: _____

Common name: _____ EPA #: _____

Facility address: _____ Reporting Quarter: ☐ 1st ☐ 2nd ☐ 3rd ☐ 4th *see table 6

Facility City, Zip: _____ Reporting Year: 20____ to 20____

Geo-Region: ☐ Columbia Slough ☐ Columbia River ☐ Portland Harbor ☐ Regional

2nd Geo-Region ☐ Columbia Slough ☐ Columbia River ☐ Portland Harbor ☐ Regional

Administrated by: ☐ DEQ ☐ Clean Water Services ☐ City of Portland ☐ City of Eugene

Primary SIC Code: _____ Secondary SIC Code: _____

Monitoring Information

Number of discharge point(s): _____ Number of monitoring location(s): _____

If different, you certify that the facility has established either: 1) the area has no exposure of stormwater to industrial activities, or 2) the effluent is substantially similar to effluent(s) monitored and the same BMPs are implemented and maintained. (See permit pg 23)

Monitoring Waiver(s) If yes list date on DEQ or Agent approval letter.

MM/DD/YY			

DMR Submittal Checklist Please check all applicable documents are included with you DMR submittal:

☐ Original Signature ☐ Laboratory Reports ☐ Chain of Custody ☐ QA/QC form Lab ☐ pH field sheets

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 (40 CFR 122.22(d)).

Signature: _____ Date: _____

Printed Name: _____ Title: _____

Legally Authorized Representative

Email: _____

*2018 1200-Z permit, page 29 Telephone : _____

Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report

1200-Z Permit

For official use only:
Legal Name:
DEQ File No:

Instructions: This report must be completed for each quarter and submitted by the 15th of February, May, August and November to the appropriate DEQ regional or agent office. The report must contain the results of all stormwater monitoring conducted during each quarter, and variance requests are due semi-annually, in February and August. Sample for the pollutants at monitoring location(s) specified in your SWPCP and use the monitoring location(s) number from your SWPCP. You must include the laboratory results, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed. You must also submit pH field notes and chain of custody.

Columbia Slough Benchmarks

Monitoring Location(s)	Sample Date	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5
		s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	counts/ 100 ml	mg/L	mg/L
Geometric Mean										
Geometric Mean										
Geometric Mean										
Geometric Mean										
Columbia Slough Benchmarks		**5.5-8.5**	**30**	**10**	**0.020**	**0.060**	**0.24**	**406**	**0.16**	**33**

Oregon Department of Environmental Quality
Stormwater Program

State of Oregon Department of Environmental Quality

Discharge Monitoring Report

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Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report

1200-Z Permit

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Impairment Pollutants and Reference Concentrations
(see permit assignment letter for identification of required parameters)

Monitoring Location(s)	Sample Date	Guthion	Heptachlor	Hexachlo-robenzene	Iron, Total	Lead, Dissolved	Malathion	Mercury, Total	Nickel, Dissolved
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Geometric Mean									
Geometric Mean									
Geometric Mean									
Geometric Mean									
Impairment Ref. Concentration		**0.001**	**0.00052**	**0.001**	**1.0**	**See Letter**	**0.0002**	**0.0024**	**See Letter**

ATTACHMENTS

ATTACHMENT 1: 1200-Z NPDES ISGP

CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory

6543 N Burlington Avenue, Bldg 217, Portland, Oregon 97203 ▪ Mingus Mapps, Commissioner ▪ Michael Jordan, Director

May 6, 2021

Pedro Tchmola
OWENS-BROCKWAY GLASS CONTAINER INC.
9710 NE GLASS PLANT RD
PORTLAND, OR 97220-1383

RE: 2021-2026 NPDES Permit Number 1200-Z, Monitoring Requirements
Facility: OWENS-BROCKWAY GLASS CONTAINER PLANT - 9710 NE GLASS PLANT ROAD PORTLAND
File Number: 65610

Dear Permit Registrant:

DEQ has reissued the 1200-Z Permit, effective July 1, 2021. Below are your revised monitoring requirements under the reissued permit, starting July 1, 2021. All monitoring waivers expire on July 1, 2021. Please review the information closely as pollutants and associated benchmarks/concentrations may have changed. If you identify any discrepancies in the table, please contact your permit manager as soon as possible.

Monitoring Requirements
You must monitor for the pollutants in the table below. If you discharge to a Category 5: 303(d) listed receiving water for pH, total copper, total lead, total zinc and/or E. coli, the table below will not include statewide or sector-specific benchmarks for those pollutants. Exceedance of impairment monitoring may escalate to a water quality-based effluent limit during this permit cycle. Please read Schedule A.13 and Schedule C carefully.

Georegion	Pollutant	Statewide Benchmark	Unit	Frequency
Columbia Slough	pH	5.5-9.0	s.u.	Four times per year
Columbia Slough	Total Copper	0.017	mg/L	Four times per year
Columbia Slough	Total Lead	0.10	mg/L	Four times per year
Columbia Slough	Total Zinc	0.24	mg/L	Four times per year
Columbia Slough	TSS	30	mg/L	Four times per year
Columbia Slough	BOD_5	24	mg/L	Four times per year
Columbia Slough	Total Phosphorus	0.16	mg/L	Four times per year
Columbia Slough	E. coli	406	organisms/100 mL	Four times per year
Receiving Water AU_ID: 104554	**Pollutant**	**Impairment Concentration**	**Units**	**Frequency**
Columbia Slough	Total Iron	10	mg/L	Four times per year

DEQ has scheduled an informational webinar on May 18th at 9 am to inform you of the changes in the reissued permit. The webinar will be recorded and will provide time to ask questions.

1200-Z Industrial Stormwater Permit Renewal 2021 Informational Webinar:
https://us02web.zoom.us/j/89933898179?pwd=VE43cWx6b0p3SnlqL1M1SE9nVGsyQT09
Passcode: 444150
or Telephone:
Dial: 877-853-5257
Webinar ID: 899-3389-8179

It is your responsibility to comply with the new permit conditions and monitoring requirements starting July 1, 2021. DEQ will be transitioning to electronic data management system during this permit cycle. As such, you will not receive the first page of the permit identifying your facility as registered under the renewed permit. However, DEQ mailed a letter, dated March 31, 2021 to your facility regarding coverage under the new permit. Please visit DEQ's industrial stormwater permits webpage to find a copy of the permit and associated documents.
https://www.oregon.gov/deq/wq/wqpermits/Pages/Stormwater-Industrial.aspx

The City of Portland Bureau of Environmental Services has an Intergovernmental Agreement with the DEQ to administer permits for those facilities located within the City. If you have any questions regarding this letter, please contact your City of Portland stormwater permit manager:

Ellen Dorsey
6543 N. Burlington Ave
Portland, OR 97203
503-823-8250
Ellen.Dorsey@PortlandOregon.gov

Sincerely,

Stacy Hibbard
Environmental Manager

Enc. Schedule A.13 and Schedule C permit language

GENERAL PERMIT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
INDUSTRIAL STORMWATER DISCHARGE PERMIT No. 1200-Z
Department of Environmental Quality
700 NE Multnomah St., Suite #600 Portland, OR 97232
Telephone: (503) 229-5630 or 1-800-452-4011 toll free in Oregon
Issued pursuant to ORS 468B.050 and the Federal Clean Water Act

REGISTERED TO:

SOURCES COVERED UNDER THIS PERMIT:

A facility that may discharge industrial stormwater to surface waters or to conveyance systems that discharge to surface waters of the state and,

1. The stormwater is associated with an industrial activity identified in Table 1: Sources Covered or listed in Table 2: Additional Industrial Activities Covered; or
2. The facility is notified in writing the Director determines coverage under this permit is required for its stormwater discharges pursuant to 40 CFR 122.26(a)(9)(i)(D).

Note:

1. Facilities may apply for conditional exclusion from the requirement to obtain coverage under this permit if there is no exposure of industrial activities and materials to stormwater pursuant to 40 CFR §122.26(g); see Permit Coverage and Exclusion from Coverage.
2. The following are not eligible to obtain coverage under this permit:
    i. Construction activities. This activity is covered under a separate general permit.
    ii. Any source with primary Standard Industrial Classification codes 2951 and 3273, including mobile asphalt and concrete batch plants; and Standard Industrial Classification code 14, Mining and Quarrying of Nonmetallic Minerals, Except Fuels. These activities are covered under a separate general permit.
    iii. Any source that has obtained an individual NPDES permit for the discharge, unless the source is otherwise eligible for coverage under this permit and DEQ has approved the source's application for coverage under this general permit.
    iv. Any source that discharges to a sanitary sewer system and the discharge is approved by the sanitary sewer operator.

Issuance Date: March 25, 2021

_____

Justin Green, Administrator
Water Quality Division

PERMITTED ACTIVITIES

Until this permit expires, is modified, or revoked, the permit registrant is authorized to construct, install, modify, or operate stormwater treatment or control facilities, and to discharge stormwater and non-stormwater discharges specifically authorized by the permit to surface waters of the state in conformance with all the requirements, limitations, and conditions set forth in the following:

Unless specifically authorized by this permit, by regulation issued by EPA, by another NPDES permit, or by Oregon Administrative Rule or Oregon Revised Statute, any other direct or indirect discharge to waters of the state is prohibited, including non-stormwater discharges to an underground injection control system.

Schedule E contains sector-specific federal requirements. Schedule F contains General Conditions that are included in all general permits issued by DEQ. If conflicts arise between Schedule E or Schedule F and any other schedule of the permit, the requirements in Schedule E or Schedule F may not apply.

Table 1: Sources Covered

Industrial Sources Covered Under this Permit
Facilities with the following primary Standard Industrial Classification (SIC) codes: 10 Metal Mining 12 Coal Mining 13 Oil and Gas Extraction 20 Food and Kindred Products 21 Tobacco Products 22 Textile Mill Products 23 Apparel and Other Finished Products Made From Fabrics and Similar Material 24 Lumber and Wood Products, Except Furniture (Activities with SIC 2411 Logging that are defined in 40 CFR §122.27 as silvicultural point source discharges are covered by this permit.) 25 Furniture and Fixtures 26 Paper and Allied Products 27 Printing, Publishing and Allied Industries 28 Chemicals and Allied Products Manufacturing and Refining (excluding 2874: Phosphatic Fertilizers) 29 Petroleum Refining and Related Industries (excluding 2951, covered by 1200-A) 30 Rubber and Miscellaneous Plastics Products 31 Leather and Leather Products 32 Glass, Clay, Cement, Concrete and Gypsum Products (excluding 3273, covered by 1200-A) 33 Primary Metal Industries 34 Fabricated Metal Products 35 Industrial and Commercial Machinery and Computer Equipment 36 Electronic and Other Electrical Equipment and Components, Except Computer Equipment 37 Transportation Equipment 38 Measuring, Analyzing, and Controlling Instruments; Photographic, Medical and Optical Goods; Watches and Clocks 39 Miscellaneous Manufacturing Industries 4221 Farm Product Warehousing and Storage 4222 Refrigerated Warehousing and Storage 4225 General Warehousing and Storage 5015 Motor Vehicle Parts, Used 5093 Scrap and Waste Materials
Facilities with the following primary SIC codes that have vehicle maintenance shops (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, or airport deicing operations[1]: 40 Railroad Transportation 41 Local and Suburban Transit and Interurban Highway Passenger Transportation 42 Trucking and Courier Services, Except Air (excluding 4221, 4222, and 4225) 43 United States Postal Service 44 Water Transportation 45 Transportation by Air 5171 Petroleum Bulk Stations and Terminals, except petroleum sold via retail method
Steam Electric Power Generation including coal handling sites
Landfills, land application sites and open dumps
Hazardous Waste Treatment, storage and disposal facilities
Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, recycling, and reclamation of municipal or domestic sewage (including land dedicated to the disposal of sewage sludge that are located within the confines of the facility) with the design flow capacity of 1.0 mgd or more, or required to have a pretreatment program under 40 CFR §403

[1]Eligibility based on auxiliary operations; however, once covered all stormwater discharge associated with industrial activities are regulated under this permit.

Facilities that discharge stormwater into the Columbia Slough or Portland Harbor that is exposed to any of the industrial activities listed in Table 2 below, are eligible to obtain permit coverage under the NPDES 1200-Z permit.

Table 2: Additional Industrial Activities Covered

Discharges to Columbia Slough and Portland Harbor
Maintenance of vehicles, machinery, equipment, and trailers (including repairs, servicing, washing, testing and painting)
Storage of vehicles, machinery, equipment (including disposal/refuse containers stored by a disposal/refuse contractor/vendor), and trailers (including rental, sales, wrecked vehicles, fleet, and general storage)
Materials storage (including raw materials; bulk fuels, chemicals, detergents, and plastic pellets; finished materials; lumber and food products; wholesale gravel, sand, and soil stockpiles; and bulk liquids other than water)
Waste handling (including recycled product storage, composting, tires, and bulk hazardous waste)
Commercial animal operations (such as kennels, race tracks, and veterinarians not covered under a Confined Animal Feeding Operation permit)
Fuel distribution and sales (including bulk stations, fuel oil dealers, manned and unmanned retail stations, fleet fueling, mobile fueling, and truck stops)
Any former activity that resulted in significant materials (as defined in Schedule D) remaining on-site

CONDITION I

PERMIT COVERAGE AND EXCLUSION FROM COVERAGE

1. **New Discharger to Impaired Waters** (see Schedule D.3, Definitions)
   a. A new discharger to an impaired water without a Total Maximum Daily Load (TMDL), based on the EPA-approved Category 5: 303(d) list in effect at the time of permit application for pH, copper, lead, zinc, iron, and E. coli that correspond to the specific pollutant(s) for which the water body is impaired must meet one of the following conditions to obtain coverage under this permit:
      i. Prevent exposure to stormwater for pH, copper, lead, zinc, iron and E. coli that correspond to the specific pollutant(s) for which the water body is impaired. Document the procedures taken to prevent exposure in the Stormwater Pollution Control Plan (SWPCP).
      ii. Provide technical demonstrations that sources of pH, copper, lead, zinc, iron and E.coli that correspond to the specific pollutant(s) for which the water body is impaired are not present at the site and document these findings and considerations in the SWPCP.
      iii. Provide DEQ or agent stormwater discharge analytical sampling results to demonstrate the discharge of stormwater is not expected to cause or contribute to an exceedance of water quality standards for pH, copper, lead, zinc, iron and E. coli that correspond to the specific pollutant(s) for which the water body is impaired at the point of discharge and retain in the SWPCP.
   b. If unable to demonstrate pH, copper, lead, zinc, iron and E. coli that correspond to the specific pollutant(s) for which the water body is impaired will not be present in the discharge, provide DEQ or agent with other technical information that demonstrates the discharge is not expected to cause or contribute to an exceedance of water quality standards at the point of discharge and document the rationale in the SWPCP.
      i. Prior to DEQ granting coverage, DEQ or agent will determine and document that Condition I.1.a or b has been satisfied.
   c. A new discharge of pollutant may be authorized by this permit to an impaired water with a TMDL (based on EPA-approved TMDLs as of March 31, 2021) under one of the following circumstances:
      i. The TMDL does not establish industrial stormwater wasteload allocations, the compliance with the terms and conditions of the permit is presumed consistent with the TMDL.
      ii. The TMDL establishes industrial stormwater wasteload allocations, and DEQ determines that there is sufficient remaining loading capacity in the TMDL to allow for the new industrial stormwater discharge.
   d. If a new discharge to an impaired water is authorized under this permit, DEQ or agent will establish additional monitoring and site controls as necessary. DEQ or agent may determine a compliance schedule is necessary.
   e. DEQ may determine that coverage under an individual NPDES permit is required.
   f. Conditions I.1.a and I.1.c above do not apply if the waterbody is impaired for:
      i. Biological communities (biocriteria), including harmful algal blooms and aquatic weeds, where no pollutant including indicator or surrogate pollutants, is specified as causing the impairment; or
      ii. Temperature, habitat and flow modifications.

2. Application Requirements for New Permit Coverage

a. The following conditions apply to:
   i. New facility: Submit a complete application to DEQ or agent (see Schedule D.4 for description of agent) at least 60 calendar days before initiating the activity that requires permit coverage, unless DEQ or agent approved a later date.
   ii. Existing facility with stormwater discharges associated with industrial activities identified in Table 1 or Table 2 operating without coverage under any NPDES permit for those discharges: Immediately submit a complete application to DEQ or agent, unless DEQ or agent approved a later date.
   iii. Existing facility that is designated by the Director as needing a stormwater permit pursuant to 40 CFR §122.26(a)(9)(i)(D): No later than 60 calendar days of being notified by DEQ that permit coverage is required, submit a complete application to DEQ or agent.
   iv. Existing facility with stormwater discharges authorized by an individual NPDES permit that seeks coverage under this permit: Submit a complete application to DEQ or agent and a copy of the individual NPDES permit.

b. A complete web-based electronic application, as required by DEQ, must include the following:
   i. Applicable permit fees;
   ii. DEQ-approved application form;
   iii. A determination, on a DEQ-approved form, from the local government agency with land use jurisdiction that states the use is compatible with acknowledged local land use plans; and
   iv. One PDF copy of the SWPCP.

c. DEQ will accept paper applications:
   i. With an approved waiver from electronic submission; or
   ii. Until directed by DEQ.

d. Permit Coverage
   i. Prior to granting the applicant coverage under this permit, DEQ will provide a 30 calendar day public notice period on the applicant's SWPCP. DEQ or agent will respond to any applicable public comments.
   ii. DEQ will notify the applicant if coverage is granted or denied. When coverage is granted, DEQ or agent will specify and communicate monitoring requirements to the permit registrant.

e. If coverage is denied or the applicant does not wish to be regulated by this permit, the applicant must apply for an individual permit in accordance with OAR 340-045-0030 or cease discharge.

3. Existing Facilities Covered Under the 1200-Z NPDES General Permit Reissued in 2018

a. DEQ will notify existing permit registrants of assignment under the current permit. Permit registrants that seek uninterrupted coverage must submit an updated SWPCP to DEQ or agent by August 31, 2021, unless DEQ or agent approved a later date.

b. Existing permitted facilities must comply with the implementation deadlines established under the previous 1200-Z NPDES permit, including Tier 2 corrective action requirements.

c. Existing permitted facility that intend to change industrial processes at the site to an new primary industrial sector must submit the following to DEQ or agent at least 60 calendar days before initiating the planned change:

i. A determination, on a DEQ-approved form, from the local government agency with land use jurisdiction that states the new industrial use is compatible with acknowledged local land use plans;
ii. A revised SWPCP; and
iii. Environmental management plan review fee.

d. DEQ will provide a 30 calendar day public notice period on the revised SWPCP.
e. DEQ or agent will specify and communicate monitoring requirements to the permit registrant.

4. Name Change or Transfer of Permit Coverage

a. For a name change or transfer of permit coverage between legal entities, the new owner or operator must submit a web-based electronic transfer or legal name change to DEQ, when directed by DEQ a paper form is no longer accepted, no later than 30 calendar days after the name change or transfer of control of the facility is complete. A complete name change or transfer must include the following:
   i. One Name Change and/or Permit Transfer form;
   ii. One PDF copy of an updated SWPCP; and
   iii. Permit transfer, legal name change fee.
b. DEQ will notify the applicant if the name change or transfer is approved or denied.
c. Transfer of permit coverage between legal entities where there will also be a change in an industrial processes at the site to a new primary industrial sector are ineligible for permit transfer. The new owner or operator must submit an application for new permit coverage under this permit as required in Condition I.2 above.

5. "No Exposure" Conditional Exclusion from Permit Coverage

a. An owner or operator that applies for a "no exposure" conditional exclusion under 40 CFR §122.26(g) from coverage under this permit must:
   i. Protect industrial materials and activities from exposure to rain, snow, snowmelt, and runoff by using a storm resistant shelter, except as provided in the Environmental Protection Agency (EPA) Guidance Manual for Conditional Exclusion from Stormwater Permitting Based on "No Exposure" of Industrial Activities to Stormwater (EPA 833-B-00-001, June 2000) and EPA's Fact Sheet on Conditional No Exposure Exclusion for Industrial Activity (EPA 833-F-00-015, revised December 2005). Storm resistant shelters with unsealed zinc or copper roofing materials are not eligible for the "no exposure" conditional exclusion;
   ii. Ensure that known significant materials from previous operations are controlled, removed or otherwise not exposed to stormwater.
   iii. When directed to do so by DEQ, complete and sign a web-based electronic DEQ-approved certification, that there is no stormwater exposure to industrial materials and activities from the entire facility, otherwise submit in paper format.
   iv. Submit the signed certification to DEQ or agent once every five years, beginning five years after the date of first submittal. If DEQ or agent does not comment on the "no exposure" certification within 60 calendar days, the "no exposure" conditional exclusion is deemed approved. DEQ or agent may notify the applicant of its approval. The owner or operator must keep a copy of the approved certification on-site.

v. Allow DEQ or agent to inspect the facility to determine compliance with the "no exposure" conditions listed above; and
vi. If the facility discharges through a municipal separate storm sewer system (MS4) submit a copy of the "no exposure" certification to the MS4 operator (for example, local municipality or district), if requested, and allow inspection and public reporting by the MS4 operator.

b. Limitations for obtaining or maintaining the exclusion:
i. This exclusion is available on a facility-wide basis only, not for individual discharge points.
ii. If any industrial materials or activities become exposed to rain, snow, snowmelt, or runoff, the conditions for this exclusion no longer apply. In such cases, the discharge becomes subject to enforcement. Any conditionally exempt discharger who anticipates changes in circumstances must apply for and obtain permit coverage before the change of circumstances.
iii. DEQ or agent retains the authority to determine that the "no exposure" conditional exclusion no longer applies and require the owner or operator to obtain permit coverage.

6. Authorized Non-Stormwater Discharges

a. Subject to the terms and conditions of the permit and Oregon law, the following non-stormwater discharges are authorized:
i. Discharges from emergency or unplanned fire-fighting activities;
ii. Fire hydrant flushing and maintenance;
iii. Potable water, including water line flushing;
iv. Uncontaminated condensate from air conditioners, coolers, chillers and other compressors, and from outside storage of refrigerated gases and liquids;
v. Landscape watering and irrigation drainage;
vi. Exterior vehicle wash water that does not use hot water or detergent; restricted to less than eight per week;
vii. Pavement wash water that does not use hot water, detergent or other cleaning products, no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed), and surfaces are swept before washing;
viii. Routine external building wash down that does not use hot water, detergent or other cleaning products;
ix. Uncontaminated ground water or spring water;
x. Foundation or footing drains where flows are not contaminated with process materials; and
xi. Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from the cooling tower (e.g., "piped" cooling tower blowdown or drains).

7. Limitations on Coverage

a. Pursuant to OAR 340-045-0033(10), DEQ may deny permit coverage to an applicant or revoke existing coverage under this permit and require the owner or operator to apply for and obtain an individual permit.
b. The permit registrant must separate any piping of interior floor drains and process wastewater discharge points from the storm drainage system to prevent unpermitted discharge of pollutants to waters of the state. Discharge from floor drains to the stormwater drainage system is a violation of this permit.

c. Any other wastewater discharge or disposal, including stormwater mixed with wastewater is not authorized under this permit and must be permitted in a separate permit, unless the wastewater is reused or recycled without discharge or disposal, or is discharged to the sanitary sewer with approval from the sanitary sewer system operator.
d. Except for sectors G, H, L and K in accordance with Schedule E, construction stormwater discharge resulting from disturbance of an acre or more is not authorized.
e. Coverage under this permit is not available under the following circumstances:
    i. If all stormwater discharges are regulated by another NPDES permit, except a MS4 permit.
    ii. If stormwater discharges were included in a permit that has been or is in the process of being denied, terminated or revoked unless the source is otherwise eligible for coverage under this permit and DEQ approves the source's application to register under this permit and simultaneously revokes coverage under the other permit pursuant to OAR 340-045-0033(8).
    iii. If stormwater discharge is covered under an individual NPDES permit that establishes site-specific numeric water quality-based effluent limitations.
    iv. For a new discharger to waters designated as Outstanding Resource Waters for antidegradation purposes under 40 CFR 131.12(a)(3) and OAR 340-041-0004.
f. Any operator eligible for coverage not seeking coverage under this general permit must apply for an individual NPDES permit in accordance with the procedures in OAR 340-045-0030.

SCHEDULE A

EFFLUENT LIMITATIONS AND PERMIT COMPLIANCE

1. Narrative Technology-based Effluent Limits

The permit registrant must meet the following narrative technology-based effluent limits and additional sector-specific limits in Schedule E of this permit, if applicable.

a. Minimize exposure - Minimize exposure of manufacturing, processing, material storage areas, loading and unloading, disposal, cleaning, maintenance and fixed fueling areas to rain, snow, snowmelt and runoff. To the extent technologically available and economically practicable and achievable in light of best industry practice, the permit registrant must do the following:

i. Locate materials and activities indoors or protect them with storm resistant covers if stormwater from affected areas may discharge to surface waters. Acceptable covers include, permanent structures such as roofs or buildings or properly secured temporary covers such as tarps;

ii. Use grading, berming, or curbing to divert stormwater away from these areas and prevent stormwater contamination;

iii. Locate materials, equipment and activities in containment and diversion systems, including the storage of leaking or leak-prone vehicles and equipment awaiting maintenance, to prevent leaks and spills from contaminating stormwater;

iv. Use drip pans or absorbents under or around leaking or leak-prone vehicles/equipment or store indoors;

v. Drain fluids from equipment and vehicles prior to on-site storage or disposal;

vi. Perform all cleaning operations indoors, under cover or in bermed areas that prevent runoff and run-on and also captures overspray, unless allowed by Condition I.6; and

vii. All wash water must be managed indoors or in bermed areas, disposed into sanitary sewer or drain to a proper collection system such as a closed-loop system or vegetated area that does not discharge into the stormwater drainage system unless Condition I.6 which allows authorized non-stormwater discharge is met.

b. Oil and Grease - Employ oil/water separators, booms, skimmers or other methods to eliminate or minimize oil and grease contamination in stormwater discharges.

c. Waste Chemicals and Material Disposal - Recycle or properly dispose of wastes to eliminate or minimize exposure of pollutants to stormwater. Cover all waste contained in bins or dumpsters where there is a potential for drainage of stormwater through the waste to prevent exposure of stormwater to these pollutants. Acceptable covers include, storage of bins or dumpsters under roofed areas or use of lids or properly secured temporary covers such as tarps.

d. Erosion and Sediment Control - Stabilize exposed areas, including areas where industrial activity has taken place in the past and significant materials remain, and contain runoff using structural and nonstructural controls to minimize erosion of soil at the site and sedimentation. Employ erosion control methods, such as vegetating exposed areas, graveling or paving to minimize erosion of soil at the site. Employ sediment control methods, such as detention facilities, vegetated filter strips, bioswales, flow velocity dissipation devices or other permanent erosion or sediment controls to minimize sediment loads in stormwater discharges. Identify any use of stabilization polymers or chemicals. For activities that involve land disturbance, the permit

registrant must contact the local municipality to determine if there are other applicable requirements related to stormwater control.

e. Debris Control - Employ screens, booms, settling ponds, or other methods to eliminate or minimize waste, garbage and floatable debris in stormwater discharges and ensure that this debris is not discharged to receiving waters.
f. Dust Generation and Vehicle Tracking of Industrial Materials - Minimize generation of dust, off-site tracking and discharge of soil, particulates and raw, final or waste materials.
g. Housekeeping - Routinely clean all exposed areas that may contribute pollutants to stormwater with measures such as sweeping at regular intervals, litter pick-up, keeping materials orderly and labeled, promptly clean-up spills and leaks, proper maintenance of vehicles and stowing materials in appropriate containers.
h. Spill Prevention and Response Procedure - Minimize the potential for leaks, spills and other releases that may be exposed to stormwater and develop plans that include methods for spill prevention and clean-up and notification procedures. At a minimum, the permit registrant must conduct spill prevention and response measures including the following:
    i. Clean up spills or leaks promptly using absorbents or other effective methods to prevent discharge of pollutants and use spill/overflow protection equipment;
    ii. Store all hazardous substances (see Schedule D.3, Definitions), petroleum/oil liquids, and other chemical solid or chemical liquid materials that have potential to contaminate stormwater within berms or other secondary containment devices to prevent leaks and spills. If the use of berms or secondary containment devices is not practicable, then store such substances in areas that do not drain off-site or into the storm sewer system;
    iii. Plainly label containers to encourage proper handling and facilitate proper response if spills or leaks occur as required by local, state and federal rules;
    iv. Implement preventative measures, such as barriers between material storage and traffic areas, secondary containment provisions, and procedures for material storage and handling;
    v. Develop procedures for expeditiously stopping, containing, and cleaning up leaks, spills and other releases. Make the methods and procedures available to appropriate personnel. Employees who may cause, detect, or respond to a spill or leak must be trained in these procedures. Have the necessary clean-up material on-site and readily available; and
    vi. Procedures for notification of appropriate facility personnel, DEQ or agent, and the Oregon Emergency Response System (1-800-452-0311), when a spill may endanger health or the environment. Contact information must be in locations that are readily accessible and available.
i. Preventative Maintenance - Regularly inspect, clean, maintain, and repair all industrial equipment and systems and materials handling and storage areas that are exposed to stormwater to avoid situations that may result in leaks, spills, and other potential releases of pollutants discharged to receiving waters. Clean, maintain and repair all control measures, including stormwater structures and temporary measures, catch basins, and treatment facilities to ensure effective operation as designed and in a manner that prevents the discharge of pollution.
j. Employee Education - Develop and maintain an employee orientation and education program to inform personnel of the pertinent components and goals of this permit and the SWPCP.
    i. Training must cover:

(1) Specific control measures used to achieve the narrative technology-based effluent limits, such as spill response procedures and good housekeeping practices, and
(2) Monitoring, inspection, reporting and documentation requirements.

ii. The permit registrant must ensure that the following personnel are trained and understand the facility's specific requirements and their responsibilities:
(1) Personnel who are responsible for the design, installation, maintenance, or repair of controls including, pollution prevention and treatment measures;
(2) Personnel responsible for the storage and handling of chemicals and materials that could contribute pollutants to stormwater;
(3) Personnel who are responsible for conducting or documenting monitoring or inspections as required in Schedule B; and
(4) Personnel who are responsible for conducting and documenting corrective actions.

iii. Education and training must be documented and must occur:
(1) No later than 30 calendar days after hiring an employee who works in areas where stormwater is exposed to industrial activities or conducts duties related to the implementation of the SWPCP;
(2) No later than 30 calendar days after change in duties for key personnel in Schedule A.1.j.ii; and
(3) Annually thereafter.

iv. Education and training must be documented and include which specific employees received training. A log of training dates must kept on-site and submitted to DEQ or agent upon request.

k. Non-Stormwater Discharges - Eliminate any non-stormwater discharges not authorized by a NPDES permit (see Condition I.6 for a list of authorized non-stormwater discharges).

2. Control Measures for Numeric and Narrative Technology-based Effluent Limits

a. The permit registrant must select, design, install, implement and maintain control measures, including all best management practices (BMPs), to meet the narrative technology-based effluent limits in Schedule A.1, and Schedule E, and numeric technology-based effluent limitations guidelines in Schedule B.1 of this permit. The permit registrant must describe these measures, maintenance schedules and frequency of housekeeping measures in the SWPCP.

b. For narrative and numeric technology-based effluent limits that require the permit registrant to minimize pollutants in the discharge, the permit registrant must reduce or eliminate pollutants to the extent achievable using control measures that are technologically available and economically practicable and achievable in light of best industry practice. The term "minimize" is defined in Schedule D.3.

c. In selecting the appropriate control measures to meet these limits, the permit registrant may consider the age of the equipment and facilities involved, the processes employed, the engineering aspects of the application of various types of control techniques, the pollutant reductions likely to be achieved, any adverse environmental or energy effects of potential measures, and the costs of achieving pollutant reductions.

d. The permit registrant must install, implement and maintain the control measures in accordance with good engineering practices and manufacturers' specifications. Any deviation from the manufacturers' specifications must be explained in the SWPCP.

e. DEQ or agent may require the permit registrant to take corrective actions to meet the narrative technology-based effluent limits in Schedule A.1 and Schedule E of this permit. Failure to implement any narrative technology-based effluent limits in Schedule A.1 and Schedule E, and other control measures or operational practices described in the SWPCP is a permit violation.
f. If modifications to the control measures are necessary to meet technology-based effluent limits in this permit, the permit registrant must implement the modifications before the next storm event if practicable or no later than 30 calendar days from discovering the violation, unless DEQ or agent approve a later date.

WATER QUALITY-BASED EFFLUENT LIMITATIONS

3. Water Quality Standards

a. The permit registrant must not cause or contribute to an exceedance of instream water quality standards as established in OAR 340-041.
b. If at any time the permit registrant discovers, or DEQ or agent determines, that the discharge causes or contributes to an exceedance of instream water quality standards, the permit registrant must take the following corrective actions:
   i. No later than 24-hours after the discovery or being informed of the determination by DEQ:
      (1) Investigate the conditions that caused or contributed to the exceedance; and
      (2) Review the SWPCP and the selection, design, installation and implementation of control measures to ensure compliance with this permit.
   ii. No later than 30 calendar days after the discovery or determination, submit a Water Quality Standards Report to DEQ or agent that documents the following:
      (1) The results of the permit registrant's investigation, including the date the exceedance was discovered and a brief description of the conditions that caused or contributed to the exceedance;
      (2) Corrective actions taken or planned to be taken, including the date the corrective action was completed or is expected to be completed; and
      (3) If the permit registrant determines that SWPCP revisions are necessary based on the investigation, the permit registrant must submit a revised SWPCP to DEQ or agent with the Water Quality Standards Report.
   iii. The permit registrant must implement the corrective action before the next storm event, if possible, or no later than 30 calendar days after discovery or determination, whichever comes first unless DEQ or agent approved a later date.
c. If information in the application, required reports, or from other sources indicates that the discharge has caused or contributed to an exceedance of water quality standards, either in the receiving waterbody or a downstream waterbody, DEQ will notify the permit registrant if any of the following are necessary:
   i. Additional monitoring and site controls;
   ii. A compliance schedule with a deadline for correcting the violation; or
   iii. Permit revocation under this general permit, and require the permit registrant to obtain coverage under an individual permit.

d. If DEQ or agent determines that additional site-specific requirements are necessary, the permit registrant must revise the SWPCP. DEQ will hold a 30 calendar day public notice period on the revised SWPCP.

4. Discharges to Impaired Waters

a. Existing discharger to an impaired water without a TMDL based on EPA-approved Category 5: 303(d) list that is in effect at the time of permit assignment must comply with Schedule A.3 and:
   i. The permit registrant that have complied with Condition I.1.a or b must implement and maintain any control measures or conditions on the site that enabled the permit registrant to become eligible for permit coverage. The permit registrant must modify such measures or conditions as necessary pursuant to Schedule A.2 and schedules outlined in the SWPCP.
   ii. The permit registrant must comply with impairment pollutant monitoring in accordance with Schedules B.3, B.4 and B.5 and additional monitoring established by DEQ or agent. When the discharge enters an impaired watershed unit, the listing will only be applied if there is a hydrologic connection between the receiving water and assessment water body causing the impairment.
   iii. Impairment monitoring results of qualifying sample that exceed impairment monitoring concentrations in Table 5 and Table 5A, as required by Schedules B.3, B.4 and B.5 may be used in conjunction with other relevant information to determine an exceedance of water quality standards.

b. Existing Discharger to an impaired water with a TMDL (based on EPA-approved TMDLs as of March 31, 2021) must comply with Schedule A.3 and:
   i. Must comply with all applicable requirements of TMDLs with wasteload allocations for industrial stormwater discharges.
   ii. If DEQ or agent determines that additional site-specific requirements are necessary, the permit registrant must revise the SWPCP. DEQ will hold a 30 calendar day public notice period on the revised SWPCP.

STORMWATER DISCHARGE

5. Statewide and Sector-Specific Benchmarks

a. Benchmarks are screening concentrations, not numeric effluent limits. A benchmark exceedance, therefore, is not a permit violation, but failing to take the required corrective action is a permit violation.

b. The permit registrant must determine whether site controls are effectively reducing pollutant concentrations in stormwater discharges, or if maintenance or implementation of additional controls is necessary when a benchmark is exceeded.

6. Mass Reduction Measures Certification

a. For mass reduction measures installed during previous permit cycles in response to an approved Tier 2 mass reduction waiver that reduced the mass of the pollutants discharged at or above DEQ-approved design storm capacity, the permit registrant must submit to DEQ or agent an evaluation that is certified by an Oregon registered professional engineer (PE) or Oregon certified

engineering geologist (CEG) stamp of the following information, as applicable, to validate the system is operating as intended:

i. Proper installation and maintenance specifications as originally designed;
ii. Infiltration testing or other demonstrations to confirm intended performance metrics;
iii. Confirmation that operation and maintenance specifications have been performed;
iv. Information concerning drawdown;
v. Whether any corrective actions are needed; and
vi. Estimated design life expectancy of the system and any plan to rejuvenate or replace measures.

b. The permit registrant must submit the mass reduction measures stamped certification to DEQ or agent by December 31, 2021, unless DEQ or agent approve a later date.
c. The permit registrant must provide DEQ or agent with operation and maintenance records upon request and meet all maintenance schedules specified in the stamped certification.
d. If the stamped certification includes corrective action, the permit registrant must complete corrective action by September 30, 2022.
e. For mass reduction measures installed during previous permit cycles that reduced the mass of the pollutants discharged at or above DEQ-approved design storm capacity not in response to Tier 2 mass reduction waiver, the permit registrant must meet Schedule A.6.a-d and submit, retroactively, to DEQ or agent a Tier 2 mass reduction waiver checklist.
f. DEQ or agent will notify the permit registrant within 60 calendar days from receipt if mass reduction measures certification is approved or denied.

7. Effluent Limitations

a. An exceedance of an applicable numeric effluent limit is a permit violation. See Schedule A.13, B.7.g and B.15.
b. Numeric effluent limits are established as follows:
   i. Numeric technology-based effluent limits based on industrial activities in Table 3, Schedule B.1 applicable to concentrations in Schedule E promulgated by EPA's effluent limitation guidelines under federal regulations 40 CFR, Subchapter N.
   ii. Numeric water quality-based effluent limits will apply to facilities:
      (1) Based on discharges to Category 5: 303(d) list in effect at the time of permit assignment for pH, copper, lead, and zinc that correspond to the specific pollutant(s) for which the water body is impaired in response to monitoring results in accordance Schedule A.13.e; and
      (2) Established by wasteload allocations in a TMDL as identified by DEQ or agent.
c. Narrative water quality-based effluent limits are established as follows:
   i. Based on discharges to Category 5: 303(d) list in effect at the time of permit assignment for E. coli and iron that correspond to the specific pollutant(s) for which the water body is impaired in response to monitoring results in accordance Schedule A.13.i and j.

STORMWATER POLLUTION CONTROL PLAN

8. Preparation and Implementation of SWPCP

a. The SWPCP must be prepared by a person knowledgeable in stormwater management and familiar with the facility.

b. The SWPCP must be signed and certified in accordance with 40 CFR §122.22.
c. In accordance with Schedule A.2, the SWPCP must include control measures/BMPs that implement each narrative technology-based effluent limit to eliminate or reduce the potential to contaminate stormwater and prevent exceedance of instream water quality standards.
d. The permit registrant must implement the SWPCP and any revisions to the plan. Failure to implement any narrative technology-based effluent limits, other control measures or operational practices described in the SWPCP is a violation of this permit.
e. If the permit registrant fails to implement the control measures in the SWPCP, the permit registrant must take corrective actions and implement the measures before the next storm event if practicable or no later than 30 calendar days after the discovery, unless a later date is approved by DEQ or agent.
f. The permit registrant must keep the SWPCP current and revise it as necessary to reflect current site conditions and changes to the site.

9. SWPCP Revisions

a. The Permit registrant must prepare SWPCP revisions in compliance with Schedule A.8.a-c.
b. The permit registrant must submit SWPCP revisions to DEQ or agent for the following reasons:
   i. Change in site contact(s);
   ii. In response to a corrective action or inspection;
   iii. Changes to the site, operations or control measures that may significantly change the nature of pollutants present in stormwater discharge; or significantly increase the pollutant(s) levels, discharge frequency, discharge volume or flow rate;
   iv. Changes to the monitoring points; or
   v. Changes to discharge points.
c. Change to site contact must be made through the web-based electronic system when available, except for facilities located in agents' jurisdictions, until directed by DEQ or agent.
d. Review of the revisions by DEQ or agent prior to implementation is not required, unless there is a change to the location of monitoring points. The permit registrant may not change monitoring points until DEQ or agent have approved the SWPCP revision.
e. DEQ or agent may require the permit registrant to revise the SWPCP at any time. The permit registrant must submit revisions through the web-based electronic system, when directed by DEQ, no later than 30 calendar days from the request date or the change to the facility, unless DEQ or agent approved a later date.
f. The proposed revisions are deemed accepted after 30 calendar days after receipt unless the permit registrant receives a response from DEQ or agent.
g. SWPCP revisions are not subject to public notice unless revisions are in response to Condition I.3.c and when the SWPCP revisions include additional site-specific requirements in response to a Water Quality Standard Report in accordance with Schedule A.3 or an EPA-approved TMDL as of March 31, 2021, in accordance with Schedule A.4.b of this permit.
h. For Tier 2 SWPCP revision submittal requirements, refer to Schedule A.12.

10. Required Elements

The SWPCP, at a minimum, must include the components below and describe how the permit registrant intends to comply with the narrative technology-based effluent limits in Schedule A.1 and

eliminate or reduce the potential to contaminate stormwater and prevent any exceedance of instream water quality standards.

a. Title Page - The title page of the SWPCP must contain the following information:
   i. Plan date;
   ii. Name of the site;
   iii. Name of the site operator or owner;
   iv. The name of the person(s) preparing the SWPCP;
   v. File number and EPA permit number as indicated in permit coverage documents;
   vi. Primary SIC code and any co-located SIC codes;
   vii. Contact person(s) name, telephone number and email; and
   viii. Physical address, including county, and mailing address if different.

b. Site Description - The SWPCP must contain the following information, including any applicable information required in Schedule E of the permit:
   i. Site map(s) including the following, labeled clearly:
      (1) general location of the site in relation to surrounding properties, transportation routes, surface waters and other relevant features;
      (2) drainage patterns, with flow arrows;
      (3) conveyance and discharge structures, such as piping or ditches;
      (4) exact location of all monitoring points, labelled with a unique three-digit identifying number starting with 001, 002, etc. used for web-based electronic reporting and indicate "monitoring point;"
      (5) outline of the drainage area for each discharge point;
      (6) paved areas and buildings within each drainage area;
      (7) locations of discharge points if different from monitoring points;
      (8) areas used for outdoor manufacturing, treatment, storage, or disposal of significant materials;
      (9) areas known or discovered significant materials from previous operations;
      (10) existing structural control measures for minimizing pollutants in stormwater runoff;
      (11) structural features that reduce flow or minimize impervious areas;
      (12) material handling and access areas;
      (13) hazardous waste treatment, storage and disposal facilities;
      (14) location of wells including waste injection wells, seepage pits, drywells;
      (15) location of springs, wetlands and other surface waterbodies both on-site and adjacent to the site;
      (16) location of groundwater wells;
      (17) location and description of authorized non-stormwater discharges;
      (18) location and description of spill prevention and cleanup materials; and
      (19) locations of the following materials and activities if they are exposed to stormwater and applicable:
         A. fueling stations;
         B. vehicle and equipment maintenance cleaning areas;
         C. loading/unloading areas;
         D. locations used for the treatment, storage, or disposal of wastes;
         E. liquid storage tanks;

F. processing and storage areas;
G. immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility;
H. transfer areas for substances in bulk;
I. machinery; and
J. locations and sources of run-on to your site from adjacent property.

ii. A description of industrial activities conducted at the site and significant materials stored, used, treated or disposed of in a manner which exposes those activities or materials to stormwater. Include in the description the methods of storage, usage, treatment or disposal.
iii. Location and description, with any available characterization data, of areas of known or discovered significant materials from previous operations.
iv. Regular business hours of operation.
v. For each area of the site where a reasonable potential exists for contributing pollutants to stormwater runoff, a description of the potential pollutant sources that could be present in stormwater discharges and if the source is associated with a co-located SIC code.
vi. A description of control measures installed and implemented to meet the technology and water quality-based requirements in Schedule A.1 –A.4, Schedule A.13 and any applicable sector-specific requirements in Schedule E of this permit. Include a description of how the stormwater control measures address potential pollutant sources from industrial activities and significant materials on-site, spills and leaks and authorized non-stormwater discharges. Include known maintenance schedules and frequency of housekeeping measures.
vii. A description of stormwater treatment controls or source controls, including low impact development, in response to corrective action requirements and operation and maintenance procedures. Include safety data sheets for any stormwater treatment chemicals or substances used in stormwater treatment and stored on site.
viii. An estimate of the amount of impervious surface area (including paved areas and building roofs) and the total area drained by each stormwater discharge point to be reported in area units.
ix. The name(s) of the receiving water(s), latitude and longitude of discharge point(s), and applicable SIC code, if facility has co-located operations. If discharge point is to a municipal storm sewer system, the name(s) and latitude and longitude of the receiving waters and the name of the municipality.
x. The identification of each discharge point and the location(s) where stormwater monitoring will occur as required by Schedule B.6. The monitoring point must also be labeled in the on the site map as "monitoring point." Existing discharge points excluded from monitoring must include a description of the discharge point(s) and data or analysis supporting that the discharge point(s) are substantially similar as described in Schedule B.7.c.ii of this permit.

c. Procedures and Schedules -The SWPCP must contain the following information to meet the narrative technology-based effluent limits in Schedule A.1 of this permit:
i. Spill Prevention and Response - Procedures for preventing and responding to spills and clean-up, documentation and notification procedures. Indicate who is responsible for on-site management of significant materials and include their contact information. Spills prevention plans required by other regulations may be substituted for this provision if the spill prevention plan addresses stormwater management concerns and the plan is included with the SWPCP.

Otherwise the SWPCP must contain all spill prevention and response procedures, schedules and documentation requirements in Schedule A.1.

(1) Indicate how spill response will be coordinated between the permit registrant and otherwise unpermitted tenants. The permit registrant is ultimately responsible for spills of tenant and appropriate response.

d. Preventative maintenance - Procedures for conducting inspections, maintenance and repairs to prevent leaks, spills, and other releases from drums, tanks and containers exposed to stormwater and the scheduled regular pickup and disposal of waste materials. Include the schedule or frequency for maintaining all control measures and waste collection.

e. Operation and Maintenance Plans - Include an operation and maintenance plan for active and passive treatment systems and mass reduction measures. The O&M plan must include, as appropriate to the type of treatment system, items such as system schematic, manufacturer's maintenance/operation specifications, chemical use, treatment volumes and a monitoring or inspection plan and frequency. For passive treatment and low impact development control measures, such as mass reduction measures, include routine maintenance standards.

f. Employee Education - The elements of the training program must include the requirements in Schedule A.1.j. Include a description of the training content and the required frequency.

BENCHMARK EXCEEDANCES AND VISUAL OBSERVATION CORRECTIVE ACTIONS

11. Tier 1 Corrective Action Response based on Exceedances of Benchmarks and Visual Observations that Show Signs of Pollution

a. If any of the triggering events occur, the permit registrant must complete the Tier 1 corrective actions below.

b. Triggering events include:

i. If qualifying sample results exceed any applicable statewide benchmark(s) in Table 4 of this permit or any sector-specific benchmarks in Schedule E; or

ii. Visual observations that show signs of pollution in the discharge as specified in Schedule B.12.a.vii.

c. Tier 1 corrective action and reporting must include:

i. Investigate the cause of the elevated pollutant levels, including conducting, commencing or planning for any needed pollutant source tracing activities. Ensure that known or discovered significant materials from previous operations are controlled, removed or otherwise not exposed.

ii. Review the SWPCP to ensure it is implemented; evaluate selection, design, installation and implementation of control measures for compliance with this permit and manufacturers' specifications. Evaluate whether any previous pollutant source isolation actions are complete and whether additional modifications are necessary.

iii. Evaluate any treatment measures, infiltration devices and mass reduction measures, including if they were properly installed, maintained and implemented and whether maintenance, corrections, or modifications are necessary.

iv. Tier 1 corrective action response(s) must be assessed and implemented at all substantially similar discharge points.

v. Tier 1 report - Summarize the following information in a Tier 1 report:

(1) The results of the site the assessment in Schedule A.11.c.i-iii.

(2) Corrective actions taken or planned to be taken, including date corrective action completed or expected to be completed. Where the permit registrant determines that corrective action is not necessary, provide the basis for this determination.

(3) Document whether SWPCP revisions are necessary.

vi. Tier 1 corrective action response may include documentation and implementation of industrial-specific checklists as provided by DEQ (see DEQ's industrial stormwater permits webpage for resources regarding source and operations controls, including the industrial-specific checklists), in addition to a Tier 1 report.

vii. The permit registrant must keep Tier 1 reports and industrial-specific checklists on site, and copies provided to DEQ or agent upon request.

d. Deadlines:

i. Implement Tier 1 corrective actions before the next storm event, if possible, or no later than 30 calendar days after receiving the monitoring results or completing the monthly visual inspection, whichever comes first. If the permit registrant fails to complete the corrective action within this timeframe, an explanation must be documented in the Tier 1 Report, and corrective actions must be completed as soon as practicable.

ii. Submit revised SWPCP in accordance with Schedule A.9., as needed.

e. Exemptions:
   i. Permit registrants subject to Tier 2 corrective action response, prior to completion of Tier 2, a Tier 1 corrective action response is not required when monitoring results exceed the benchmark for the same pollutant and monitoring point.
   ii. If stormwater monitoring results from properly maintained mass reduction measures installed at or above DEQ-approved designed storm capacity exceed benchmarks, the permit registrant is not required to complete a Tier 1 corrective action.

12. Tier 2 Corrective Action Response based on Geometric Mean Benchmark Evaluation:

a. Permit registrants subject to a Tier 2 installation deadline of June 30, 2021, or later in response to a Tier 2 corrective action response triggered under the previous permit, are not required to conduct Tier 2 evaluation for the same pollutant(s) and monitoring point(s) during this permit cycle.
b. Once a monitoring point triggers Tier 2 corrective action response for a pollutant, in subsequent full reporting years a Tier 2 geometric mean evaluation and Tier 2 corrective action response are not required more for the same pollutant(s) and monitoring point(s).
c. The permit registrant must use all qualifying samples collected during the full reporting year to calculate the geometric mean, except sample results from properly maintained mass reduction measures installed at or above DEQ-approved designed storm capacity.
d. If any of the triggering events occur, the permit registrant must complete the Tier 2 corrective actions below.
e. Triggering events include:
   i. The geometric mean of qualifying sample results collected at any monitoring point exceeds any applicable statewide benchmark(s) in Table 4, during each full reporting year (see Schedule D.3, Definitions).
   ii. For the pH benchmark, if 50 percent or more of qualifying sample results collected at any monitoring point during two full reporting years, are outside of the pH benchmark range.
f. Corrective action and Reporting must include:
   i. The permit registrant must submit a SWPCP appendix including: Tier 2 report, a Tier 2 mass reduction waiver request, or a Tier 2 background waiver request as described below.
   ii. Properly apply and size approved Tier 2 corrective action responses and mass reduction measures to all substantially similar discharge points.
   iii. Tier 2 Report
      (1) The Tier 2 report must include a proposal for active or passive treatment. This may include a combination of source removal, control and treatment measures, with the goal of achieving the benchmark(s) in this permit. The report must include the rationale for the selection of the control and treatment measures, the projected reduction of pollutant concentration(s) and the schedule for implementing these measures.
      (2) An Oregon registered professional engineer (PE) must design and stamp the portion of the SWPCP that addresses these control measures.
g. At discharge points where Tier 2 has been implemented:
   i. The permit registrant must take Tier 1 corrective actions in accordance with Schedule A.11.

ii. The permit registrant must sample substantially similar discharge points for the parameters that triggered Tier 2. For exceptionally large facilities where sampling at all substantially similar discharge points are infeasible, DEQ or agent may approve a modification.
iii. The permit registrant may request a monitoring waiver if the geometric mean of five consecutive qualifying sample results collected at any monitoring point is equal to or below the benchmark.

h. Exemptions:
i. Tier 2 Mass Reduction Waiver
(1) The permit registrant may request an exemption from the requirements in Schedule A.12.f.iii above by submitting a mass reduction waiver request if the permit registrant implements or has implemented volume reduction measures, such as low impact development practices, that will or has resulted in reductions of the mass load of pollutants in the discharge below the mass equivalent of the applicable statewide benchmark(s) in Table 4 of this permit.
(2) The mass reduction waiver request and the revised SWPCP must include data and analysis to support the rationale for the mass load reduction selection. The mass reduction waiver request must include a description of the measure(s), and a mass load analysis, and expected implementation date(s).
(3) An Oregon Professional Engineer (PE) or Oregon certified engineering geologist (CEG) must design and stamp the portion of the SWPCP that addresses the mass reduction measures.
ii. Tier 2 Background Waiver
(1) The permit registrant may request a background waiver exemption from the requirements in Schedule A.12.f.iii and A.12.h.i above if the permit registrant can sufficiently demonstrate the benchmark exceedance(s) is attributed solely to the presence of the pollutant(s) in natural background and is not associated with industrial activities at the site (see Schedule D.3, Definitions).
(2) The background waiver request must include the supporting rationale and any data collected by the facility or others (including peer-reviewed literature studies) which is used to demonstrate that the exceedances are due solely to background conditions that describe and quantify the levels of background pollutants in the discharge.

i. Deadlines:
i. The permit registrant must submit a proposed Tier 2 corrective action response to DEQ or agent no later than December 31 (six months after the end of the full reporting year that triggered Tier 2) unless DEQ or agent approved a later date.
ii. DEQ or agent will notify the permit registrant within 60 calendar days of receipt if Tier 2 corrective action is approved or denied.
iii. Tier 2 corrective action(s) or mass reduction measures(s) must be installed and implemented no later than September 30 (a year and nine months after the Tier 2 proposal corrective action response submittal deadline) unless DEQ or agent approved a later date. If the permit registrant changes the specifics of the corrective actions before implementation, revisions must be submitted and approved by DEQ or agent before implementation. Corrective action revisions do not change the Tier 2 implementation deadline.

iv. No later than 30 calendar days from implementing Tier 2 corrective actions or mass reduction measures, the permit registrant must inform DEQ or agent of the date of completion. This notification requirement also applies to facilities with an implementation deadline established in the previous permit.
v. No later than 30 calendar days from implementing all Tier 2 corrective actions or mass reduction measures, the permit registrant must submit all new and modified control measures and any associated changes to monitoring or discharge points within a SWPCP revision.

CATEGORY 5: 303(d) LIST IMPAIRMENT EXCEEDANCE RESPONSE

13. Water Quality-based Effluent Limits

a. The permit registrant must comply with water quality-based effluent limits for discharges to impaired receiving waters based on the EPA-approved Category 5: 303(d) list in effect at the time of permit assignment for pH, copper, lead, zinc, iron and E. coli that correspond to the specific pollutant(s) for which the water body is impaired when monitoring results trigger the events specified below.
b. The permit registrant must use all qualifying samples except sample results from properly maintained mass reduction measures installed at or above DEQ-approved designed storm capacity.
c. For E. coli and iron, if the triggering events occur, the permit registrant must comply with narrative water quality-based effluent limits.
d. For pH, copper, lead and zinc, if the triggering events occur, the permit registrant must comply with numeric water quality-based effluent limits at the pollutant concentrations in Table 5 as required by Schedule B.3.
e. Triggering events for pH, copper, lead and zinc:
   i. If two consecutive qualifying sample results collected at any monitoring point falls outside the basin-specific range for pH in Appendix A as required by Schedule B.3 at each monitoring point subject to impairment monitoring for which the water body is impaired for pH.
   ii. If two consecutive qualifying sample results collected at any monitoring point exceed the impairment concentrations for copper, lead, or zinc in Table 5, as required by Schedule B.3 subject to impairment monitoring.
   iii. If a qualifying sample result collected at any monitoring point is greater than two times the impairment concentrations in Table 5, as required by Schedule B.3 for copper, lead, or zinc subject to impairment monitoring.
f. When the impairment monitoring as required by Schedule B.3 escalates to a numeric water quality-based effluent limit based on triggering events above in Schedule A.13.e, the permit registrants must notify DEQ or agent no later than 30 calendar days from receiving the monitoring results. At such time, permit registrant may request up to a two-year compliance schedule in accordance with Schedule C.
g. The permit registrants must sample all discharge points subject to numeric water quality-based effluent limit, including those previously designated as substantially similar.
h. Permit registrants that discharge into Category 5: 303(d) listed receiving waters for fecal coliform or enterococcus must monitor stormwater discharge that correspond to the specific pollutant and report as specified in Table 6 and Table 7 applicable to impairment pollutants. DEQ may require

additional narrative water quality-based effluent limits if a public health risk is identified from the discharge.

i. Triggering event for E. coli:
   i. If two consecutive qualifying sample results collected at any monitoring point exceeds the impairment concentration for E. coli in Table 5A, as required in Schedule B.4 subject to impairment monitoring, the permit registrant must implement the following narrative water quality-based effluent limits:
      (1) Prevent rodents, birds, and other animals from feeding/nesting/roosting at the facility to the degree practicable. Nothing in this section shall be construed as allowing violations of any applicable federal, state or local statutes, ordinances, or regulations including the Migratory Bird Treaty Act;
      (2) Clean storm sewer lines, including catch basins, annually. Frequency of cleaning may be reduced, or decreased to catch basins, only after the first annual cleaning if the source of the E. coli exceedances are identified and the storm sewer lines are determined to not be a contributing factor. Flushed water and solids must be disposed of properly and not allowed to discharge;
      (3) If the source of the exceedances is not readily identified, perform a one-time dry weather inspection to identify and eliminate any sanitary sewer cross-connections or leaky sewer pipes;
      (4) Investigate and document any human dwelling encampments;
      (5) Install additional source or operational controls to address known sources of fecal contamination such as green waste, illegal dumping, dumpsters or garbage trucks and grease bins, and portable toilets as applicable; and if applicable,
      (6) Conduct and report biochemical speciation identification results to indicate non-fecal discharges.

j. Triggering event for iron:
   i. If two consecutive qualifying sample results collected at any monitoring point exceeds impairment concentration for iron in Table 5A, as required by Schedule B.4 subject to impairment monitoring, the permit registrant must implement the following narrative water quality-based effluent limits:
      (1) Demonstrate compliance with the erosion and sediment control narrative technology-based effluent limit in Schedule A.1.d. and stabilize all exposed soils that have potential to discharge;
      (2) Implement sweeping or other equivalent methods of cleaning sufficient to minimize the discharge of sediment and debris, but in no case less than once per calendar quarter when industrial activity has occurred at the site;
      (3) Clean storm sewer lines, including catch basins, annually. Frequency of cleaning may be reduced or decreased to catch basins only after the first annual cleaning if the source of the iron exceedances are identified and the storm sewer lines are determined to not be a contributing factor. Flushed water and solids must be disposed of properly and not allowed to discharge; and
      (4) Install additional source and operational controls to the extent practicable to address known sources of iron pollution such as permanent structures by removing, replacing or sealing corroding metal.

k. The permit registrant must complete the narrative water quality-based effluent limits no later than 90 calendar days from receiving monitoring results of the triggering event above in Schedule A.13.h and i and continue as required. SWPCP revisions documenting completion are required as specified in Schedule A.9.

l. If the permit registrant is unable to comply with the numeric or narrative water quality-based effluent limits, it is a permit violation and permit coverage may be revoked under this general permit and coverage required under an individual permit.

PERMIT COMPLIANCE

14. Authorization Under This Permit

a. Any noncompliance with any of the requirements of this permit constitutes a violation of the Clean Water Act and Oregon Revised Statues (ORS) 468B.025(2).

b. Corrective actions and compliance within the time periods specified for remedying noncompliance with the permit do not absolve the permit registrant of the initial underlying violations.

c. Where corrective action is triggered by an event that does not itself constitute a violation, such as a benchmark exceedance, there is no permit violation associated with the triggering event provided that the permit registrant must take the corrective action within the deadlines identified in this permit.

d. A new permit registrant with a new facility or an existing facility without a stormwater discharge permit must implement stormwater control measures to meet new technology and water quality-based requirements in Schedule A.1 – A.4, including applicable sector-specific requirements in Schedule E of this permit, no later than 90 calendar days after receiving permit coverage. Control measures that require capital improvements must be completed no later than two years after receiving permit coverage, unless DEQ or agent approved a later date.

e. The permit registrant must complete corrective action associated with monitoring exceedances.

SCHEDULE B

MONITORING REQUIREMENTS

1. **Numeric Effluent Limitations Based on Effluent Limitations Guidelines:** Permit registrants that engage in a "regulated activity" described in Table 3 below must monitor stormwater discharges for numeric technology-based effluent limits in accordance with concentrations in Schedule E. Numeric technology-based effluent limits are based on Industry-specific stormwater effluent limitations guidelines as established by EPA.

Table 3: Numeric Effluent Limitations Based on Effluent Limitations Guidelines

Regulated Activity	40 CFR Part/Subpart	Effluent Limit
Discharge from asphalt emulsion facilities (co-located SIC code only, 2951 covered under the 1200-A)	Part 443, Subpart A	See Schedule E.D.2
Discharge from material storage piles at cement manufacturing facilities	Part 411, Subpart C	See Schedule E.E.5
Discharge from hazardous waste landfills	Part 445, Subpart A	See Schedule E.K.3
Discharge from non-hazardous waste landfills	Part 445, Subpart B	See Schedule E.L.7
Discharge from coal storage piles at steam electric generating facilities	Part 423, Subpart E	See Schedule E.O.5
Discharge containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Part 449, Subpart S	See Schedule E.S.7

2. **Statewide Benchmarks:** The permit registrant must monitor stormwater discharges for the benchmarks in Table 4. In addition permit registrants must monitor for any sector-specific benchmarks in Schedule E. See Schedule B.7.c for exceptions.

Table 4: Statewide Benchmarks

Georegion	pH s.u.	Total Copper mg/L	Total Lead mg/L	Total Zinc mg/L	TSS mg/L	BOD mg/L	Total Phosphorus mg/L	E. coli organism/100 mL
Columbia Slough	5.5-9.0	0.017[2]	0.10[2]	0.24[2]	30	24	0.16	406[1]
Portland Harbor	5.5-9.0	0.015[2]	0.24[2]	0.24[2]	30			
Cascades	5.5-9.0	0.016	0.018	0.068	100			
Coastal	5.5-9.0	0.017	0.039[2]	0.086	100			
Columbia River Mainstem	6.0-9.0	0.023	0.21	0.35	100			
Eastern	5.5-9.0	0.031	0.077[2]	0.16	100			

Georegion	pH s.u.	Total Copper mg/L	Total Lead mg/L	Total Zinc mg/L	TSS mg/L	BOD mg/L	Total Phosphorus mg/L	E. coli organism/100 mL
Willamette Valley	5.5-9.0	0.015[2]	0.11[2]	0.14[2]	100			
Marine Waters	6.0-9.0	0.025	1.10	0.46	100			

[1]Columbia Slough dischargers are only subject to benchmark monitoring, no impairment monitoring
[2]Applied regional translators

3. **Discharges into Category 5: 303(d) listed waters for pH, copper, lead and zinc:** The permit registrant must monitor for pH, total copper, total lead and total zinc at all discharge points into impaired receiving waters that correspond to the specific pollutant(s) for which the water body is impaired. For discharges unable to meet the impairment concentrations for pH, total copper, total lead and total zinc monitoring requirements escalate to a numeric water quality-based effluent limit equal to the impairment monitoring concentrations. See Schedule A.13.e and Schedule C.

Table 5: Impairment Monitoring Concentrations and Numeric Water Quality-based Effluent Limits

Georegion	Total Copper mg/L	Total Lead mg/L	Total Zinc mg/L	pH s.u.
Columbia Slough	0.017[2]	0.017[2]	0.042[2]	Basin-Specific[1]
Portland Harbor	0.015[2]	0.017[2]	0.041[2]	
Cascades	0.016	0.006	0.021	
Coastal	0.017	0.017[2]	0.043	
Columbia River Mainstem	0.023	0.046	0.082	
Eastern	0.031	0.037[2]	0.070	
Willamette Valley	0.015[2]	0.027[2]	0.057[2]	
Marine Waters	0.0058	0.22	0.095	

[1]See Appendix A for basin-specific pH concentrations
[2]Applied regional translators

4. **Discharges into Category 5: 303(d) listed waters for E. coli and iron:** The permit registrant must monitor for E. coli and total iron at all discharge points into impaired receiving waters that correspond with the specific pollutant for which the water body is impaired. For discharges unable to meet the impairment concentrations for E. coli and total iron in accordance with Schedule A.13.h.i, the permit registrant must comply with narrative water quality-based effluent limits and continue monitoring discharge. Discharges into the Columbia Slough are not be subject to E. coli impairment monitoring.

Table 5A: Impairment Monitoring Concentrations

Impairment Pollutant	Impairment Concentrations
E. coli	406 organisms/100 mL
Total iron	10 mg/L

5. **Discharges into Category 5: 303(d) listed Receiving Waters for Fecal Coliform and Enterococcus:** The permit registrant must monitor for fecal coliform and enterococcus at all discharge points that correspond to the specific pollutant for which the water is impaired. There are no established impairment monitoring concentrations.

6. Pollutant Parameters

a. Benchmarks

i. The permit registrant must monitor for the applicable statewide benchmark pollutants identified in Table 4 of this permit. The permit registrant must also monitor for benchmarks identified in Schedule E for applicable industrial sector(s), for both primary industrial activity and any co-located industrial activities.

ii. If a discharge point is subject to a statewide benchmark(s) for the same parameter that also has a benchmark(s) in Schedule E, the statewide benchmark concentrations are applied as the target concentration.

iii. If discharge point is into the Pacific Ocean and a saltwater benchmark is established in Table 4 or Schedule E, the saltwater benchmark will be applied as the target concentration. For dischargers into estuarine waters, the more stringent benchmark between the freshwater and saltwater benchmarks are applied as the target concentration.

iv. When assigning coverage under the permit, DEQ or agent will specify and communicate benchmark monitoring requirements to the permit registrant.

b. Impairment Pollutants

i. The permit registrant must monitor for pH, total copper, total lead, total zinc, total iron and fecal indicator bacteria: E. coli, fecal coliform and enterococcus, pollutant(s) based on discharge into Category 5: 303(d) listed receiving waters that correspond to the specific pollutant(s) for which the water body is impaired.

ii. DEQ or agent will notify the permit registrant of additional impairment monitoring and the specific concentrations if required, based on new listings in the current EPA-approved Category 5: 303(d) list in effect at the time of permit assignment.

iii. For discharge point(s) required to monitor for impairments as required by Schedule B.3 and B.4 for a pollutant that has a benchmark, the permit registrant will not be subject to benchmark monitoring.

iv. DEQ or agent will specify and communicate impairment pollutant(s) monitoring requirement to the permit registrant.

(1) If the pollutant for which the waterbody is impaired is expressed in the form of an indicator or surrogate pollutant, the permit registrant must monitor for that indicator or surrogate pollutant.

(2) No monitoring is required for biological communities (biocriteria), including harmful algal blooms and aquatic weeds, where no pollutant including indicator or surrogate pollutants, is specified as causing the impairment; or temperature, or habitat and flow modifications.

v. The permit registrant must meet Schedule B.6.b.i unless the permit registrant provides monitoring data demonstrating that the pollutant(s) for which the waterbody is impaired are not present in the discharge.

c. Numeric Effluent Limits

i. DEQ or agent will specify and communicate monitoring requirements applicable to numeric effluent limit(s) to the permit registrant.

ii. For discharge point(s) required to monitor for a numeric water quality-based effluent limit, the permit registrant will not be subject to benchmark monitoring for the same pollutant.

iii. The permit registrant may not reduce monitoring requirements associated with substantially similar discharge points in accordance with Schedule B.7.c.ii for discharges with applicable effluent limits. The permit registrant must sample all discharge points subject to numeric effluent limit(s).

7. Sampling Procedures

a. Grab Sampling

i. For each discharge point monitored, collect a grab or composite sample of stormwater discharges. Discharges from discharge points with shallow overland/sheet flows may need to be concentrated to obtain a sample.

ii. Composite samples may be used as an alternative to grab sampling, except when monitoring for pH, bacteria or oil and grease. Composited samples must be collected from the same storm event. The permit registrant may not switch between grab sampling to composite sampling during a full reporting year without prior approval from DEQ or agent.

iii. The permit registrant must perform all monitoring using proper sampling techniques in accordance Schedule F, Section C3.

b. Representative Sample

i. Samples must be representative of the discharge.

ii. Monitoring points must be identified in the SWPCP.

iii. Stormwater discharges regulated by this permit include stormwater run-on that commingles with stormwater discharges associated with industrial activity.

iv. If discharges authorized by this permit commingle with discharges authorized under a separate NPDES permit, any required sampling of the authorized discharges must be performed at a point before they mix with other waste streams, to the extent practicable. When combined flows are unavoidable, sampling must include all permitted parameters.

v. Authorized non-stormwater discharges under Condition I.6 of this permit must only be sampled when commingled with stormwater discharges associated with industrial activity.

vi. Stormwater flows may combine into a common on-site treatment facility; discharges in excess of the design storm capacity must be sampled if the minimum monitoring frequency has not been achieved.

vii. The permit registrant shall, to the extent practicable, sample stormwater associated with industrial activity as it flows off-site before it combines with stormwater, wastewater or other waste permitted streams, or from areas outside the facility, or mixes with any surface water.

c. Multiple Discharges - Each discharge point must be monitored unless:

i. Discharge point serves an area without exposure of stormwater to industrial activities.

ii. Discharge point has effluent that is substantially similar to the effluent(s) of a monitored discharge point and the same BMPs are implemented and maintained at the substantially similar discharge points or drainage areas that lead to the discharge points. Substantially similar effluent(s) are discharges from drainage areas serving comparable activities where the discharges are expected to be similar in composition. The determination of substantial similarity of effluent(s) must be based on past monitoring data or an analysis supporting that the discharge points are substantially similar. The supporting data or analysis must be included in the SWPCP. This provision does not apply to discharge point(s) subject to a numeric effluent limit.

iii. Discharge points from approved mass reduction measures that reduced the mass of pollutants at or above DEQ-approved design storm capacity. For mass reduction measures installed during previous permit cycles, the permit registrant must comply with Schedule A.6.

d. Timing - The discharge must be monitored during the first 12 hours of the discharge event, which is a storm event or snowmelt resulting in an actual discharge from a site. If it is not practicable to collect the sample within this period, collect the sample as soon as practicable and provide documentation with the Discharge Monitoring Report why it was not practicable to take samples within the first 12 hour period. The permit registrant is not required to sample outside of regular business hours of operation or during unsafe conditions.

e. Sampling for pH - pH sampling must be done by either measuring the pH directly in the flow, or analyzing the sample within 15 minutes of sample collection.
   i. The permit registrant must perform pH monitoring with a properly calibrated pH meter.
   ii. The permit registrant must follow pH meter manufacturers' specifications and keep meter in good working order.
   iii. pH paper may not be used to comply with the monitoring requirements established in this permit.

f. Monitoring Frequency - The permit registrant must monitor stormwater discharge according to the frequency described in Table 6, unless DEQ or agent grant a monitoring waiver or approve a monitoring variance.
   i. Qualifying stormwater samples must be collected at least 14-days apart.
   ii. The permit registrant may collect more samples than the minimum frequency described below, but must report this additional data in the Discharge Monitoring Report. All qualifying samples must be included to establish a monitoring waiver in Schedule B.9 or to conduct the geometric mean evaluation in Schedule A.12 of this permit, except from approved mass reduction measures that reduced the mass of pollutants at or above DEQ-approved design storm capacity. For mass reduction measures installed during previous permit cycles, the permit registrant must comply with Schedule A.6.

g. Exceedance of Numeric Effluent Limit – The permit registrant must conduct follow-up monitoring of any pollutant that exceeds the numeric effluent limit(s) no later than 30 calendar days (or during the next storm event should none occur within 30 calendar days) of receiving the monitoring results. If the follow-up monitoring exceeds the numeric effluent limit, the permit registrant must monitor the discharge four times per year until compliance with the numeric effluent limit is achieved. Once monitoring achieves the effluent limit concentration, semi-annual frequency may resume.

Table 6: Monitoring Frequency

Pollutant Category	Minimum Frequency
All applicable statewide benchmarks in Table 4, any applicable sector-specific benchmarks in Schedule E and any impairment pollutants	Four times per year, two samples between January 1 and June 30, and two samples between July 1 and December 31
Any applicable numeric effluent limitations	Two times per year, One sample between January 1 and June 30, and one sample between July 1 and December 31 (unless exceed numeric effluent limit, four times per year)
Any wasteload allocations or additional schedules in EPA-approved TMDL	As specified in the TMDL

8. Monitoring Variance

a. If the permit registrant missed a sample due to no storm events of sufficient magnitude to produce run-off during regular business hours of operation and safe conditions, a monitoring variance must be requested. Variance requests are required to be submitted on February 15 and August 15 with the Discharge Monitoring Report for each missed sample. A "no discharge" claim monitoring variance request must include supporting data and analysis demonstrating why there was no discharge for monitoring to occur. If DEQ or agent has evidence contradicting the information in the permit registrant's monitoring variance request, failure to complete the required monitoring is cited as a permit violation. Supporting data must be included in the request, and may include:

i. State or federal authorities declared the year a drought year.
ii. Demonstration that rainfall in the area where the permit registrant's facility is located was 20 percent or more below the three-year average rainfall for that area.
iii. Photo documentation, rain gauge data, detention basin storage volumes, storm infiltration rate or retention capacity.

9. Monitoring Waiver for Benchmarks and Impairment Pollutant Monitoring

a. A monitoring waiver may be requested from DEQ or agent for the following circumstances:

i. When the benchmark concentrations have been achieved during a full reporting year, as demonstrated by:
(1) The geometric mean of five consecutive qualifying sample results collected at any monitoring point is equal to or below the applicable statewide or sector-specific benchmarks; or
(2) For pH, qualifying sample results collected at any monitoring point are within the range for five consecutive readings; or
(3) For parameters and discharge point(s) that triggered Tier 2 during this permit cycle, after the corrective action has been implemented and qualifying sample results during a full reporting year achieve the conditions above in Schedule A.8.a.i.(1) or (2).

ii. When impairment monitoring results collected at any monitoring point indicate non-detect for four consecutive qualifying samples, or after two full reporting years all qualifying sample results collected at any monitoring point are equal or below the impairment monitoring

concentrations in Table 5 and Table 5A. For pH impairment monitoring after two full reporting years all qualifying sample results collected at any monitoring point are within the basin-specific pH range as specified in Appendix A, referenced in Table 5.

iii. If the exceedance(s) of a benchmark or impairment pollutant is attributed solely to the presence of the pollutant(s) in background and is not associated with industrial activities at the site. The permit registrant may submit a background waiver report to DEQ or agent that describes the investigation and analysis to demonstrate that the exceedances is due to background conditions. The report must include any data collected by the permit registrant or others (including peer-review literature studies) that describe the levels of background pollutant in the discharge.

iv. If a facility is inactive and unstaffed and no industrial materials or activities are exposed to stormwater, the permit registrant is not required to conduct monitoring for the remainder of the permit term.

(1) The permit registrant must provide documentation with the Discharge Monitoring Report indicating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to stormwater, in accordance with the substantive requirements in 40 CFR 122.26(g)(4)(iii).

(2) The permit registrant must sign and certify the statement in accordance with D8 in Schedule F of this permit.

b. The permit registrant's monitoring waiver request must include documentation to support the request. Monitoring waivers may be requested for individual parameters at each monitoring point.

c. DEQ or agent will notify the permit registrant if a monitoring waiver is approved or denied. Until approval of the monitoring waiver is received, the permit registrant must continue monitoring.

d. Approved monitoring waivers are valid until the last full reporting year of the permit term, which begins on July 1, 2025.

e. There is no reduction in monitoring allowed for:

i. Visual observations, unless the site is inactive or unstaffed and there are no industrial materials or activities exposed to stormwater and the permit registrant meets requirements in Schedule B.9.a.vii of this permit;

ii. The first and last full reporting year of the permit cycle;

iii. Impairment monitoring subject to a compliance schedule in Schedule C; and

iv. Monitoring for numeric effluent limits.

f. Reinstatement of Monitoring

i. It is the responsibility of the permit registrant to reinstate discharge monitoring under any of the following circumstances or if notified by DEQ or agent:

(1) Prior monitoring used to establish the monitoring waiver was improper or sampling results were incorrect;

(2) Changes to site conditions are likely to affect stormwater discharge characteristics, such as change in SIC code, process change or increased pollutants sources exposed to stormwater;

(3) Additional monitoring occurs and the sampling results exceed benchmark(s) or impairment monitoring concentrations in Table 5 or Table 5A;

(4) On July 1, 2025, for benchmark and impairment monitoring waiver approvals; or

(5) For inactive or unstaffed sites, the facility becomes active or staffed, or industrial materials or activities become exposed to stormwater.

g. Revocation of Monitoring Waiver
   i. DEQ or agent may revoke the monitoring waiver based on any of the above conditions in Schedule B.9.f.i.1-5 or in response to an inspection, corrective action, or upon discovery of the discharge which has caused or contributed to a water quality standard exceedance. DEQ or agent will notify the permit registrant that the monitoring waiver is revoked.

10. **Additional Monitoring-** DEQ or agent may notify the permit registrant of additional discharge monitoring requirements. Any such notice will state the reasons for the additional monitoring, monitoring location and pollutant to be monitored, frequency and period of monitoring, sample types and reporting requirements.

11. **For a new permit registrant discharging to Clackamas River, McKenzie River above Hayden Bridge (River Mile 15), and North Santiam River** under OAR 340-041-0350 - For potential or existing dischargers that did not have a permit prior to January 28, 1994, and existing dischargers that have a NPDES stormwater discharge permit but request an increased load limitation.
    a. No later than 180 calendar days after obtaining permit coverage, the permit registrant must submit to DEQ a monitoring and water quality evaluation program. This program must be effective in evaluating the in-stream impacts of the stormwater discharge as required by OAR 340-041-0350(7)(a).
    b. No later than 30 calendar days from DEQ approval, the permit registrant must implement the monitoring and water quality evaluation program.

INSPECTIONS

12. **Monthly Inspection Requirements**
    a. The permit registrant must inspect areas where industrial materials or activities are exposed to stormwater and areas where stormwater control measures, including infiltration devices, mass reduction measures, structures, catch basins, and treatment facilities are located. Inspections must include an evaluation of control measures consistent with the SWPCP requirements. Inspections must include observations of all discharge points as well as the following:
       i. Industrial materials, residue, or trash that may have or could come into contact with stormwater;
       ii. Leaks or spills from industrial equipment, drums, tanks, and other containers;
       iii. Offsite and internal tracking of industrial or waste materials, or sediment where vehicles enter or exit the site;
       iv. Tracking or blowing of raw, final, or waste materials that results in exposure of stormwater falling on the site;
       v. Evidence of, or the potential for, pollutants entering the drainage system;
       vi. Evidence of pollutants discharging to receiving waters at all discharge point(s);
       vii. Visual observation for the presence of floating and suspended solids, color, odor, foam, visible oil sheen, or other obvious indicators of pollution in the stormwater discharge at all discharge

point(s), including discharge points that have been authorized to be substantially similar in accordance with Schedule B.7.c.ii; and

viii. Stormwater control measures, including treatment, infiltration devices and mass reduction measures, to ensure they are functioning properly, and maintained on designed schedules.

b. Inspections must be conducted by personnel that have completed employee training and are familiar with all aspects of the SWPCP.
c. Conduct visual inspections at the site on a monthly basis when the facility is in operation. The permit registrant must perform visual observations for signs of pollution as required by Schedule B.12.a.vii above during a discharge event if one occurs during the month, regardless whether the monthly site inspection has already occurred.
d. For exceptionally large facilities where monthly inspections of all areas or visual observation at all substantially similar discharge points are infeasible, DEQ or agent may approve a modified inspection frequency.
e. Conduct visual observations of a sample in a clean, colorless glass or plastic container in well-lit area during regular business hours of operation and safe conditions.
f. The permit registrant's visual observations sample collection does not need to conform to sample collection requirements in Section D8 within Schedule F, but must be representative of the stormwater discharge.
g. Immediately take all reasonable steps to temporarily minimize or prevent the discharge of pollutants until permanent corrective action is complete.
h. Conduct all corrective action required as a result of inspection and visual observation.
i. Document monthly inspections in an inspection report that is retained on-site and submitted to DEQ or agent upon request. The inspection report must include:
    i. The inspection date and time;
    ii. The name(s) of inspector(s);
    iii. Control measures and treatment facilities needing cleaning, replacement, maintenance, reconditioning or repair;
    iv. The condition of the drainage and conveyance system and need for maintenance;
    v. Previously unidentified sources of pollutants;
    vi. Stormwater discharge visual observations, (Tier 1 report is required if visual observation shows evidence of stormwater pollution listed in Schedule B.12.a.vii.);
    vii. Nature of the discharge; whether caused by snow or rain; and
    viii. Any corrective action response, source control or maintenance taken or scheduled to remedy problems found.

REPORTING AND RECORDKEEPING REQUIREMENTS

13. Reporting Monitoring Data

a. The permit registrant must submit all monitoring results required in this permit web-based electronically, when directed by DEQ or agent. Paper submittal must be on DEQ-approved Discharge Monitoring Report (DMR) forms.
    i. DMRs are due quarterly as specified in Table 7, as required in Schedule B.14 for samples taken during the preceding calendar quarter.

ii. Reports must include laboratory results from the testing laboratory, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed.
iii. The permit registrant must submit pH field notes and chain-of-custody.
iv. Report non-detections as directed by DEQ. In calculating the geometric mean, use one-half of the detection level for non-detections.
v. Report all sample results from monitoring points.
vi. The permit registrant must sign and certify submittals of Discharge Monitoring Reports, any additional reports, and other information in accordance with the requirements of Section D8 within Schedule F of this permit.

b. The permit registrant must report Tier 2 geometric mean benchmark evaluation on the DMR due on August 15 after each full reporting year.
c. Electronic Submission
i. When directed by DEQ, the permit registrant must submit sampling results and lab and field reports and other information required by Schedule B using DEQ's web-based electronic system.
ii. A permit registrant may apply for a waiver from web-based electronic reporting. The request must be submitted on a DEQ-approved form and a fee may be assessed.
iii. Permit registrants in agents' jurisdictions will continue to submit DEQ-approved DMR forms in paper format until notified by DEQ and agent of phased electronic submission requirements.

14. Discharge Monitoring Reports Submission:
The permit registrant must submit all data by required Discharge Monitoring Report due dates. Failure to submit a DMR is a violation, even if there was no discharge during a quarter.

Table 7: DMR Submission Deadlines

Reporting Quarters	Months	DMR Due Dates
1st	July-September	November 15
2nd	October-December	February 15[1]
3rd	January-March	May 15
4th	April-June	August 15[1]

[1]Variance request must be submitted semi-annually, as applicable

15. Exceedance Report for Numeric Effluent Limits - If follow-up monitoring pursuant to Schedule B.7.g of this permit exceeds a numeric effluent limit, the permit registrant must submit an Exceedance Report to DEQ or agent no later than 30 calendar days after receiving the monitoring results. The report must include the monitoring data from this monitoring event and the preceding monitoring event(s), an explanation of the contributing factors that resulted in the exceedance, and what the permit registrant has done to correct the violation or intends to do if the corrective actions are not complete.

16. **Record Keeping Procedures** – The permit registrant must record and maintain the following information at the facility. All records must be retained by the permit registrant for at least three years and made available to DEQ, agent or local municipality upon request.
    a. A copy of the SWPCP and any revisions, including revised stamped SWPCP from Tier 2 corrective action;
    b. A copy of this permit;
    c. DEQ's notice of permit coverage under the current permit term;
    d. Documentation of maintenance and repairs of control measures, treatment systems and mass reduction measures;
    e. Mass reduction measures re-certification as required by Schedule A.6;
    f. Tier 1 reports, including industrial-specific checklist(s);
    g. All inspection reports;
    h. Documentation of any benchmark exceedance and corrective action taken;
    i. All copies of any reports or corrective action submitted to DEQ or agent;
    j. Spills or leaks of significant materials (See Schedule D.3, Definitions) that impacted or had the potential to impact stormwater or surface waters. Include the corrective actions to clean up the spill or leak as well as measures to prevent future problems of the same nature;
    k. Documentation to support a claim that a facility has changed its status from active to inactive and unstaffed with respect to the requirements to conduct routine facility inspections;
    l. Discharge Monitoring Reports, laboratory reports, pH calibration and field sampling notes;
    m. Compliance schedule reports as specified in Schedule C;
    n. Numeric limits exceedance reports;
    o. Water Quality Standards Report; and
    p. Employee education materials and records of training.

17. Summary of Reporting Requirements and Submittal Date

The permit registrant must submit all reports through a web-based electronic system when directed by DEQ and agent.

Table 8: Reporting Requirements

Permit Condition	Permit Schedule	Report Required	Due Date
Must not cause or contribute to a violation of instream water quality standard	Schedule A.3	Water Quality Standards Corrective Action Report	No later than 30 calendar days after receiving monitoring results
Certification of mass reduction measures installed during previous permit cycles	Schedule A.6	Stamped certification	December 31, 2021
SWPCP submission	Schedule A.9	SWPCP revision	No later than 30 calendar days after the completion of modification or as requested by DEQ or agent
Sample results exceed applicable statewide or sector-specific benchmarks or visual observations show signs of pollution	Schedule A.11	Tier 1 Report	No later than 30 calendar days after receiving monitoring results; Retain on-site and submit upon request
Geometric mean exceeds statewide benchmarks in full reporting year (July1 – June 30)	Schedule A.12	Tier 2 Report	No later than December 31, six months after June 30 (date triggered)
		Tier 2 Mass Reduction Waiver	
		Tier 2 Background Waiver	
Confirmation of Tier 2 implementation	Schedule A.12.i.iv	Notification confirming Tier 2 proposal installation	No later than 30 calendar days of implementation
Sample results continue to exceed benchmark for Tier 2 parameters post-implementation	Schedule A.11.c.v	Tier 1 Report	No later than 30 calendar days after receiving monitoring results; Retain on-site and submit upon request
Trigger numeric water quality-based effluent limit	Schedule A.13.e	WQBEL notification and compliance schedule request	No later than 30 calendar days after receiving monitoring results
Submission of monitoring results after the preceding calendar quarter	Schedule B.14	Discharge Monitoring Report	No later than February 15, May 15, August 15, and November 15
Sample results exceed numeric effluent limitations	Schedule B.15	Exceedance Report	No later than 30 calendar days after receiving monitoring results and increase monitoring frequency

SCHEDULE C

COMPLIANCE SCHEDULES

1. **Numeric Water Quality-based Effluent Limits:** If the permit registrant is subject to numeric water quality-based effluent limits as required by triggering events in Schedule A.13.e, unable to immediately comply with applicable effluent limits, and has requested a compliance schedule as specified in Schedule C.2., the permit registrant must comply with the following compliance schedule milestones in Table 9. The permit registrant is allowed a compliance schedule when site modifications to implement a combination of source control and treatment are necessary to achieve numeric water quality-based effluent limit. Final numeric water quality-based effluent limits become enforceable when consistent compliance is achieved, or a maximum of 24 months following the trigger event specified in Schedule A.13.e, whichever occurs first.
   a. Failure to comply with the final compliance schedule within 24 months following the qualifying event specified in Schedule A.13.e is a permit violation.
   b. Consistent compliance with the effluent limits for this section shall be demonstrated by achieving compliance with the applicable effluent limit(s) for one full reporting year, unless the permit registrant provides, and DEQ or agent accepts, a rationale for why the monitoring data is not representative of anticipated future performance.

2. **Compliance Schedule Milestones:** A permit registrant will be allowed a compliance schedule if monitoring results indicate that stormwater discharges do not meet numeric water quality-based effluent limit concentrations in Table 5 that correspond to the specific pollutant(s) for which the water body is impaired. The permit registrant must request a compliance schedule from DEQ or agent and shall carry out the actions by the specified due dates below.

Table 9: Compliance Schedules

Action	Due Date[1]
1. Identify the source of contamination in stormwater discharge and determine if source control, treatment, or both will be used to achieve compliance with the applicable numeric effluent limit(s).	Within 6 months
2. Submit plans for structural modification of existing facilities or the construction of new facilities consistent with the determination in Action 1.	Within 12 months
3. Commence modifications/installations as specified in Action 2.	Within 18 months
4. Comply with final effluent limits and submittal of a revised SWPCP	Within 24 months

[1] In relation to the date of the triggering events specified in Schedule A.13.e occurred

3. **Status Reports:** Permit registrant shall submit status reports to DEQ or agent within 14-days after each action due date listed in Table 9. Status reports shall include the following information:
   a. A status summary of the progress towards completing the actions specified in Table 9, including any relevant documentation or findings necessary to demonstrate compliance with the applicable due dates.
   b. Confirmation of completion of the required action or a communication with DEQ or agent that the permit registrant will be delayed in implementing the required action. Notifications of a delay must include reasons for the delay and a revised schedule for ensuring compliance with the final

due date to comply with the numeric water quality-based effluent limits within 24 months. DEQ or agent will notify the permit registrant no later than 30 calendar days from receipt if the delay is approved or denied. An extension of the final compliance date is prohibited.

SCHEDULE D

SPECIAL CONDITIONS

1. Releases in Excess of Reportable Quantities. This permit does not relieve the permit registrant of the reporting requirements of 40 CFR §117 Determination of Reportable Quantities for Hazardous Substances and 40 CFR §302 Designation, Reportable Quantities, and Notification.

2. Availability of SWPCP and Monitoring Data. The Stormwater Pollution Control Plan and stormwater monitoring data must be made available to government agencies responsible for stormwater management in the permit registrant's area.

3. Definitions

For the purpose of this permit:

a. Arid areas means portion of the state where annual precipitation averages range from 0 to 10 inches.
b. Background pollutants include substances that are naturally occurring in soils or groundwater. Background pollutants do not include legacy pollutants from earlier activity on the site, or pollutants in run-on from neighboring sources that are not naturally occurring.
c. Best management practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the state." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. See 40 CFR 122.2.
d. Capital Improvements means the following improvements that require capital expenditures:
    i. Removal or permanent isolation from exposure to stormwater of significant materials left from previous activities on the site.
    ii. Treatment best management practices including to settling basins, oil/water separation equipment, grassy swales, detention/retention basins, and media filtration devices.
    iii. Manufacturing modifications that incur capital expenditures, including process changes for reduction of pollutants or wastes at the source.
    iv. Concrete pads, dikes and conveyance or pumping systems utilized for collection and transfer of stormwater to treatment systems.
    v. Roofs and appropriate covers for manufacturing areas.
    vi. Volume reduction measures, including low impact development control measures.
e. Co-located Industrial Activities means any industrial activities, excluding the primary industrial activity(ies), located on-site that are defined by the stormwater regulations at 122.26(b)(14)(i - ix, xi) and identified in Table 1: Sources Covered of the permit. An activity at a facility is not considered co-located if the activity, when considered separately, does not meet the description of a category of industrial activity covered by the stormwater regulations or identified in Table 1.
f. Columbia Slough means the waterway in northern Multnomah County flowing roughly parallel to the Columbia River between Fairview Lake and the Willamette River. *Confirm discharges to Columbia Slough by contacting the cities of Portland or Gresham.*

g. Compliance Schedule means a schedule of remedial measures, including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with a water quality-based effluent limit. See *Schedule of compliance* in 40 CFR 122.2.
h. Control Measure means any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the state.
i. Discharge Point means the location where stormwater flows leave the facility and enters waters of the state directly or indirectly through a separate storm sewer system, including the location where any sheet flow leaves a facility.
j. Existing Discharger means an operator applying for coverage under this permit for discharges authorized previously under an NPDES general or individual permit.
k. Feasible means technologically possible and economically practicable and achievable in light of best industry practices.
l. Full reporting year is from July 1 of one year to June 30 of the following year (for example, the 2021/2022 full reporting year is from July 1, 2021, through June 30, 2022).
m. Hazardous Substances is defined in 40 CFR §302 Designation, Reportable Quantities, and Notification.
n. High Quality Waters means those waters that meet or exceed levels that are necessary to support the propagation of fish, shellfish, and wildlife; recreation in and on the water; and other designated beneficial uses. Waters identified on the Category 5: 303(d) listed waters as not meeting applicable state water quality standards for a given pollutant are not high quality waters.
o. Immediately means in the context of repair or maintenance to control measures, the day you identify that a control measure needs to be maintained, repaired, or replaced, you must take all reasonable steps to minimize or prevent the discharge of pollutants until you can implement a permanent solution. However, if you identify a problem too late in the work day to initiate action, you must perform the action the following work day morning.
p. Impaired Waters means those waters identified by a State or EPA pursuant to Section 303(d) (Category 5) of the Clean Water Act as not meeting applicable State water quality standards for one or more pollutants. This may include both waters with approved TMDLs (Category 4), and those for which a TMDL has not yet been approved.
q. Industrial Activity means the categories of industrial activities included in the definition of "stormwater discharges associated with industrial activity" as defined in 40 CFR 122.26(b)(14)(i)-(ix) and (xi) or activities identified by DEQ as a significant contributor of pollutants, such as Table 2.
r. Industrial-specific Checklists means technical assistance document for optional use to assist permit registrants with a Tier 1 corrective action response comprised of universal and sector-specific source and operational control measures for major industrial groups. When implemented will assist in reducing sources of pollution exposed to stormwater. The permit registrant is expected to complete the universal checklists designed for all industrial sectors covered under this permit as well as sector-specific checklists applicable to SIC codes industrial activities at the site.
s. Industrial Stormwater means stormwater discharge associated with industrial activity (40 CFR 122.26(b)(14)).
t. Material Handling Activities include the storage, loading and unloading, transportation or conveyance of raw material, intermediate product, finished product, by-product or waste product.

u. Minimize means reduce or eliminate, or both, to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practice.
v. Monitoring Point for the purpose of this permit, means the location where stormwater discharge is sampled.
w. New Discharger means a facility from which there is or may be a discharge, that did not commence the discharge of pollutants at a particular site prior to August 13, 1979, which is not a new source, and which has never received a finally effective NPDES permit for discharges at that site. See 40 CFR 122.2.
x. New Source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced: after promulgation of standards of performance under section 306 of the CWA which are applicable to such source, or after proposal of standards of performance in accordance with section 306 of the 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. See 40 CFR 122.2.
y. No Exposure means all industrial materials or activities are protected by a storm-resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. See 40 CFR 122.26(g).
z. Operator means any entity with a stormwater discharge associated with industrial activity that meets either of the following two criteria:
    i. The entity has operational control over industrial activities, including the ability to modify those activities; or
    ii. The entity has day-to-day operational control of activities at a facility necessary to ensure compliance with this permit (e.g., the entity is authorized to direct workers at a facility to carry out activities required by this permit).
aa. Outstanding Resource Waters means those waters designated by the Environmental Quality Commission where existing high quality waters constitute an outstanding state or national resource based on their extraordinary water quality or ecological values or where special water quality protection is needed to maintain critical habitat areas.
bb. Portland Harbor means the study area of EPA's Portland Harbor Superfund site located in the Lower Willamette River from approximately river mile 1.9 to 11.8.
cc. Primary industrial activity means any activities performed on-site that are (1) identified by the facility's primary SIC code; or (2) included in the narrative descriptions of 122.26(b)(14)(i), (iv), (v), or (vii), and (ix). Narrative descriptions in 40 CFR 122.26(b)(14) identified above include: (i) activities subject to stormwater effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards; (iv) hazardous waste treatment storage, or disposal facilities including those that are operating under interim status or a permit under subtitle C of the Resource Conservation and Recovery Act (RCRA); (v) landfills, land application-sites and open dumps that receive or have received industrial wastes; (vii) steam electric power generating facilities; and (ix) sewage treatment works with a design flow of 1.0 mgd or more.
dd. Qualifying samples are samples that are collected at least 14-days apart, are analyzed using approved methods (see Schedule F), and satisfy the Quality Assurance/Quality Control requirements of the method.
ee. Regular business hours of operation means those timeframes when the facility is engaged in its primary production process, with personnel that have completed the required SWPCP training.

ff. Run-on sources of stormwater means stormwater that drains from land located upslope or upstream from the regulated facility.

gg. Semi-arid areas means where annual rainfall averages range from 10 to 20 inches.

hh. Significant Materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under section 101(14) of CERCLA; any chemical that a facility is required to report pursuant to section 313 of title III of SARA; TSCA, fertilizers; pesticides; and waste products such as ash, slag, and sludge that have the potential to be released with stormwater discharges.

ii. Storm event means a precipitation event that results in a measurable amount of precipitation to results in an actual discharge (except otherwise specified in Schedule E).

jj. Stormwater means stormwater runoff, snow melt runoff and surface runoff drainage. See 40 CFR 122.26(b)(13).

kk. Stormwater Discharge Associated with Industrial Activity, the discharge from any conveyance that is used for collecting and conveying stormwater and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the NPDES program under Part 122. For the categories of industries identified in this section, the term includes, but is not limited to, stormwater discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined at part 401 of this chapter); sites used for the storage and maintenance of material handling equipment; sites used for residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and final products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to stormwater. For the purposes of this paragraph, material handling activities include storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with stormwater drained from the above described areas. Industrial facilities include those that are federally, state, or municipally owned or operated that meet the description of the facilities listed in 40 CFR 122.26(b)(14). The term also includes those facilities designated under the provisions of 40 CFR 122.26(a)(1)(v). See 40 CFR 122.26(b)(14)

ll. Stormwater Conveyance means a sewer, ditch, or swale that is designed to carry stormwater; a stormwater conveyance may also be referred to as a storm drain or storm sewer.

mm. Total Maximum Daily Load (TMDL) is the sum of the individual Waste Load Allocations (WLAs) for point sources and Load Allocations (LAs) for nonpoint sources and background. See OAR 340-041-0002(65) and OAR 340-042-0030(15).

nn. Treatment Measures mean Best Management Practices that are intended to remove pollutants from stormwater. These measures include: settling basins, oil/water separation equipment, detention/retention basins, media filtration devices, electrocoagulation, constructed wetlands and bioswales.

oo. Wasteload Allocation (WLA) means the portion of receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation. See OAR 340-041-0002(67).

4. Local Public Agencies Acting as DEQ's Agent

DEQ has entered into agreement which authorize certain local governments and special districts to act as its agent in implementing portions of this permit. The agent conducts the following activities, including: application and SWPCP review, inspections, monitoring data review, stormwater and wastewater monitoring, and verification and approval of no-exposure certifications. Where DEQ has entered into such an agreement, DEQ or agent will notify the permit registrant of where to submit no-exposure certifications, and other notifications or correspondence associated with this permit.

5. Terminating Permit Coverage

a. The permit registrant must meet the following conditions:
   i. Cease all industrial operations and stormwater discharge associated with industrial activity as defined in 40 CFR 122.26(b)(14); or
   ii. Obtain NPDES coverage under an individual permit; or
   iii. A new owner or operator legally acquires responsibility of property or industrial activity.
   iv. Conditions for termination under sectors G, H and I have been met, as applicable.

b. To terminate permit coverage, registrants must:
   i. Complete and submit a Notice of Termination to DEQ or agent for approval.
   ii. Resolve all outstanding invoices and compliance issues.

c. Until termination has been approved by DEQ, the permit registrant must comply with all permit conditions.

SCHEDULE E

SECTOR-SPECIFIC REQUIREMENTS

1. The permit registrant must meet the sector-specific requirements in Schedule E associated with their primary industrial activity and any co-located industrial activities, as defined in Schedule D of this permit. The sector-specific requirements apply to the areas of the facility where the sector-specific activities occur.
2. These sector-specific requirements in Schedule E are in addition to the requirements in Schedule A, Schedule B, and Schedule C of this permit.
3. Pacific Ocean discharges will use saltwater benchmarks as the target concentrations, when one is established in this Schedule.
4. Estuarine waters discharges, the more stringent benchmark between the freshwater and saltwater benchmarks are applied as the target concentration. If no saltwater benchmark is listed, the freshwater benchmark is applied.
5. If a discharge point is subject to a statewide benchmark(s) for the same parameter that also has a benchmark(s) in Schedule E, the statewide benchmark supersedes Schedule E concentrations. Other hardness-dependent metals concentrations are calculated in Table 10 using median hardness for each georegion.

Table 10: Metals Concentrations

Georegion	Median Hardness mg/L	Total Cadmium[1] mg/L	Total Chromium III[1] mg/L	Total Nickel[1] mg/L	Total Selenium[2] mg/L	Total Silver[1] mg/L
Cascades	12.9	0.00039	0.34	0.083	0.013	0.00011
Coastal	29.75	0.0010	0.67	0.17	0.013	0.00047
Columbia River Mainstem	63.8	0.0024	1.2	0.32	0.013	0.0017
Columbia Slough	29.4	0.00099	0.66	0.17	0.013	0.00046
Eastern	53.3	0.0019	1.1	0.28	0.013	0.0013
Portland Harbor	28.55	0.00095	0.65	0.16	0.013	0.00044
Willamette Valley	41.9	0.0015	0.88	0.22	0.013	0.00085

[1]See Endnote E and Endnote F equations for hardness-based metals, Table 30: Aquatic Life Water Quality Criteria
[2] DEQ Memorandum, Implementations Instruction for Selenium

6. Table E-1 below identifies SIC codes and activities descriptions that are required to meet the sector-specific requirements in Schedule E of the permit.

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
SECTOR A: TIMBER PRODUCTS	
2421	General Sawmills and Planing Mills
2411	Logging
2426	Hardwood Dimension and Flooring Mills
2429	Special Product Sawmills, Not Elsewhere Classified
2431-2439 (except 2434, see Sector W)	Millwork, Veneer, Plywood, and Structural Wood
2448	Wood Pallets and Skids
2449	Wood Containers, Not Elsewhere Classified
2451, 2452	Wood Buildings and Mobile Homes
2491	Wood Preserving
2493	Reconstituted Wood Products
2499	Wood Products, Not Elsewhere Classified
2441	Nailed and Lock Corner Wood Boxes and Shook
SECTOR B: PAPER AND ALLIED PRODUCTS	
2631	Paperboard Mills
2611	Pulp Mills
2621	Paper Mills
2652-2657	Paperboard Containers and Boxes
2671-2679	Converted Paper and Paperboard Products, Except Containers and Boxes
SECTOR C: CHEMICALS AND ALLIED PRODUCTS	
2873-2879 (excluding 2874)	Agricultural Chemicals
2812-2819	Industrial Inorganic Chemicals
2841-2844	Soaps, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations
2821-2824	Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers Except Glass
2833-2836	Medicinal Chemicals and Botanical Products; Pharmaceutical Preparations; in vitro and in vivo Diagnostic Substances; and Biological Products, Except Diagnostic Substances
2851	Paints, Varnishes, Lacquers, Enamels, and Allied Products

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
2861-2869	Industrial Organic Chemicals
2891-2899	Miscellaneous Chemical Products
3952 (limited to list of inks and paints)	Inks and Paints, Including China Painting Enamels, India Ink, Drawing Ink, Platinum Paints for Burnt Wood or Leather Work, Paints for China Painting, Artist's Paints and Artist's Watercolors
2911	Petroleum Refining
SECTOR D: PETROLEUM REFINING AND RELATED INDUSTRIES Asphalt Paving Mixtures and Blocks, Primary SIC code 2951, Covered by 1200-A General Permit	
2951 (co-located SIC code only), 2952	Asphalt Paving and Roofing Materials
2992, 2999	Miscellaneous Products of Petroleum and Coal
SECTOR E: GLASS, CLAY, CEMENT, CONCRETE, AND GYPSUM PRODUCTS Ready-Mixed Concrete, Primary SIC code 3273, Covered by 1200-A General Permit	
3251-3259	Structural Clay Products
3261-3269	Pottery and Related Products
3271-3275 (3273 co-located SIC code only)	Concrete, Gypsum and Plaster Products
3211	Flat Glass
3221, 3229	Glass and Glassware, Pressed or Blown
3231	Glass Products Made of Purchased Glass
3241	Hydraulic Cement
3281	Cut Stone and Stone Products
3291-3299	Abrasive, Asbestos, and Miscellaneous Nonmetallic Mineral Products
SECTOR F: PRIMARY METALS	
3312-3317	Steel Works, Blast Furnaces, and Rolling and Finishing Mills
3321-3325	Iron and Steel Foundries
3351-3357	Rolling, Drawing, and Extruding of Nonferrous Metals
3363-3369	Nonferrous Foundries (Castings)
3331-3339	Primary Smelting and Refining of Nonferrous Metals
3341	Secondary Smelting and Refining of Nonferrous Metals
3398, 3399	Miscellaneous Primary Metal Products
SECTOR G: METAL MINING (ORE MINING AND DRESSING)	
1021	Copper Ore and Mining Dressing Facilities
1011	Iron Ores
1021	Copper Ores

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
1031	Lead and Zinc Ores
1041, 1044	Gold and Silver Ores
1061	Ferroalloy Ores, Except Vanadium
1081	Metal Mining Services
1094, 1099	Miscellaneous Metal Ores
SECTOR H: COAL MINES AND COAL MINING-RELATED FACILITIES	
1221-1241	Coal Mines and Coal Mining-Related Facilities
SECTOR I: OIL AND GAS EXTRACTION AND REFINING	
1311	Crude Petroleum and Natural Gas
1321	Natural Gas Liquids
1381-1389	Oil and Gas Field Services
SECTOR J: MINERAL MINING AND DRESSING- Discharges Covered by 1200-A General Permit	
SECTOR K: HAZARDOUS WASTE TREATMENT, STORAGE, OR DISPOSAL FACILITIES	
HZ	Hazardous Waste Treatment, Storage, or Disposal Facilities: • Hazardous waste storage • Hazardous waste disposal • Hazardous waste facilities operating under interim status • Hazardous waste facilities operating under a permit under Subtitle C of RCRA HZ is the Activity Code for this Sector. It potentially applies to any facility regardless of SIC, in addition to these specifically related to hazardous waste: • SIC 4953 Refuse Systems (hazardous waste treatment and disposal)
SECTOR L: LANDFILLS, LAND APPLICATION SITES, AND OPEN DUMPS	
LF	All Landfill, Land Application Sites and Open Dumps
LF	All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance with 40 CFR 258.60
SECTOR M: MOTOR VEHICLE PARTS, USED	
5015	Automobile Salvage Yards
SECTOR N: SCRAP AND WASTE MATERIALS	
5093	Scrap Recycling and Waste Recycling Facilities except Source-Separated Recycling
5093	Source-separated Recycling Facility

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
SECTOR O: STEAM ELECTRIC GENERATING FACILITIES	
SE	Steam Electric Generating Facilities, including coal handling sites: • steam electric power generation using coal, including coal handling areas • steam electric power generation using natural gas • steam electric power generation using oil • steam electric power generation using nuclear energy • steam electric power generation using any other fuel to produce a steam source • coal pile discharge (includes effluent limitations established by 40 CFR 423) • dual fuel co-generation (i.e., steam generation using fossil fuel to augment a heat-capture generation system) SE is the Activity Code for this Sector. It may apply to any facility SIC Code, in addition to these specifically related to steam electric generation: • SIC 4911 Electric Services (fossil fuel power generation, nuclear electric power generation & other electric power generation)
SECTOR P: LAND TRANSPORTATION AND WAREHOUSING	
4011, 4013	Railroad Transportation
4111-4173	Local and Highway Passenger Transportation
4212-4215	Trucking and Courier Services, Except Air
4226, 4231	Special Warehousing and Storage, Not Otherwise Classified, Terminal and Joint Terminal Maintenance Facilities for Motor Freight Transportation
4311	United States Postal Service
5171	Petroleum Bulk Stations and Terminals
SECTOR Q: WATER TRANSPORTATION	
4412-4499	Water Transportation Facilities
SECTOR R: SHIP AND BOAT BUILDING AND REPAIRING YARDS	
3731, 3732	Ship and Boat Building or Repairing Yards
SECTOR S: AIR TRANSPORTATION FACILITIES	
4512-4581	Air Transportation Facilities
SECTOR T: TREATMENT WORKS	

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
TW	Treatment Works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under 40 CFR Part 403.
SECTOR U: FOOD AND KINDRED PRODUCTS	
2041-2048	Grain Mill Products
2074-2079	Fats and Oils Products
2011-2015	Meat Products
2021-2026	Dairy Products
2032-2038	Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties
2051-2053	Bakery Products
2061-2068	Sugar and Confectionery Products
2082-2087	Beverages
2091-2099	Miscellaneous Food Preparations and Kindred Products
2111-2141	Tobacco Products
SECTOR V: TEXTILE MILLS, APPAREL, AND OTHER FABRIC PRODUCT MANUFACTURING; LEATHER AND LEATHER PRODUCTS	
2211-2299	Textile Mill Products
2311-2399	Apparel and Other Finished Products Made from Fabrics and Similar Materials
3131-3199	Leather and Leather Products (note: see Sector Z1 for Leather Tanning and Finishing)
SECTOR W: FURNITURE AND FIXTURES	
2434	Wood Kitchen Cabinet and countertop Manufacturing
2511-2519	Household Furniture
2521, 2522	Office Furniture
2531	Public Building and Related Furniture
2541, 2542	Partitions, Shelving, Lockers, and Office and Store Fixtures
2591, 2599	Miscellaneous Furniture and Fixtures
SECTOR X: PRINTING AND PUBLISHING	

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
2711-2796	Printing, Publishing, and Allied Industries
SECTOR Y: RUBBER, MISCELLANEOUS PLASTIC PRODUCTS, AND MISCELLANEOUS MANUFACTURING INDUSTRIES	
3011	Tires and Inner Tubes
3021	Rubber and Plastics Footwear
3052, 3053	Gaskets, Packing and Sealing Devices, and Rubber and Plastic Hoses and Belting
3061, 3069	Fabricated Rubber Products, Not Elsewhere Classified
3081-3089	Miscellaneous Plastics Products
3931	Musical Instruments
3942-3949	Dolls, Toys, Games, and Sporting and Athletic Goods
3951-3955 (except 3952 – see Sector C)	Pens, Pencils, and Other Artists' Materials
3961, 3965	Costume Jewelry, Costume Novelties, Buttons, and Miscellaneous Notions, Except Precious Metal
3991-3999	Miscellaneous Manufacturing Industries
SECTOR Z: LEATHER TANNING AND FINISHING	
3111	Leather Tanning and Finishing
SECTOR AA: FABRICATED METAL PRODUCTS	
3411-3499 (except 3479)	Fabricated Metal Products, and Coating, Engraving, and Allied Services
3911-3915	Jewelry, Silverware, and Plated Ware
3479	Fabricated Metal Coating and Engraving
SECTOR AB: TRANSPORTATION EQUIPMENT, INDUSTRIAL OR COMMERCIAL MACHINERY	
3511-3537	Engines and Turbines, Farm and Garden Machinery and Equipment, Construction, Mining and Materials Handling Machinery and Equipment
3541-3549	Metalworking Machinery and Equipment
3552-3559	Special Industry Machinery, Except Metalworking Machinery
3561-3569	General Industrial Machinery and Equipment
3581-3599	Refrigeration and Service Industry Machinery, Miscellaneous Industrial and Commercial Machinery and Equipment
3711-3716	Motor Vehicles and Motor Vehicle Equipment
3721-3751 (except 3731, 3732)	Aircraft and Parts, Ship and Boat Building and Repairing, Railroad Equipment, Motorcycles, Bicycles and Parts

Table E-1. Sectors of Industrial Activity with Description

SIC Code or Activity Code	Activity Represented
3761-3799	Guided Missiles and Space Vehicles and Parts, Miscellaneous Transportation Equipment
SECTOR AC: ELECTRONIC, ELECTRICAL, PHOTOGRAPHIC AND OPTICAL GOODS ***No Sector-specific requirements***	
3571-3579	Computer and Office Equipment
3612-3699	Electronic and Other Electrical Equipment and Components, Except Computer Equipment
3812-3829	Measuring, Analyzing, Optical and Controlling Instruments
3841-3861	Photographic, Medical and Optical Goods
3873	Watches and Clocks

Sector A – Timber Products
Additional Technology-Based Effluent Limits

E.A.1 *Good Housekeeping*. In areas where storage, loading and unloading, and material handling occur, perform good housekeeping to limit the discharge of wood debris, minimize the leachate generated from decaying wood materials, and minimize the generation of dust.

E.A.2 Additional SWPCP Requirements

E.A.2.1 *Drainage Area Site Map*. Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: processing areas, treatment chemical storage areas, treated wood and residue storage areas, wet decking areas, dry decking areas, untreated wood and residue storage areas, and treatment equipment storage areas.

E.A.2.2 *Inventory of Exposed Materials*. Where such information exists, if your facility has used chlorophenolic, creosote, or chromium-copper-arsenic formulations for wood surface protection or preserving, document in your SWPCP the following: areas where contaminated soils, treatment equipment, and stored materials still remain and the management practices employed to minimize the contact of these materials with stormwater discharge.

E.A.2.3 *Description of Stormwater Management Controls*. Document measures implemented to address the following activities and sources: log, lumber, and wood product storage areas; residue storage areas; loading and unloading areas; material handling areas; chemical storage areas; and equipment and vehicle maintenance, storage, and repair areas. If your facility performs wood surface protection and preservation activities, address the specific control measures, including any BMPs, for these activities.

E.A.3 Additional Inspection Requirements.

E.A.3.1. If your facility is a wood preserving facility under SIC 2491, inspect processing areas, transport areas, and treated wood storage areas monthly to assess the usefulness of practices to minimize the deposit of treatment chemicals on unprotected soils and in areas that will come in contact with stormwater discharges.

E.A.4 Sector-Specific Benchmarks

Table E.A-1 identifies benchmarks that apply to the specific subsectors of Sector A. These benchmarks apply to both your primary industrial activity and any co-located industrial activities, which describe your site activities.

Table E.A-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
General Sawmills and Planing Mills (SIC code 2421)	Chemical Oxygen Demand (COD)	120.0 mg/L
	Total Suspended Solids (TSS)	Statewide benchmark
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L
Hardwood Dimension and Flooring Mills; Special Products Sawmills, not elsewhere classified; Millwork, Veneer, Plywood, and Structural Wood; Wood Pallets and Skids; Wood Containers, not elsewhere classified; Wood Buildings and Mobile Homes; Reconstituted Wood Products; and Wood Products Facilities not elsewhere classified (SIC code 2426, 2429, 2431-2439 (except 2434), 2441, 2448, 2449, 2451, 2452, 2493, and 2499)	Chemical Oxygen Demand (COD)	120.0 mg/L
	Total Suspended Solids (TSS)	Statewide benchmark
Log Storage and Handling (SIC code 2411)	Total Suspended Solids (TSS)	Statewide benchmark
Wood Preserving (SIC code 2491)	Total Arsenic freshwater	0.34 mg/L
	Total Arsenic saltwater	0.069 mg/L
	Total copper freshwater	Statewide benchmark
	Total copper saltwater	0.025 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector B – Paper and Allied Products

E.B.1 Sector-Specific Benchmarks

Table E.B-1 identifies benchmarks that apply to the specific subsectors of Sector B. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.B-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Paperboard Mills (SIC code 2631)	Chemical Oxygen Demand (COD)	120 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector C – Chemical and Allied Products Manufacturing, and Refining

E.C.1 Sector-Specific Benchmarks

Table E.C-1 identifies benchmarks that apply to the specific subsectors of Sector C. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.C-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Agricultural Chemicals (SIC codes 2873-2879, excluding 2874)	Nitrate plus Nitrite Nitrogen	10 mg/L
	Phosphorus	2.0 mg/L
	Total lead freshwater	Statewide benchmark
	Total lead saltwater	1.10 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L
Industrial Inorganic Chemicals (SIC codes 2812-2819)	Total Aluminum	1.10 mg/L
	Nitrate plus Nitrite Nitrogen	10 mg/L
Soaps, Detergents, Cosmetics, and Perfumes (SIC codes 2841-2844)	Nitrate plus Nitrite Nitrogen	10 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L
Plastics, Synthetics, and Resins (SIC codes 2821-2824)	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector D – Petroleum Refining and Related Industries

E.D.1 Limitation of Coverage

Asphalt Paving Mixtures and Blocks, Primary SIC code 2951, must apply for coverage under the 1200-A Industrial Stormwater General Permit.

Table E.D-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Asphalt Paving and Roofing Materials (SIC codes 2951, 2952) **co-located SIC codes only**	Total Suspended Solids (TSS)	Statewide benchmark

E.D.2 Effluent Limitations Based on Effluent Limitations Guidelines

Table E.D-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other wastestreams that may be covered under this permit.

Table E.D-2[1]

Industrial Activity	Parameter	Effluent Limit
Discharges from asphalt emulsion facilities. **co-located SIC code only.**	Total Suspended Solids (TSS)	23.0 mg/L, daily maximum
		15.0 mg/L, 30-day avg.
	pH	6.0 - 9.0 s.u.
	Oil and Grease	15.0 mg/L, daily maximum
		10 mg/L, 30-day avg.

[1]Monitor semi-annually

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector E – Glass, Clay, Cement, Concrete, and Gypsum Products

E.E.1 Limitations of coverage

Ready-Mixed Concrete, primary SIC code 3273, must apply for coverage under the 1200-A General Permit.

E.E.2 Additional Technology-Based Effluent Limits

E.E.2.1 *Good Housekeeping Measures*. With good housekeeping, prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), kiln dust, fly ash, settled dust, or other significant material in stormwater from paved portions of the site that are exposed to stormwater. Consider sweeping regularly or using other equivalent measures to minimize the presence of these materials. Indicate in your SWPCP the frequency of sweeping or equivalent measures. Determine the frequency based on the amount of industrial activity occurring in the area and the frequency of precipitation, but it must be performed at least once a week if cement, aggregate, kiln dust, fly ash, or settled dust are being handled or processed. You must also prevent the exposure of fine granular solids (cement, fly ash, kiln dust, etc.) to stormwater, where practicable, by storing these materials in enclosed silos, hoppers, or buildings, or under other covering.

E.E.3 Additional SWPCP Requirements

E.E.3.1 *Drainage Area Site Map*. Document in the SWPCP the locations of the following, as applicable: bag house or other dust control device; recycle/sedimentation pond, clarifier, or other device used for the treatment of process wastewater; and the areas that drain to the treatment device.

E.E.3.1 *Discharge Testing*. For facilities producing ready-mix concrete, concrete block, brick, or similar products, include in the non-stormwater discharge testing a description of measures that ensure that process wastewaters resulting from washing trucks, mixers, transport buckets, forms, or other equipment are discharged in accordance with NPDES wastewater permit requirements or are recycled.

E.E.4 Sector-Specific Benchmarks

Table E.E-1 identifies benchmarks that apply to the specific subsectors of Sector E. These benchmarks apply to both your primary industrial activity and any co-located industrial activities, which describe your site activities.

Table E.E-1

Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Clay Product Manufacturers (SIC codes 3251-3259, 3261-3269)	Total Aluminum	1.10 mg/L
Concrete and Gypsum Manufacturers (SIC codes 3271-3275) **3273: co-located SIC code only.**	Total Suspended Solids (TSS)	Statewide benchmark

E.E.5 Effluent Limitations Based on Effluent Limitations Guidelines

Table E.E-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these limits is to be determined based on discharges from these industrial activities independent of commingling with any other wastestreams that may be covered under this permit.

Table E.E-2[1]

Industrial Activity	Parameter	Effluent Limit
Discharges from material storage piles at cement manufacturing facilities (SIC code 3241)	Total Suspended Solids (TSS)	50 mg/L, daily maximum
	pH	6.0 - 9.0 s.u.

[1]Monitor semi-annually

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector F – Primary Metal

E.F.1 Additional Technology-Based Effluent Limits

E.F.1.1 *Good Housekeeping Measures*. As part of your good housekeeping program, include a cleaning and maintenance program for all impervious areas of the facility where particulate matter, dust, or debris may accumulate, especially areas where material loading and unloading, storage, handling, and processing occur; and, where practicable, the paving of areas where vehicle traffic or material storage occur but where vegetative or other stabilization methods are not practicable (institute a sweeping program in these areas too). For unstabilized areas where sweeping is not practicable, consider using stormwater management devices such as sediment traps, vegetative buffer strips, filter fabric fence, sediment filtering boom, gravel outlet protection, or other equivalent measures that effectively trap or remove sediment.

E.F.2 Additional SWPCP Requirements

E.F.2.1 *Drainage Area Site Map*. Identify in the SWPCP where any of the following activities may be exposed to precipitation or stormwater: storage or disposal of wastes such as spent solvents and baths, sand, slag and dross; liquid storage tanks and drums; processing areas including pollution control equipment (e.g., baghouses); and storage areas of raw material such as coal, coke, scrap, sand, fluxes, refractories, or metal in any form. In addition, indicate where an accumulation of significant amounts of particulate matter could occur from such sources as furnace or oven emissions, losses from coal and coke handling operations, etc., and could result in a discharge of pollutants to waters of the state.

E.F.2.2 *Inventory of Exposed Material*. Include in the inventory of materials handled at the site that potentially may be exposed to precipitation or discharge, areas where deposition of particulate matter from process air emissions or losses during material-handling activities are possible.

E.F.3 Additional Inspection Requirements

As part of conducting your monthly inspections address all potential sources of pollutants, including (if applicable) air pollution control equipment (e.g., baghouses, electrostatic precipitators, scrubbers, and cyclones), for any signs of degradation (e.g., leaks, corrosion, or improper operation) that could limit their efficiency and lead to excessive emissions. Consider monitoring air flow at inlets and outlets (or use equivalent measures) to check for leaks (e.g., particulate deposition) or blockage in ducts. Also inspect all process and material handling equipment (e.g., conveyors, cranes, and vehicles) for leaks, drips, or the potential loss of material; and material storage areas (e.g., piles, bins, or hoppers for storing coke, coal, scrap, or slag, as well as chemicals stored in tanks and drums) for signs of material losses due to wind or stormwater runoff.

E.F.4 Sector-Specific Benchmarks

Table E.F-1 identifies benchmarks that apply to the specific subsectors of Sector F. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.F-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Steel Works, Blast Furnaces, and Rolling and Finishing Mills (SIC codes 3312-3317)	Total Aluminum	1.10 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L
Iron and Steel Foundries (SIC codes 3321-3325)	Total Aluminum	1.10 mg/L
	Total Suspended Solids (TSS)	Statewide benchmark
	Total copper freshwater	Statewide benchmark
	Total copper saltwater	0.025 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L
Rolling, Drawing, Extruding of Nonferrous Metals, Nonferrous Foundries (SIC codes 3351-3357 and 3363-3369)	Total copper freshwater	Statewide benchmark
	Total copper saltwater	0.025 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector G – Metal Mining

E.G.1 Covered Stormwater Discharges

The requirements in Sector G apply to stormwater discharges associated with industrial activity from Metal Mining facilities, including mines abandoned on Federal lands, as identified by the SIC Codes specified under types of industrial sources required to obtain coverage, Table 1. Coverage is required for metal mining facilities that discharge stormwater contaminated by contact with, or that has come into contact with, any overburden, raw material, intermediate product, finished product, byproduct, or waste product located on the site of the operation.

E.G.1.1 *Covered Discharges from Inactive Facilities.* All stormwater discharges.

E.G.1.2 *Covered Discharges from Active and Temporarily Inactive Facilities*. Only the stormwater discharges from the following areas are covered:

- Waste rock and overburden piles if composed entirely of stormwater and not combined with mine drainage;
- Topsoil piles;
- Offsite haul and access roads;
- Onsite haul and access roads constructed of waste rock, overburden or spent ore if composed entirely of stormwater and not combining with mine drainage;
- Onsite haul and access roads not constructed of waste rock, overburden or spent ore except if mine drainage is used for dust control;
- Discharges from tailings dams or dikes when not constructed of waste rock or tailings and no process fluids are present;
- Discharges from tailings dams or dikes when constructed of waste rock or tailings and no process fluids are present, if composed entirely of stormwater and not combining with mine drainage;
- Concentration building if no contact with material piles;
- Mill site if no contact with material piles;
- Office or administrative building and housing if mixed with stormwater from industrial area;
- Chemical storage area;
- Docking facility if no excessive contact with waste product that would otherwise constitute mine drainage;
- Explosive storage;
- Fuel storage;
- Vehicle and equipment maintenance area and building;
- Parking areas (if necessary);
- Power plant;
- Truck wash areas if no excessive contact with waste product that would otherwise constitute mine drainage;
- Unreclaimed, disturbed areas outside of active mining area;
- Reclaimed areas released from reclamation requirements prior to December 17, 1990;
- Partially or inadequately reclaimed areas or areas not released from reclamation requirements.

E.G.1.3 *Covered Discharges from Earth-Disturbing Activities Conducted Prior to Active Mining Activities*. All stormwater discharges.

E.G.1.4 *Covered Discharges from Facilities Undergoing Reclamation*. All stormwater discharges.

E.G.2 Limitations on Coverage

E.G.2.1 *Prohibition of Stormwater Discharges.* Stormwater discharges not authorized by this permit: discharges from active metal mining facilities that are subject to effluent limitation guidelines for the Ore Mining and Dressing Point Source Category (40 CFR Part 440).
Note: Stormwater discharge from these sources are subject to 40 CFR Part 440 if they are mixed with other discharges subject to Part 440. In this case, they are not eligible for coverage under this permit. Discharges from overburden/waste rock and overburden/waste rock-related areas are not subject to 40 CFR Part 440 unless they: (1) drain naturally (or are intentionally diverted) to a point source; and (2) combine with "mine drainage" that is otherwise regulated under the Part 440 regulations. For such sources, coverage under this permit would be available if the discharge composed entirely of stormwater does not combine with other sources of mine drainage that are not subject to 40 CFR Part 440. Operators bear the initial responsibility for determining if they are eligible for coverage under this permit, or must seek coverage under another NPDES permit.

E.G.2.2 *Prohibition of Non-Stormwater Discharges*. Not authorized by this permit: adit drainage, and contaminated springs or seeps discharging from waste rock dumps that do not directly result from precipitation events.

E.G.3 Definitions

The following definitions are not intended to supersede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

E.G.3.1 *Mining operation* – For this permit, mining operations are grouped into two distinct categories, with distinct technology based effluent limits and requirements applicable to each: a) earth-disturbing activities conducted prior to active mining activities); and b) active mining activities, which includes reclamation. “Mining operations” can occur at both inactive mining facilities and temporarily inactive mining facilities.

E.G.3.2 *Earth-disturbing activities conducted prior to active mining activities* – Consists of two classes of earth-disturbing (i.e., clearing, grading and excavation) activities:
a. activities performed for purposes of mine site preparation, including: cutting new rights of way (except when related to access road construction); providing access to a mine site for vehicles and equipment (except when related to access road construction); other earth disturbances associated with site preparation activities on any areas where active mining activities have not yet commenced (e.g., for heap leach pads, waste rock facilities, tailings impoundments, wastewater treatment plants); and
b. construction of staging areas to prepare for erecting structures such as to house project personnel and equipment, mill buildings, etc., and construction of access roads. Earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining are considered to be “construction” and have additional technology based effluent limits in E.G.4.2.

E.G.3.3 *Active mining activities* – Activities related to the extraction, removal or recovery, and benefication of metal ore from the earth; removal of overburden and waste rock to expose mineable minerals; and site reclamation and closure activities. All such activities occur within the "active mining area." Reclamation involves activities undertaken, in compliance with applicable mined land reclamation requirements, to return the land to an appropriate post-mining contour and land use in order to meet applicable federal and state reclamation requirements. In addition, once earth-disturbing activities conducted prior to active mining activities have ceased and all related requirements in E.G.4 have been met, and a well-delineated "active mining area" has been established, all activities (including any clearing, grading, and excavation) that occur within the active mining area are "active mining activities."

E.G.3.4 *Active mining area* – A place where work or other activity related to the extraction, removal or recovery of metal ore is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.
Note: Earth-disturbing activities described in the definition in E.G.3.2 that occur on areas outside the active mining area (e.g., for expansion of the mine into undeveloped territory) are considered "earth-disturbing conducted prior to active mining activities", and must comply with the requirements in E.G.4

E.G.3.5 *Inactive metal mining facility* – A site or portion of a site where metal mining and/or milling occurred in the past but there are no active mining activities occurring as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable state or federal agency. An inactive metal mining facility has an identifiable owner / operator. Sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials and sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim are not considered either active or inactive mining facilities and do not require an NPDES industrial stormwater permit.

E.G.3.6 *Temporarily inactive metal mining facility* – A site or portion of a site where metal mining and/or milling occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable State or Federal agency.

E.G.4 Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities Stormwater discharges from earth-disturbing activities conducted prior to active mining activities (defined in E.G.3.3) are covered under this permit. For such earth-disturbing activities, permit registrants do not need to comply the technology-based effluent limits or Schedule B, monitoring or inspection frequency in Schedule B or E.G.5, E.G.7 or E.G.8. Authorized discharges from areas where earth-disturbing activities have ceased and stabilization as specified in E.G.4.1.9 or E.G.4.2.11, where appropriate, has been completed (stabilization is not required for areas where active mining activities will occur), are no longer subject to E.G.4 requirements. At such time, authorized discharges become subject to all other applicable requirements in the permit, including the technology-based effluent limits or Schedule B, monitoring or inspection frequency in Schedule B and Sector E.G.5, E.G.7 and E.G.8.

E.G.4.1 *Technology-Based Effluent Limits Applicable to All Earth-Disturbing Activities Conducted Prior to Active Mining Activities*. The following technology-based effluent limits apply to authorized discharges from all earth-disturbing activities conducted prior to active mining activities defined in E.G.3. These limits supersede the technology-based limits listed in Schedule A.1.

E.G.4.1.1 *Erosion and sediment control installation requirements*.

- By the time construction activities commence, install and make operational downgradient sediment controls, unless this timeframe is infeasible. If infeasible you must install and make such controls operational as soon as practicable or as soon as site conditions permit.
- All other stormwater controls described in the SWPCP must be installed and made operational as soon as conditions on each portion of the site allows.

E.G.4.1.2 *Erosion and sediment control maintenance requirements*. You must:

- Ensure that all erosion and sediment controls remain in effective operating condition.
- Wherever you determine that a stormwater control needs maintenance to continue operating effectively, initiate efforts to fix the problem immediately after its discovery, and complete such work by the end of the next work day.
- When a stormwater controls must be replaced or significantly repaired, complete the work within 7 days, unless infeasible. If 7 days is infeasible, you must complete the installation or repair as soon as practicable.

E.G.4.1.3 *Perimeter controls*. You must:

- Install sediment controls along those perimeter areas of your disturbed area that will receive stormwater, except where site conditions prevent the use of such controls (in which case, maximize their installation to the extent practicable).
- Remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.

E.G.4.1.4 *Sediment track-out*. For construction vehicles and equipment exiting the site directly onto paved roads, you must:

- Install sediment controls along those perimeter areas of your disturbed area that will receive stormwater, except where site conditions prevent the use of such controls (in which case, maximize their installation to the extent practicable).
- Remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.
- Note: DEQ recognizes that some fine grains may remain visible on the surfaces of off-site streets, other paved areas, and sidewalks even after you have implemented sediment removal practices. Such "staining" is not a violation of E.G.4.1.4.

E.G.4.1.5 *Soil or sediment stockpiles*. You must:

- Minimize erosion of stockpiles from stormwater and wind via temporary cover, if feasible.
- Prevent up-slope stormwater flows from causing erosion of stockpiles (e.g., by diverting flows around the stockpile).
- Minimize sediment from stormwater that runs off of stockpiles, using sediment controls (e.g., a sediment barrier or downslope sediment control).

E.G.4.1.6 *Sediment basins*. If you intend to install a sediment basin to treat stormwater from your earth-disturbing activities, you must:

- Provide storage for either (1) the 2-year, 24-hour storm, or (2) 3,600 cubic feet per acre drained.
- Prevent erosion of (1) basin embankments using stabilization controls (e.g., erosion control blankets), and (2) the inlet and outlet points of the basin using erosion controls and velocity dissipation devices.

E.G.4.1.7 *Minimize dust*. You must minimize the generation of dust through the appropriate application of water or other dust suppression techniques that minimize pollutants being discharged into surface waters.

E.G.4.1.8 *Restrictions on use of treatment chemicals*. If you intend to use sediment treatment chemicals at your site, you are subject to the following minimum requirements:

- Use conventional erosion and sediment controls prior to and after application of chemicals;
- Select chemicals suited to soil type, and expected turbidity, pH, flow rate;
- Minimize the discharge risk from stored chemicals;
- Comply with state/local requirements;
- Use chemicals in accordance with good engineering practices and specifications of chemical supplier;
- Ensure proper training;
- Provide proper SWPCP documentation.

If you plan to use cationic treatment chemicals, you are ineligible for coverage under this permit, unless you notify your applicable DEQ regional office or agent in advance and receive authorization under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

E.G.4.1.9 *Site stabilization requirements for earth-disturbing activities performed for purposes of mine site preparation as defined in E.G.3.2(a) (i.e., not applicable to construction of staging areas for structures and access roads as defined in E.G.3.2(b)).* You must comply with the following stabilization requirements except where the intended function of the site accounts for such disturbed earth (e.g., the earth disturbances will become actively mined, or the controls implemented at the active mining area effectively control the disturbance) (although you are encouraged to do so within the active mining area, where appropriate):

- *Temporary stabilization of disturbed areas*. Stabilization measures must be initiated immediately in portions of the site where earth-disturbing activities performed for purposes of mine site preparation (as defined in E.G.3.2(a)) have temporarily ceased, but in no case more than 14 days after such activities have temporarily ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities performed for purposes of mine site preparation has temporarily ceased, temporary vegetative stabilization measures must be initiated as soon as practicable. Until temporary vegetative stabilization is achieved, interim measures such as erosion control blankets with an appropriate seed base and tackifiers must be employed. In areas of the site where earth-disturbing activities performed for purposes of mine site preparation have permanently ceased prior to active mining, temporary stabilization measures must be implemented to minimize mobilization of sediment or other pollutants until active mining activities commence.
- *Final stabilization of disturbed areas*. Stabilization measures must be initiated immediately where earth-disturbing activities performed for purposes of mine site preparation (as defined in E.G.3.2(a)), have permanently ceased but in no case more than 7 days after the earth-disturbing activities have permanently ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing

conditions, where initiating perennial vegetative stabilization measures is not possible within 7 days after earth-disturbing activities have permanently ceased, final vegetative stabilization measures must be initiated as soon as possible. Until final stabilization is achieved, temporary stabilization measures, such as erosion control blankets with an appropriate seed base and tackifiers, must be used.

E.G.4.2 *Additional Technology-Based Effluent Limits Applicable Only to the Construction of Staging Areas for Structures and Access Roads*. The following technology-based effluent limits apply to authorized discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads, as defined in E.G.3.2(b). These limits supersede the technology-based limits listed in Schedule B and E.G.5 of this sector. These limits do not apply to earth-disturbing activities performed for purposes of mine site preparation (as defined in E.G.3.2(a)).

E.G.4.2.1 *Area of disturbance*. You must minimize the amount of soil exposed during construction activities.

E.G.4.2.2 *Erosion and sediment control design requirements*. You must:

- Design, install and maintain effective erosion and sediment controls to minimize the discharge of pollutants from earth-disturbing activities. Account for the following factors in designing your erosion and sediment controls:
  - The expected amount, frequency, intensity and duration of precipitation;
  - The nature of stormwater discharge and run-on at the site, including factors such as impervious surfaces, slopes and site drainage features;
  - The range of soil particle sizes expected to be present on the site.
- Direct discharges from your stormwater controls to vegetated areas of your site to increase sediment removal and maximize stormwater infiltration, including any natural buffers, unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.
- If any stormwater flow becomes or will be channelized at your site, you must design erosion and sediment controls to control both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.
- If you install stormwater conveyance channels, they must be designed to avoid unstabilized areas on the site and to reduce erosion, unless infeasible. In addition, you must minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

E.G.4.2.3 *Natural Buffers*. For any stormwater discharges from earth-disturbing activities within 50 feet of a waters of the state, you must comply with one of the following compliance alternatives:

1. Maintain a 50-foot undisturbed natural buffer between earth-disturbing activities and the waters of the state; or
2. Provide and maintain less than 50 feet of an undisturbed natural buffer zone and supplement by installing erosion and sediment controls that achieve a modeled or calculated sediment load reduction equivalent to a undisturbed natural buffer zone; or

3. If infeasible to provide and maintain an undisturbed natural buffer zone of any size, implement erosion and sediment controls that achieve a modeled or calculated sediment load reduction equivalent to a 50-foot undisturbed natural buffer zone. Ensure all discharges are treated by control measures prior to entering the natural buffer.
4. Delineate and clearly mark off all natural buffers.

There are exceptions when buffer requirements do not apply:

- The natural buffer has already been eliminated by preexisting development disturbances;
- The disturbance is for a water-dependent structure or earth-disturbing approved under a CWA section 404 permit.

E.G.4.2.4 *Soil or sediment stockpiles*. In addition to the requirements in E.G.4.1.5, you must locate any piles outside of any natural buffers established under E.G.4.2.3.

E.G.4.2.5 *Sediment basins*. In addition to the requirements in E.G.4.1.6, you must locate sediment basins outside of any surface waters and any natural buffers established under E.G.4.2.3, and you must utilize outlet structures that withdraw water from the surface, unless infeasible.

E.G.4.2.6 *Native topsoil preservation*. You must preserve native topsoil removed during clearing, grading, or excavation, unless infeasible. Store topsoil in a manner that will maximize its use in reclamation or final vegetative stabilization (e.g., by keeping the topsoil stabilized with seed or similar measures). This requirement does not apply if the intended function of the disturbed area dictates that topsoil be disturbed or removed.

E.G.4.2.7 *Steep slopes*. You must minimize the disturbance of steep slopes. The permit does not prevent or prohibit disturbance on steep slopes.

Depending on site conditions and needs, disturbance on steep slopes may be necessary (e.g., a road cut in mountainous terrain; for grading steep slopes prior to erecting the mine office). Where steep slope disturbances are necessary, you can minimize the disturbances to steep slopes through the implementation of a number of standard erosion and sediment control practices, such as by phasing disturbances in these areas and using stabilization practices specifically for steep grades.

E.G.4.2.8 *Soil compaction*. Where final vegetative stabilization will occur or where infiltration practices will be installed, you must either restrict vehicle/ equipment use in these areas to avoid soil compaction or use soil conditioning techniques to support vegetative growth. Minimizing soil compaction is not required where compacted soil is integral to the functionality of the site.

E.G.4.2.9 *Dewatering Practices*. You are prohibited from discharging ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults or other similar points of accumulation, unless such waters are first effectively managed by appropriate controls (e.g., sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, or filtration systems).

Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control.

You must also meet the following requirements for dewatering activities:

- Discharge requirements:
  - No discharging visible floating solids or foam;
  - Remove oil, grease and other pollutants from dewatering water via an oil-water separator or suitable filtration device (such as a cartridge filter);

- Utilize vegetated upland areas of the site, to the extent feasible, to infiltrate dewatering water before discharge. In no case shall waters of the state be considered part of the treatment area;
- Implement velocity dissipation devices at all points where dewatering water is discharged;
- Haul backwash water away for disposal or return it to the beginning of the treatment process; and
- Clean or replace the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturers' specifications.

- Treatment chemical restrictions: If you use polymers, flocculants or other chemicals to treat dewatering water, you must comply with the requirements in E.G.4.1.8.

E.G.4.2.10 *Pollution prevention requirements*.

- Prohibited discharges:
  - Turbid discharge or discharge of sediment;
  - Wastewater from washout of concrete;
  - Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other materials;
  - Wastewater from wheel wash;
  - Fuels, oils, or other pollutants used for operation and maintenance of vehicles or equipment;
  - Soaps, solvents, or detergents used in vehicle or equipment washing;
  - Toxic or hazardous substances from a spill or other release.
  - Design and location requirements: Minimize the discharge of pollutants from pollutant sources by:
- *Minimizing exposure*;
  - Using secondary containment, spill kits, or other equivalent measures;
  - Locating pollution sources away from surface waters, storm sewer inlets, and drainageways;
  - Cleaning up spills immediately (do not clean by hosing area down).
- *Pollution prevention requirements for wash waters*: Minimize the discharge of pollutants from equipment and vehicle washing and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
- *Pollution prevention requirements for the storage, handling, and disposal of construction products, materials, and wastes*: Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to stormwater. Minimization of exposure is not required in cases where the exposure to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

E.G.4.2.11 *Site Stabilization requirements for the construction of staging areas for structures and access roads as defined in E.G.3.2(b) (i.e., not applicable to earth-disturbing activities performed for purposes of mine site preparation as defined in E.G.3.2(a)).* You must comply with the following stabilization requirements, except where the intended function of the site accounts for such disturbed earth (e.g., the area of

construction will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- By no later than the end of the next work day after construction work in an area has stopped permanently or temporarily ("temporarily" means the land will be idle for a period of 14 days or more but earth-disturbing activities will resume in the future), immediately initiate stabilization measures;
- If using vegetative measures, by no later than 14 days after initiating stabilization:
  - Seed or plant the area, and provide temporary cover to protect the planted area;
  - Once established, vegetation must be uniform (evenly distributed without large bare areas) perennial vegetation, which provides 70 percent or more coverage based on density of native vegetation.
- If using non-vegetative stabilization, by no later than 14 days after initiating stabilization:
  - Install or apply all non-vegetative measures;
  - Cover all areas of exposed soil.

  Note: For the purposes of this permit, DEQ will consider any of the following types of activities to constitute the initiation of stabilization: 1. Prepping the soil for vegetative or non-vegetative stabilization; 2. Applying mulch or other non-vegetative product to the exposed area; 3. Seeding or planting the exposed area; 4. Starting any of the activities in #1 – 3 on a portion of the area to be stabilized, but not on the entire area; and 5. Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

Exceptions:

- Arid, semi-arid or drought-stricken areas:
  - Within 14 days of stopping construction work in an area, install any necessary non-vegetative stabilization measures;
  - Initiate vegetative stabilization as soon as conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Cover planted or seeded area with bio or photo degradable erosion controls designed to prevent erosion without active maintenance.
- Sites affected by severe storm events or other unforeseen circumstances:
  - Initiate vegetative stabilization as soon conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Add a suitable interim measures (such as mulch or bark) are in place if 70 percent coverage of vegetation is expected to expand.

E.G.4.3 *Water Quality-Based Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.* The following water quality-based limits apply to earth-disturbing activities conducted prior to active mining activities defined in E.G.3.2(a) and E.G.3.2(b), in addition to the water quality-based standards in Schedule A.3.

Stricter requirements apply if your site will discharge to an impaired waters that are listed for turbidity or sedimentation or have an EPA-approved TMDL for sedimentation or turbidity:

- More rapid stabilization of exposed areas: Complete initial stabilization activities within 7 days of stopping earth-disturbing work.

- More frequent site inspections: Once every 7 days and within 24 hours of a storm event of 0.25 inches or greater.

E.G.4.4 *Inspection Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.* The following requirements supersede the inspection requirements in Schedule B and E.G.7 for earth-disturbing activities conducted prior to active mining activities defined in E.G.3.2(a) and E.G.3.2(b).

E.G.4.4.1 *Inspection frequency*

- At least once every 7 calendar days, or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.

Note:

- Inspections only required during working hours;
- Inspections not required during unsafe conditions; and
- If you choose to inspect once every 14 days, you must have a method for measuring rainfall amount on site (either rain gauge or representative weather station)

Note: To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that day.
Note: You are required to specify in your SWPCP which schedule you will be following.
Note: "Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

E.G.4.4.2 *Reductions in inspection frequency*.

- Stabilized areas: You may reduce the frequency of inspections to once per month in any area of your site where stabilization has occurred pursuant to E.G.4.1.9 or E.G.4.2.11.
- Arid, semi-arid, and drought stricken areas: If earth-disturbing activities are occurring during the seasonally dry period or during a period in which drought is predicted to occur, you may reduce inspections to once per month and within 24 hours of a 0.25 inch storm event.
- Frozen conditions: You may temporarily suspend or reduce inspections to once per month until thawing conditions occur if frozen conditions are continuous and disturbed areas have been stabilized. For extreme conditions in remote areas, e.g., where transit to the site is perilous/restricted or temperatures are routinely below freezing, you may suspend inspections until the conditions are conducive to safe access, and more frequent inspections can resume.

E.G.4.4.3 *Areas to be inspected*. You must at a minimum inspect the all of the following areas:

- Disturbed areas;

- Stormwater controls and pollution prevention measures;
- Locations where stabilization measures have been implemented;
- Material, waste, borrow, or equipment storage and maintenance areas;
- Areas where stormwater flows;
- Points of discharge.

E.G.4.4.4 *What to check for during inspections*. At a minimum you must check:

- Whether all stormwater controls are installed, operational and working as intended;
- Whether any new or modified stormwater controls are needed;
- For conditions that could lead to a spill or leak;
- For visual signs of erosion/sedimentation at points of discharge.
- If a discharge is occurring, check:
- The quality and characteristics of the discharge;
- Whether controls are operating effectively.

E.G.4.4.5 *Inspection report*. Within 24 hours of an inspection, complete a report that includes:

- Inspection date;
- Name and title of inspector(s);
- Summary of inspection findings;
- Rainfall amount that triggered the inspection (if applicable);
- If it was unsafe to inspect a portion of the site, include documentation of the reason and the location(s);
- Each inspection report must be signed;
- Keep a current copy of all reports at the site or at an easily accessible location.

E.G.5 Technology-Based Effluent Limits for Active Mining Activities

Note: These requirements do not apply for any discharges from earth-disturbing activities conducted prior to active mining as defined in E.G.3.2(a) or E.G.3.2(b).

E.G.5.1 *Employee training*. (See also Schedule A.1.j) Conduct employee training at least annually at active and temporarily inactive facilities.

E.G.5.2 *Stormwater controls.* Apart from the control measures you implement to meet Schedule A technology-based effluent limits, where necessary to minimize pollutant discharges in stormwater, implement the following control measures at your site. The potential pollutants identified in E.G.6.3 shall determine the priority and appropriateness of the control measures selected. For mines subject to dust control requirements under DEQ or county air quality permits, provided the requirements are equivalent, compliance with such air permit dust requirements shall constitute compliance with the dust control effluent limit in Schedule A.1.f.
Stormwater diversions: Divert stormwater away from potential pollutant sources through implementation of control measures such as the following, where determined to be feasible including: interceptor or diversion controls (e.g., dikes, swales, curbs, berms); pipe slope drains; subsurface drains; conveyance systems (e.g., channels or gutters, open-top box culverts, and waterbars; rolling dips and road sloping; roadway surface water deflector and culverts); or their equivalents.
Capping: When capping is necessary to minimize pollutant discharges in stormwater, identify the source being capped and the material used to construct the cap.
Treatment: If treatment of stormwater (e.g., chemical or physical systems, oil - water separators, artificial wetlands) is necessary to protect water quality, describe the type and location of treatment used. Passive and/or active treatment of stormwater discharge is encouraged, where

feasible. Treated stormwater may be discharged as a stormwater source regulated under this permit provided the discharge is not combined with discharges subject to effluent limitation guidelines for the Ore Mining and Dressing Point Source Category (40 CFR Part 440).

E.G.5.3 *Discharge testing.* Test or evaluate all off-site discharge points covered under this permit for the presence of specific mining-related but unauthorized non-stormwater discharges such as seeps or adit discharges, or discharges subject to effluent limitations guidelines (40 CFR Part 440), mine drainage or process water. Alternatively (if applicable), you may keep a certification with your SWPCP consistent with E.G.6.6.

E.G.6 Additional SWPCP Requirements for Mining Operations

Note: The requirements in E.G.6 are not applicable to inactive metal mining facilities. Some requirements may be already a requirement under Schedule A.10.

E.G.6.1 *Nature of industrial activities.* Briefly document in your SWPCP the mining and associated activities that can potentially affect the stormwater discharges covered by this permit, including a general description of the location of the site relative to major transportation routes and communities.

E.G.6.2 *Site map.* Document in your SWPCP the locations of the following (as appropriate): mining or milling site boundaries; access and haul roads; outline of the drainage areas of each stormwater discharge point within the facility with indications of the types of discharges from the drainage areas; location(s) of all permitted discharges covered under an individual NPDES permit; outdoor equipment storage, fueling, and maintenance areas; materials handling areas; outdoor manufacturing, outdoor storage, and material disposal areas; outdoor chemicals and explosives storage areas; overburden, materials, soils, or waste storage areas; location of mine drainage (where water leaves mine) or other process water; tailings piles and ponds (including proposed ones); heap leach pads; off-site points of discharge for mine drainage and process water; surface waters; boundary of tributary areas that are subject to effluent limitations guidelines; and location(s) of reclaimed areas.

E.G.6.3 *Potential pollutant sources*. For each area of the mine or mill site where stormwater discharges associated with industrial activities occur, identify the types of pollutants (e.g., heavy metals, sediment) likely to be present in significant amounts. Consider these factors: the mineralogy of the ore and waste rock (e.g., acid forming); toxicity and quantity of chemicals used, produced, or discharged; the likelihood of contact with stormwater; vegetation of site (if any); and history of significant leaks or spills of toxic or hazardous pollutants. Also include a summary of any existing ore or waste rock or overburden characterization data and test results for potential generation of acid rock. If any new data is acquired due to changes in ore type being mined, update your SWPCP with this information.

E.G.6.4 *Documentation of control measures.* Document all control measures that you implement consistent with E.G.5.2. If control measures are implemented or planned but are not listed in E.G.5.2 (e.g., substituting a less toxic chemical for a more toxic one), include descriptions of them in your SWPCP. If you are in compliance with dust control requirements under state or county air quality permits, you must include (or summarize, as necessary) what the state or county air quality permit dust control requirements are and how you've achieved compliance with them.

E.G.6.5 *Employee training.* All employee training(s) must be documented in the SWPCP.

E.G.6.6 *Certification of permit coverage for commingled non-stormwater discharges*. If you are able, consistent with E.G.5.3 above, to certify that a particular discharge composed of commingled stormwater and non-stormwater is covered under a separate NPDES permit, and that permit subjects the non-stormwater portion to effluent limitations prior to any commingling, retain

such certification with your SWPCP. This certification must identify the non-stormwater discharges, the applicable NPDES permit(s), the effluent limitations placed on the non-stormwater discharge by the permit(s), and the points at which the limitations are applied.

E.G.7 Additional Inspection Requirements

Except for earth-disturbing activities conducted prior to active mining activities as defined in E.G.3.2(a) and E.G.3.2(b), which are subject to E.G.4.4, inspect sites at least monthly unless adverse weather conditions make the site inaccessible. See E.G.8.4 for inspection requirements for inactive and unstaffed sites.

E.G.8 Additional Inspection Requirements for Inactive Operations

Once every three years an annual inspection must be performed by a Registered Professional Engineer.

E.G.9 Monitoring and Reporting Requirements. (See also Schedule B)

Note: There are no monitoring and reporting or impaired waters monitoring requirements for inactive and unstaffed sites.

E.G.9.1 Benchmark Monitoring for Active Copper Ore Mining and Dressing Facilities. Table E.G-1 identifies benchmarks that apply to active copper ore mining and dressing facilities. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.G-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Active Copper Ore Mining and Dressing Facilities (SIC code 1021)	Nitrate plus Nitrite Nitrogen	10 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L
	Total Suspended Solids (TSS)	Statewide benchmark

E.G.9.2 *Benchmark Monitoring Requirements for Discharges From Waste Rock and Overburden Piles at Active Metal Mining Facilities*. For discharges from waste rock and overburden piles, perform benchmark monitoring once in the first year for the parameters listed in Table E.G-2, and twice annually in all subsequent years of coverage under this permit for any parameters for which the benchmark has been exceeded. You are also required to conduct analytic monitoring for the parameters listed in Table E.G-3 in accordance with the requirements in E.G.8.3. DEQ may also notify you that you must perform additional monitoring to accurately characterize the quality and quantity of pollutants discharged from your waste rock and overburden piles.

Table E.G-2

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Iron Ores; Copper Ores; Lead and Zinc Ores; Gold and Silver Ores; Ferroalloy Ores, Except Vanadium; and Miscellaneous Metal Ores (SIC codes 1011, 1021, 1031, 1041, 1044, 1061, 1081, 1094, 1099)	Turbidity	50 NTU
	pH	Statewide benchmark
	Total Antimony	9.0 mg/L
	Total Arsenic freshwater	0.34 mg/L
	Total Arsenic saltwater	0.069 mg/L
	Total Beryllium	0.13 mg/L
	Total Cadmium freshwater	See Table 10
	Total Cadmium saltwater	0.040 mg/L
	Total copper freshwater	Statewide benchmark
	Total copper saltwater	0.025 mg/L
	Total lead freshwater	Statewide benchmark
	Total lead saltwater	1.10 mg/L
	Total Mercury freshwater	0.0024 mg/L
	Total Mercury saltwater	0.0021 mg/L
	Total Nickel freshwater	See Table 10
	Total Nickel saltwater	0.074 mg/L
	Total Selenium freshwater	0.013 mg/L
	Total Selenium saltwater	0.29 mg/L
	Total Silver freshwater	See Table 10
	Total Silver saltwater	0.0019
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L

E.G.9.3 *Additional Analytic Monitoring Requirements for Discharges From Waste Rock and Overburden Piles at Active Metal Mining Facilities*. In addition to the monitoring required in E.G.8.2 for discharges from waste rock and overburden piles, you must also conduct monitoring for additional parameters based on the type of ore you mine at your site. The schedule for monitoring is the same as E.G.9.2: once the first year for all parameters in Table E.G.3 (except radium and uranium) and twice annually in all subsequent years of coverage for any parameters

monitoring results have exceeded the benchmarks. Where a parameter in Table E.G-3 is the same as a pollutant you are required to monitor for in Table E.G-2 (i.e., for all of the metals), you must use the corresponding benchmark in Table E.G-2 and you may use any monitoring results conducted for E.G.8.2 to satisfy the monitoring requirement for that parameter for E.G.8.3. For radium and uranium, which do not have corresponding benchmarks in Table E.G-2, there are no applicable benchmarks. The frequency of monitoring for radium and uranium is quarterly for the first four quarters after which no monitoring is required.

Table E.G-3 Additional Monitoring Requirements for Discharges from Waste Rock and Overburden Piles

Supplemental Requirements			
Type of Ore Mined	**Pollutants of Concern**		
	Total Suspended Solids (TSS)	**pH**	**Metals, Total**
Tungsten Ore	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Zinc (H)
Nickel Ore	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Zinc (H)
Aluminum Ore	X	X	Iron
Mercury Ore	X	X	Nickel (H)
Iron Ore	X	X	Iron (Dissolved)
Platinum Ore			Cadmium (H), Copper, Mercury, Lead (H), Zinc (H)
Titanium Ore	X	X	Iron, Nickel (H), Zinc (H)
Vanadium Ore	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Zinc (H)
Molybdenum	X	X	Arsenic, Cadmium (H), Copper, Lead (H), Mercury, Zinc (H)
Uranium, Radium, and Vanadium Ore	X	X	Chemical Oxygen Demand, Arsenic, Radium (Dissolved and Total), Uranium, Zinc (H)

Note: An "X" indicated for TSS and/or pH means that you are required to monitor for those parameters. (H) indicates that hardness must also be measured when this pollutant is measured.

E.G.9.4 *Inactive and Unstaffed Sites – Conditional Exemption from No Exposure Requirements for Monthly Visual Assessments and Routine Facility Inspections*. As a Sector G facility, if you are seeking to exercise a monitoring or inspection waiver, you are conditionally exempt from the requirement to certify that "there are no industrial materials or activities exposed to stormwater" in Schedule B.9.a.iv of the permit. This exemption is conditioned on the following:

- If circumstances change and your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the monitoring and inspection requirements; and
- DEQ retains the authority to revoke this exemption and/or the monitoring waiver where it is determined that the discharge causes, has a reasonable potential to cause, or contributes to an instream excursion above an applicable water quality standard, including designated uses.

Table E.G-4 Applicability of the Permit to Stormwater Discharge From Active Mining and Dressing Sites, Temporarily Inactive Sites, and Sites Undergoing Reclamation

Discharge/Source of Discharge	Note/Comment
Piles	
Waste rock/overburden	If composed entirely of stormwater and not combining with mine drainage. See note below.
Topsoil	--
Roads constructed of waste rock or spent ore	
Onsite haul roads	If composed entirely of stormwater and not combining with mine drainage. See note below.
Offsite haul and access roads	--
Roads not constructed of waste rock or spent ore	
Onsite haul roads	Except if mine drainage is used for dust control
Offsite haul and access roads	--
Milling/concentrating	
Discharge from tailings dams and dikes when constructed of waste rock/tailings	Except if process fluids are present and only if composed entirely of stormwater and not combining with mine drainage. See Note below.
Discharge from tailings dams/dikes when not constructed of waste rock and tailings	Except if process fluids are present
Concentration building	If stormwater only and no contact with piles
Mill site	If stormwater only and no contact with piles
Ancillary areas	
Office and administrative building and housing	If mixed with stormwater from the industrial area
Chemical storage area	--
Docking facility	Except if excessive contact with waste product that would otherwise constitute mine drainage
Explosive storage	--
Fuel storage (oil tanks/coal piles)	--
Vehicle and equipment maintenance area/building	--
Parking areas	But coverage unnecessary if only employee and visitor-type parking
Power plant	
Truck wash area	Except when excessive contact with waste product that would otherwise constitute mine drainage
Reclamation-related areas	
Any disturbed area (unreclaimed)	Only if not in active mining area
Reclaimed areas released from reclamation requirements prior to Dec. 17, 1990	--
Partially/inadequately reclaimed areas or areas not released from reclamation requirements	--

Note: Stormwater discharge from these sources are subject to the NPDES program for stormwater unless mixed with discharges subject to 40 CFR Part 440 that are regulated by another permit prior to mixing. Non-stormwater discharges from these sources are subject to NPDES permitting and may be subject to the effluent limitation guidelines under 40 CFR Part 440. Discharges from overburden/waste rock and overburden/waste rock-related areas are not subject to 40 CFR Part 440 unless: (1) it drains naturally (or is intentionally diverted) to a point source; and (2) combines with "mine drainage" that is otherwise regulated under the Part 440 regulations. For such sources, coverage under this permit would be available if the discharge composed entirely of stormwater does not combine with other sources of mine drainage that are not subject to 40 CFR Part 440, as well as meeting other eligibility criteria contained in Part 1.1 of the permit. Operators bear the initial responsibility for determining the applicable technology-based standard for such discharges.

E.G.10. Termination of Permit Coverage

E.G.10.1 *Termination of Permit Coverage for Sites Reclaimed After December 17, 1990.* A site or a portion of a site that has been released from applicable state or federal reclamation requirements after December 17, 1990, is no longer required to maintain coverage under this permit. If the site or portion of a site reclaimed after December 17, 1990, was not subject to reclamation requirements, the site or portion of the site is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed as defined in E.G.3.3.

E.G.10.2 *Termination of Permit Coverage for Sites Reclaimed Before December 17, 1990.* A site or portion of a site that was released from applicable state or federal reclamation requirements before December 17, 1990, or that was otherwise reclaimed before December 17, 1990, is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed. A site or portion of a site is considered to have been reclaimed if: (1) stormwater discharge that comes into contact with raw materials, intermediate byproducts, finished products, and waste products does not have the potential to cause or contribute to violations of state water quality standards, (2) soil disturbing activities related to mining at the sites or portion of the site have been completed, (3) the site or portion of the site has been stabilized to minimize soil erosion, and (4) as appropriate depending on location, size, and the potential to contribute pollutants to stormwater discharges, the site or portion of the site has been revegetated, will be amenable to natural revegetation, or will be left in a condition consistent with the post-mining land use.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector H – Coal Mines and Coal Mining-Related Facilities

E.H.1 Definitions

The following definitions are not intended to supersede the definitions of active and inactive mining facilities established by 40 CFR 122.26(b)(14)(iii).

E.H.1.1 *Mining operations* - For this permit, mining operations are grouped into two distinct categories, with distinct effluent limits and requirements applicable to each: a) earth-disturbing activities conducted prior to active mining activities); and b) active mining activities, which includes reclamation. "Mining operations" can occur at both inactive mining facilities and temporarily inactive mining facilities.

E.H.1.2 *Earth-disturbing activities conducted prior to active mining activities* – Consists of two classes of earth-disturbing (i.e., clearing, grading and excavation) activities:
a. activities performed for purposes of mine site preparation, including: cutting new rights of way (except when related to access road construction); providing access to a mine site for vehicles and equipment (except when related to access road construction); other earth disturbances associated with site preparation activities on any areas where active mining activities have not yet commenced (e.g., for heap leach pads, waste rock facilities, tailings impoundments, wastewater treatment plants); and
b. construction of staging areas to prepare for erecting structures such as to house project personnel and equipment, mill buildings, etc., and construction of access roads. Earth-disturbing activities associated with the construction of staging areas and the construction of access roads conducted prior to active mining are considered to be "construction" and have additional technology based effluent limits in E.H.2.2.

E.H.1.3 *Active mining activities* – Activities related to the extraction, removal or recovery, and preparation of coal; removal of overburden and waste rock to expose mineable minerals; and site reclamation and closure activities. All such activities occur within the "active mining area." Reclamation involves activities undertaken, in compliance with applicable mined land reclamation requirements, to return the land to an appropriate post-mining contour and land use in order to meet applicable federal and state reclamation requirements. In addition, once earth-disturbing activities conducted prior to active mining activities have ceased and all related requirements in E.H.2 have been met, and a well-delineated "active mining area" has been established, all activities (including any clearing, grading, and excavation) that occur within the active mining area are "active mining activities."

E.H.1.4 *Active mining area* – A place where work or other activity related to the extraction, removal or recovery of coal is being conducted, except, with respect to surface mines, any area of land on or in which grading has been completed to return the earth to desired contour and reclamation work has begun.
Note: Earth-disturbing activities described in the definition in E.H.1.2 that occur on areas outside the active mining area (e.g., for expansion of the mine into undeveloped territory) are considered "earth-disturbing conducted prior to active mining activities", and must comply with the requirements in E.H.2.

E.H.1.5 *Inactive coal mining facility* – A site or portion of a site where coal mining and/or milling occurred in the past but there are no active mining operations occurring as defined above, and where the inactive portion is not covered by an active mining permit issued by the applicable state or federal agency. An inactive coal mining facility has an identifiable owner / operator. Sites where mining claims are being maintained prior to disturbances associated with the

extraction, beneficiation, or processing of mined materials and sites where minimal activities are undertaken for the sole purpose of maintaining a mining claim are not considered either active or inactive mining facilities and do not require an NPDES industrial stormwater permit.

E.H.1.6 *Temporarily inactive coal mining facility* – A site or portion of a site where coal mining and/or milling occurred in the past but currently are not being actively undertaken, and the facility is covered by an active mining permit issued by the applicable state or federal agency.

E.H.2 Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities Stormwater discharges from earth-disturbing activities conducted prior to active mining activities (defined in E.H.1.2) are covered under this permit. For such earth-disturbing activities, you must comply with all applicable requirements in technology-based effluent limits in E.H.3 and Schedule A, the inspection and monitoring requirements in Schedule B and in E.H.5 and E.H.6 Authorized discharges from areas where earth-disturbing activities have ceased and stabilization as specified in E.H.2.1.9 or E.H.2.2.11, where appropriate, has been completed (stabilization is not required for areas where active mining activities will occur), are no longer subject to the E.H.2 requirements. At such time, authorized discharges become subject to all other applicable requirements in the permit, including the technology based effluent limits in limits in E.H.3 and Schedule A, the inspection and monitoring requirements in Schedule B and in E.H.5 and E.H.6.

E.H.2.1 *Technology-Based Effluent Limits Applicable to All Earth-Disturbing Activities Conducted Prior to Active Mining Activities*. The following technology-based effluent limits apply to authorized discharges from all earth-disturbing activities conducted prior to active mining activities defined in E.H.1.2(a) and E.H.1.2(b). These limits supersede the technology-based effluent limits listed in Schedule A.1.

E.H.2.1.1 *Erosion and sediment control installation requirements*.

- By the time construction activities commence, install and make operational downgradient sediment controls, unless this timeframe is infeasible. If infeasible you must install and make such controls operational as soon as practicable or as soon as site conditions permit.
- All other stormwater controls described in the SWPCP must be installed and made operational as soon as conditions on each portion of the site allows.

E.H.2.1.2 *Erosion and sediment control maintenance requirements*. You must:

- Ensure that all erosion and sediment controls remain in effective operating condition.
- Wherever you determine that a stormwater control needs maintenance to continue operating effectively, initiate efforts to fix the problem immediately after its discovery, and complete such work by the end of the next work day.
- When a stormwater control must be replaced or significantly repaired, complete the work within 7 days, unless infeasible. If 7 days is infeasible, you must complete the installation or repair as soon as practicable.

E.H.2.1.3 *Perimeter controls*. You must:

- Install sediment controls along those perimeter areas of your disturbed area that will receive stormwater, except where site conditions prevent the use of such controls (in which case, maximize their installation to the extent practicable).
- Remove sediment before it accumulates to one-half of the above-ground height of any perimeter control.

E.H.2.1.4 *Sediment track-out*. For construction vehicles and equipment exiting the site directly onto paved roads, you must:

- Use appropriate stabilization techniques to minimize sediment track-out from vehicles and equipment prior to exit;
- Use additional controls to remove sediment from vehicle and equipment tires prior to exit, where necessary;
- Remove sediment that is tracked out onto paved roads by end of the work day.

Note: DEQ recognizes that some fine grains may remain visible on the surfaces of off-site streets, other paved areas, and sidewalks even after you have implemented sediment removal practices. Such "staining" is not a violation of E.H.2.1.4.

E.H.2.1.5 *Soil or sediment stockpiles*. You must:

- Minimize erosion of stockpiles from stormwater and wind via temporary cover, if feasible.
- Prevent up-slope stormwater flows from causing erosion of stockpiles (e.g., by diverting flows around the stockpile).
- Minimize sediment from stormwater that runs off of stockpiles, using sediment controls (e.g., a sediment barrier or downslope sediment control).

E.H.2.1.6 *Sediment basins*. If you intend to install a sediment basin to treat stormwater from your earth-disturbing activities, you must:

- Provide storage for either (1) the 2-year, 24-hour storm, or (2) 3,600 cubic feet per acre drained.
- Prevent erosion of (1) basin embankments using stabilization controls (e.g., erosion control blankets), and (2) the inlet and outlet points of the basin using erosion controls and velocity dissipation devices.

E.H.2.1.7 *Minimize dust*. You must minimize the generation of dust through the appropriate application of water or other dust suppression techniques that minimize pollutants being discharged into surface waters.

E.H.2.1.8 *Restrictions on use of treatment chemicals*. If you intend to use sediment treatment chemicals at your site, you are subject to the following minimum requirements:

- Use conventional erosion and sediment controls prior to and after application of chemicals;
- Select chemicals suited to soil type, and expected turbidity, pH, flow rate;
- Minimize the discharge risk from stored chemicals;
- Comply with state/local requirements;
- Use chemicals in accordance with good engineering practices and specifications of chemical supplier;
- Ensure proper training;
- Provide proper SWPCP documentation.

If you plan to use cationic treatment chemicals, you are ineligible for coverage under this permit, unless you notify your applicable DEQ regional office or agent in advance and the DEQ regional office or agent authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

E.H.2.1.9 *Site stabilization requirements for earth-disturbing activities performed for purposes of mine site preparation as defined in E.H.1.2(a) (i.e., not applicable to construction*

of staging areas for structures and access roads as defined in E.H.1.2(b)). You must comply with the following stabilization requirements except where the intended function of the site accounts for such disturbed earth (e.g., the earth disturbances will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- *Temporary stabilization of disturbed areas*. Stabilization measures must be initiated immediately in portions of the site where earth-disturbing activities performed for purposes of mine site preparation (as defined in E.H.1.2(a)) have temporarily ceased, but in no case more than 14 days after such activities have temporarily ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 14 days after earth-disturbing activities performed for purposes of mine site preparation has temporarily ceased, temporary vegetative stabilization measures must be initiated as soon as practicable. Until temporary vegetative stabilization is achieved, interim measures such as erosion control blankets with an appropriate seed base and tackifiers must be employed. In areas of the site where earth-disturbing activities performed for purposes of mine site preparation have permanently ceased prior to active mining, temporary stabilization measures must be implemented to minimize mobilization of sediment or other pollutants until active mining activities commence.
- *Final stabilization of disturbed areas.* Stabilization measures must be initiated immediately where earth-disturbing activities performed for purposes of mine site preparation (as defined in E.H.1.2(a)) have permanently ceased, but in no case more than 7 days after the earth-disturbing activities have permanently ceased. In arid, semi-arid, and drought-stricken areas, or in areas subject to snow or freezing conditions, where initiating perennial vegetative stabilization measures is not possible within 7 days after earth-disturbing activities have permanently ceased, final vegetative stabilization measures must be initiated as soon as possible. Until final stabilization is achieved, temporary stabilization measures, such as erosion control blankets with an appropriate seed base and tackifiers, must be used.

E.H.2.2 *Additional Technology-Based Effluent Limits Applicable Only to the Construction of Staging Areas for Structures and Access Roads*. The following technology-based effluent limits apply to authorized discharges from earth-disturbing activities associated with the construction of staging areas and the construction of access roads, as defined in E.H.1.2(b). These limits supersede the technology-based limits listed in Schedule A and E.H.3. These limits do not apply to earth-disturbing activities performed for purposes of mine site preparation (as defined in E.H.1.2(a)).

E.H.2.2.1 *Area of disturbance*. You must minimize the amount of soil exposed during construction activities.

E.H.2.2.2 *Erosion and sediment control design requirements*. You must:

- Design, install and maintain effective erosion and sediment controls to minimize the discharge of pollutants from construction activities. Account for the following factors in designing your erosion and sediment controls:
  - The expected amount, frequency, intensity and duration of precipitation;

- The nature of stormwater discharge and run-on at the site, including factors such as impervious surfaces, slopes and site drainage features;
- The range of soil particle sizes expected to be present on the site.

- Direct discharges from your stormwater controls to vegetated areas of your site to increase sediment removal and maximize stormwater infiltration, including any natural buffers, unless infeasible. Use velocity dissipation devices if necessary to prevent erosion when directing stormwater to vegetated areas.
- If any stormwater flow becomes or will be channelized at your site, you must design erosion and sediment controls to control both peak flowrates and total stormwater volume to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.
- If you install stormwater conveyance channels, they must be designed to avoid unstabilized areas on the site and to reduce erosion, unless infeasible. In addition, you must minimize erosion of channels and their embankments, outlets, adjacent streambanks, slopes, and downstream waters during discharge conditions through the use of erosion controls and velocity dissipation devices within and along the length of any constructed stormwater conveyance channel, and at any outlet to provide a non-erosive flow velocity.

E.H.2.2.3 *Natural Buffers*. For any stormwater discharges from earth-disturbing activities within 50 feet of a waters of the state, you must comply with one of the following compliance alternatives:

1. Maintain a 50-foot undisturbed natural buffer between earth-disturbing activities and the waters of the state; or
2. Provide and maintain less than 50 feet of an undisturbed natural buffer zone and supplement by installing erosion and sediment controls that achieve a modeled or calculated sediment load reduction equivalent to a undisturbed natural buffer zone; or
3. If infeasible to provide and maintain an undisturbed natural buffer zone of any size, implement erosion and sediment controls that achieve a modeled or calculated sediment load reduction equivalent to a 50-foot undisturbed natural buffer zone. Ensure all discharges are treated by control measures prior to entering the natural buffer.
4. There are exceptions when buffer requirements do not apply:

- The natural buffer has already been eliminated by preexisting development disturbances;
- The disturbance is for a water-dependent structure or earth-disturbing approved under a CWA section 404 permit.

E.H.2.2.4 *Soil or sediment stockpiles*. In addition to the requirements in E.H.2.1.5, you must locate any piles outside of any natural buffers established under E.H.2.2.3.

E.H.2.2.5 *Sediment basins*. In addition to the requirements in E.H.2.1.6, you must locate sediment basins outside of any surface waters and any natural buffers established under E.H.2.2.3, and you must utilize outlet structures that withdraw water from the surface, unless infeasible.

E.H.2.2.6 *Native topsoil preservation*. You must preserve native topsoil removed during clearing, grading, or excavation, unless infeasible. Store topsoil in a manner that will maximize its use in reclamation or final vegetative stabilization (e.g., by keeping the

topsoil stabilized with seed or similar measures). This requirement does not apply if the intended function of the disturbed area dictates that topsoil be disturbed or removed.

E.H.2.2.7 *Steep slopes*. You must minimize the disturbance of steep slopes. The permit does not prevent or prohibit disturbance on steep slopes.

Depending on site conditions and needs, disturbance on steep slopes may be necessary (e.g., a road cut in mountainous terrain; for grading steep slopes prior to erecting the mine office). Where steep slope disturbances are necessary, you can minimize the disturbances to steep slopes through the implementation of a number of standard erosion and sediment control practices, such as by phasing disturbances in these areas and using stabilization practices specifically for steep grades.

E.H.2.2.8 *Soil compaction*. Where final vegetative stabilization will occur or where infiltration practices will be installed, you must either restrict vehicle/ equipment use in these areas to avoid soil compaction or use soil conditioning techniques to support vegetative growth. Minimizing soil compaction is not required where compacted soil is integral to the functionality of the site.

E.H.2.2.9 *Dewatering Practices*. You are prohibited from discharging ground water or accumulated stormwater that is removed from excavations, trenches, foundations, vaults or other similar points of accumulation, unless such waters are first effectively managed by appropriate controls (e.g., sediment basins or sediment traps, sediment socks, dewatering tanks, tube settlers, weir tanks, or filtration systems). Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control.

You must also meet the following requirements for dewatering activities:

- Discharge requirements:
  - No discharging visible floating solids or foam;
  - Remove oil, grease and other pollutants from dewatering water via an oil-water separator or suitable filtration device (such as a cartridge filter);
  - Utilize vegetated upland areas of the site, to the extent feasible, to infiltrate dewatering water before discharge. In no case shall waters of the state be considered part of the treatment area;
  - Implement velocity dissipation devices at all points where dewatering water is discharged;
  - Haul backwash water away for disposal or return it to the beginning of the treatment process; and
  - Clean or replace the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturers' specifications.
- Treatment chemical restrictions: If you use polymers, flocculants or other chemicals to treat dewatering water, you must comply with the requirements in E.H.2.1.8.

E.H.2.2.10 *Pollution prevention requirements*.

- Prohibited discharges:
  - Turbid discharge or discharge of sediment;
  - Wastewater from washout of concrete;

- Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other materials;
- Wastewater from wheel wash;
- Fuels, oils, or other pollutants used for operation and maintenance of vehicles or equipment;
- Soaps, solvents, or detergents used in vehicle or equipment washing;
- Toxic or hazardous substances from a spill or other release.
- Design and location requirements: Minimize the discharge of pollutants from pollutant sources by:

- Design and location requirements: Minimize the discharge of pollutants from pollutant sources by:
  - Minimizing exposure;
  - Using secondary containment, spill kits, or other equivalent measures;
  - Locating pollution sources away from surface waters, storm sewer inlets, and drainageways;
  - Cleaning up spills immediately (do not clean by hosing area down).
- Pollution prevention requirements for wash waters: Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- Pollution prevention requirements for the storage, handling, and disposal of construction products, materials, and wastes: Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, and other materials present on the site to stormwater. Minimization of exposure is not required in cases where the exposure to stormwater will not result in a discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

E.H.2.2.11 *Site Stabilization requirements for the construction of staging areas for structures and access roads as defined in E.H.1.2(b) (i.e., not applicable to earth-disturbing activities performed for purposes of mine site preparation as defined in E.H.1.2(a)).* You must comply with the following stabilization requirements, except where the intended function of the site accounts for such disturbed earth (e.g., the area of construction will become actively mined, or the controls implemented at the active mining area effectively control the disturbance):

- By no later than the end of the next work day after construction work in an area has stopped permanently or temporarily ("temporarily" means the land will be idle for a period of 14 days or more but earth-disturbing activities will resume in the future), immediately initiate stabilization measures;
- If using vegetative measures, by no later than 14 days after initiating stabilization:
  - Seed or plant the area, and provide temporary cover to protect the planted area;
  - Once established, vegetation must be uniform (evenly distributed without large bare areas) perennial vegetation, which provides 70 percent or more coverage based on density of native vegetation.
- If using non-vegetative stabilization, by no later than 14 days after initiating stabilization:

- Install or apply all non-vegetative measures;
- Cover all areas of exposed soil.

Note: For the purposes of this permit, DEQ will consider any of the following types of activities to constitute the initiation of stabilization: 1. Prepping the soil for vegetative or non-vegetative stabilization; 2. Applying mulch or other non-vegetative product to the exposed area; 3. Seeding or planting the exposed area; 4. Starting any of the activities in #1 – 3 on a portion of the area to be stabilized, but not on the entire area; and 5. Finalizing arrangements to have stabilization product fully installed in compliance with the applicable deadline for completing stabilization.

Exceptions:

- Arid, semi-arid or drought-stricken areas:
  - Within 14 days of stopping construction work in an area, install any necessary non-vegetative stabilization measures;
  - Initiate vegetative stabilization as soon as conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Cover planted or seeded area with bio or photo degradable erosion controls designed to prevent erosion without active maintenance.
- Sites affected by severe storm events or other unforeseen circumstances:
  - Initiate vegetative stabilization as soon conditions on the site allow;
  - Document the schedule that will be followed for initiating and completing vegetative stabilization;
  - Add a suitable interim measures (such as mulch or bark) are in place if 70 percent coverage of vegetation is expected to expand.

E.H.2.3 *Water Quality-Based Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following water quality-based limits apply to earth-disturbing activities conducted prior to active mining activities defined in E.H.1.2(a) and E.H.1.2(b), in addition to the water quality standards in Schedule A.3.

Stricter requirements apply if your site will discharge to an impaired waters that are listed for turbidity or sedimentation or have an EPA-approved TMDL for sedimentation or turbidity:

- More rapid stabilization of exposed areas: Complete initial stabilization activities within 7 days of stopping earth-disturbing work.
- More frequent site inspections: Once every 7 days and within 24 hours of a storm event of 0.25 inches or greater.

E.H.2.4 *Inspection Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.*

The following requirements supersede the inspections requirements in Schedule B and E.H.7 of the permit for earth-disturbing activities conducted prior to active mining activities defined in E.H.1.2(a) and E.H.1.2(b).

E.H.2.4.1 *Inspection Frequency*

- At least once every 7 calendar days, or
- Once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.
  - Note:
  - Inspections only required during working hours;

- Inspections not required during unsafe conditions; and
- If you choose to inspect once every 14 days, you must have a method for measuring rainfall amount on site (either rain gauge or representative weather station)

Note: To determine if a storm event of 0.25 inches or greater has occurred on your site, you must either keep a properly maintained rain gauge on your site, or obtain the storm event information from a weather station that is representative of your location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, you must record the total rainfall measured for that.

Note: You are required to specify in your SWPCP which schedule you will be following.

Note: "Within 24 hours of the occurrence of a storm event" means that you are required to conduct an inspection within 24 hours once a storm event has produced 0.25 inches, even if the storm event is still continuing. Thus, if you have elected to inspect bi-weekly in and there is a storm event at your site that continues for multiple days, and each day of the storm produces 0.25 inches or more of rain, you are required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the end of the storm.

E.H.2.4.2 *Reductions in Inspection Frequency*

- Stabilized areas: You may reduce the frequency of inspections to once per month in any area of your site where stabilization has occurred pursuant to E.H.2.1.9 or E.H.2.2.11.
- Arid, semi-arid, and drought stricken areas: If earth-disturbing activities are occurring during the seasonally dry period or during a period in which drought is predicted to occur, you may reduce inspections to once per month and within 24 hours of a 0.25 inch storm event.
- Frozen conditions: You may temporarily suspend or reduce inspections to once per month until thawing conditions occur if frozen conditions are continuous and disturbed areas have been stabilized. For extreme conditions in remote areas, e.g., where transit to the site is perilous/restricted or temperatures are routinely below freezing, you may suspend inspections until the conditions are conducive to safe access, and more frequent inspections can resume.

E.H.2.4.3 *Areas to be Inspected*. You must at a minimum inspect the following areas:

- Disturbed areas;
- Stormwater controls and pollution prevention measures;
- Locations where stabilization measures have been implemented;
- Material, waste, borrow, or equipment storage and maintenance areas;
- Areas where stormwater flows;
- Points of discharge.

E.H.2.4.4 *What to Check for During Inspections*. At a minimum you must check:

- Whether all stormwater controls are installed, operational, and working as intended;
- Whether any new or modified stormwater controls are needed;
- For conditions that could lead to a spill or leak;
- For visual signs of erosion/sedimentation at points of discharge.

If a discharge is occurring:

- The quality and characteristics of the discharge;
- Whether controls are operating effectively.

E.H.2.4.5 *Inspection Report*. Within 24 hours of an inspection, complete a report that includes:

- Inspection date;
- Name and title of inspector(s);
- Summary of inspection findings;
- Rainfall amount that triggered the inspection (if applicable);
- If it was unsafe to inspect a portion of the site, include documentation of the reason and the location(s);
- Each inspection report must be signed;
- Keep a current copy of all reports at the site or at an easily accessible location.

E.H.2.5 *Cessation of Requirements Applicable to Earth-Disturbing Activities Conducted Prior to Active Mining Activities.* The requirements in E.H.2 no longer apply for any earth-disturbing activities conducted prior to active mining activities as defined in E.H.1.2(a) or E.H.1.2(b) where:

1. Earth-disturbing activities have ceased; and
2. Stabilization has been met consistent with E.H.2.1.9 or E.H.2.2.11 (not required for areas where active mining activities will occur).

E.H.3 Technology-Based Effluent Limits for Active Mining Activities

Note: These requirements do not apply for any discharges from earth-disturbing activities conducted prior to active mining as defined in E.H.1.2(a) or E.H.1.2(b).

E.H.3.1 *Good Housekeeping Measures.* As part of your good housekeeping program, in order to minimize discharges of pollutants in stormwater, implement control measures such as the following, where determined to be feasible including: using sweepers and covered storage; watering haul roads to minimize dust generation; and conserving vegetation to minimize erosion. For mines subject to dust control requirements under state or county air quality permits, provided the requirements are equivalent, compliance with such air permit dust requirements shall constitute compliance with the dust control effluent limit in Schedule A.1.f.

E.H.3.2 *Preventive Maintenance.* Perform inspections or other equivalent measures of storage tanks and pressure lines of fuels, lubricants, hydraulic fluid, and slurry to prevent leaks due to deterioration or faulty connections.

E.H.4 Additional SWPCP Requirements for Mining Operations

Note: The requirements in E.H.6 are not applicable to inactive coal mining facilities. Some requirements may be already a requirement under Schedule A.10.

E.H.4.1 *Other Applicable Regulations.* Most active coal mining-related areas (SIC Codes 1221-1241) are subject to sediment and erosion control regulations of the U.S. Office of Surface Mining (OSM) that enforces the Surface Mining Control and Reclamation Act (SMCRA). OSM has granted authority to most coal-producing states to implement SMCRA through State SMCRA regulations. All SMCRA requirements regarding control of stormwater-related pollutant discharges must be addressed and then documented with the SWPCP (directly or by reference).

E.H.4.2 *Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: haul and access roads; railroad spurs, sliding, and internal hauling lines; conveyor belts, chutes, and aerial tramways; equipment storage and maintenance yards; coal handling buildings and structures; inactive mines and related areas; acidic spoil, refuse, or unreclaimed disturbed areas; and liquid storage tanks containing pollutants such as caustics, hydraulic fluids, and lubricants.

E.H.4.3 *Potential Pollutant Sources.* Document in your SWPCP the following sources and activities that have potential pollutants associated with them: truck traffic on haul roads and resulting generation of sediment subject to discharge and dust generation; fuel or other liquid storage; pressure lines containing slurry, hydraulic fluid, or other potential harmful liquids; and loading or temporary storage of acidic refuse or spoil.

E.H.4.4 If you are in compliance with dust control requirements under state or county air quality permits, you must include (or summarize, as necessary) what the state or county air quality permit dust control requirements are and how you've achieved compliance with them.

E.H.5 Additional Inspection Requirements

E.H.5.1 *Inspections of Active Mining-Related Areas.* Except for earth-disturbing activities conducted prior to active mining activities as defined in E.H.1.2(a) and E.H.1.2(b), which are subject to E.H.2.4, perform routine inspections of active mining areas covered by this permit, corresponding with the inspections as performed by SMCRA inspectors, of all mining-related areas required by SMCRA. Also maintain the records of the SMCRA authority representative. See E.H.8.1 for inspection requirements for inactive and unstaffed sties.

E.H.5.2 *Sediment and Erosion Control.* As indicated in E.H.4.1, SMCRA requirements regarding sediment and erosion control measures must be complied with for those areas subject to SMCRA authority, including inspection requirements.

E.H.5.3 *Routine Site Inspections.* Your inspection program must include inspections for pollutants entering the drainage system from activities located on or near coal mining-related areas. Among the areas to be inspected are haul and access roads; railroad spurs, sliding, and internal hauling lines; conveyor belts, chutes, and aerial tramways; equipment storage and maintenance yards; coal handling buildings and structures; and inactive mines and related areas.

E.H.6 Sector-Specific Benchmarks

Table E.H-1 identifies benchmarks that apply to the specific subsectors of Sector H. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.
Note: There are no monitoring and reporting or impaired waters monitoring requirements for inactive and unstaffed sites.

Table E.H-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Coal Mines and Related Areas (SIC codes 1221-1241)	Total Aluminum	1.10 mg/L
	Total Suspended Solids (TSS)	Statewide benchmark

E.H.6.1 *Inactive and Unstaffed Sites – Conditional Exemption from No Exposure Requirements for Monthly Visual Assessments and Routine Facility Inspections*. As a Sector H facility, if you are seeking to exercise a monitoring or inspection waiver, you are conditionally exempt from the requirement to certify that "there are no industrial materials or activities exposed to stormwater" in Schedule B.9.a.iv of the permit. This exemption is conditioned on the following:

- If circumstances change and your facility becomes active and/or staffed, this exception no longer applies and you must immediately begin complying with the monitoring and inspection requirements; and
- DEQ retains the authority to revoke this exemption and/or the monitoring waiver where it is determined that the discharge causes, has a reasonable potential to cause, or contributes to an instream excursion above an applicable water quality standard, including designated uses.

Subject to the two conditions above, if your facility is inactive and unstaffed, you are waived from the requirement to conduct routine facility inspections, monthly visual assessments, and benchmark and impaired waters monitoring. You are encouraged to inspect your site more frequently where you have reason to believe that severe weather or natural disasters may have damaged control measures or increased discharges.

E.H.7 Termination of Permit Coverage

E.H.7.1 *Termination of Permit Coverage for Sites Reclaimed After December 17, 1990.* A site or a portion of a site that has been released from applicable state or federal reclamation requirements after December 17, 1990, is no longer required to maintain coverage under this permit. If the site or portion of a site reclaimed after December 17, 1990, was not subject to reclamation requirements, the site or portion of the site is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed.

E.H.7.2 *Termination of Permit Coverage for Sites Reclaimed Before December 17, 1990.* A site or portion of a site that was released from applicable state or federal reclamation requirements before December 17, 1990, or that was otherwise reclaimed before December 17, 1990, is no longer required to maintain coverage under this permit if the site or portion of the site has been reclaimed. A site or portion of a site is considered to have been reclaimed if: (1) stormwater runoff that comes into contact with raw materials, intermediate byproducts, finished products, and waste products does not have the potential to cause or contribute to exceedance of state water quality standards, (2) soil disturbing activities related to mining at the sites or portion of the site have been completed, (3) the site or portion of the site has been stabilized to minimize soil erosion, and (4) as appropriate depending on location, size, and the potential to contribute pollutants to stormwater discharges, the site or portion of the site has been revegetated, will be amenable to natural revegetation, or will be left in a condition consistent with the post-mining land use.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector I – Oil and Gas Extraction

E.I.1 Additional Technology-Based Effluent Limits

E.I.1.1 *Vegetative Controls.* Implement vegetative practices designed to preserve existing vegetation, where attainable, and revegetate open areas as soon as practicable after grade drilling. Consider the following (or equivalent measures): temporary or permanent seeding, mulching, sod stabilization, vegetative buffer strips, and tree protection practices. Begin implementing appropriate vegetative practices on all disturbed areas within 14 days following the last activity in that area.

E.I.2 Additional SWPCP Requirement

E.I.2.1 *Drainage Area Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: Reportable Quantity (RQ) releases; locations used for the treatment, storage, or disposal of wastes; processing areas and storage areas; chemical mixing areas; construction and drilling areas; all areas subject to the effluent guidelines requirements for "No Discharge" in accordance with 40 CFR 435.32; and the structural controls to achieve compliance with the "No Discharge" requirements.

E.I.2.2 *Potential Pollutant Sources.* Also document in your SWPCP the following sources and activities that have potential pollutants associated with them: chemical, cement, mud, or gel mixing activities; drilling or mining activities; and equipment cleaning and rehabilitation activities. In addition, include information about the reportable quantity (RQ) release that triggered the permit application requirements: the nature of the release (e.g., spill of oil from a drum storage area), amount of oil or hazardous substance released, amount of substance recovered, date of the release, cause of the release (e.g., poor handling techniques and lack of containment in the area), areas affected by the release (i.e., land and water), procedure to clean up release, actions or procedures implemented to prevent or improve response to a release, and remaining potential contamination of stormwater from release (taking into account human health risks, the control of drinking water intakes, and the designated uses of the receiving water).

E.I.2.3 *Erosion and Sedimentation Control.* Unless covered by the NPDES Construction Stormwater 1200-C General Permit, the additional documentation requirements for sediment and erosion controls for well drillings and sand/shale mining areas include the following:

E.I.2.3.1 *Site Description.* Also include a description in your SWPCP of the nature of the exploration activity, estimates of the total area of site and area disturbed due to exploration activity, an estimate of runoff coefficient of the site, a site drainage map, including approximate slopes, and the names of all receiving waters.

E.I.2.3.2 *Vegetative Controls.* Document vegetative practices used in the SWPCP.

E.I.3 Additional Inspection Requirements.

All erosion and sediment controls must be inspected either: 1) every 7 days; or 2) once every 14 calendar days and within 24 hours of a storm event of 0.25 inches or greater.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector K – Hazardous Waste Treatment, Storage, or Disposal Facilities

E.K.1 Definitions

K.1.1 *Contaminated stormwater* - stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in E.K.1.4. Some specific areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

K.1.2 *Drained free liquids* - aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

K.1.3 *Landfill* - an area of land or an excavation in which wastes are placed for permanent disposal, but that is not a land application or land treatment unit, surface impoundment, underground injection well, waste pile, salt dome formation, salt bed formation, underground mine, or cave as these terms are defined in 40 CFR 257.2, 258.2, and 260.10.

K1.4 *Landfill wastewater* - as defined in 40 CFR Part 445 (Landfills Point Source Category), all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated groundwater, and wastewater from recovery pumping wells. Landfill wastewater includes, but is not limited to, leachate, gas collection condensate, drained free liquids, laboratory derived wastewater, contaminated stormwater, and contact wash water from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

K.1.5 *Leachate* - liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

K.1.6 *Non-contaminated stormwater* - stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater as defined in E.K.1.4. Non-contaminated stormwater includes stormwater that flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

E.K.2 Sector-Specific Benchmarks

Table E.K-1 identifies benchmarks that apply to the specific subsectors of Sector K. These benchmarks apply to both your primary industrial activity and any co-located industrial activities, which describe your site activities.

Table E.K-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
ALL - Industrial Activity Code "HZ" Benchmarks only applicable to discharges not subject to effluent limitations in 40 CFR Part 445 Subpart A.	Ammonia	2.14 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L
	Total Arsenic freshwater	0.34 mg/L
	Total Arsenic saltwater	0.069 mg/L
	Total Cadmium freshwater	See Table 10
	Total Cadmium saltwater	0.04 mg/L
	Total Cyanide freshwater	0.022 mg/ L
	Total Cyanide saltwater	0.001 mg/L
	E. coli	406 organisms/100 mL
	Total Mercury freshwater	0.0024 mg/L
	Total Mercury saltwater	0.0021 mg/L
	Total Selenium freshwater	0.013 mg/L
	Total Selenium saltwater	0.29 mg/L
	Total Silver freshwater	See Table 10
	Total Silver saltwater	0.0019 mg/L

E.K.3 Effluent Limitations Based on Effluent Limitations Guidelines

Table E.K-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other wastestreams that may be covered under this permit.

Table E.K-2[1]

Industrial Activity	Parameter	Effluent Limit
Discharges from hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart A.	Biochemical Oxygen Demand (BOD_5)	220 mg/L, daily maximum
		56 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum

Table E.K-2[1]

Industrial Activity	Parameter	Effluent Limit
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.042 mg/L, daily maximum
		0.019 mg/L, monthly avg. maximum
	Aniline	0.024 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Benzoic Acid	0.119 mg/L, daily maximum
		0.073 mg/L, monthly avg. maximum
	Naphthalene	0.059 mg/L, daily maximum
		0.022 mg/L, monthly avg. maximum
	p-Cresol	0.024 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Phenol	0.048 mg/L, daily maximum
		0.029 mg/L, monthly avg. maximum
	Pyridine	0.072 mg/L, daily maximum
		0.025 mg/L, monthly avg. maximum
	Total Arsenic	1.1 mg/L, daily maximum
		0.54 mg/L, monthly avg. maximum
	Total Chromium	1.1 mg/L, daily maximum
		0.46 mg/L, monthly avg. maximum
	Total Zinc	0.535 mg/L, daily maximum
		0.296 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

[1] Monitor semi-annually. As set forth at 40 CFR Part 445 Subpart A, these numeric limitations apply to contaminated stormwater discharges from hazardous waste landfills subject to the provisions of RCRA Subtitle C at 40 CFR Parts 264 (Subpart N) and 265 (Subpart N) except for any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;

(b) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;

(c) landfills operated in conjunction with Centralized Waste Treatment (CWT) facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

(d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector L – Landfills, Land Application Sites, and Open Dumps

E.L.1 Definitions

E.L.1.1 *Contaminated stormwater* - stormwater that comes into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Some areas of a landfill that may produce contaminated stormwater include (but are not limited to) the open face of an active landfill with exposed waste (no cover added); the areas around wastewater treatment operations; trucks, equipment, or machinery that has been in direct contact with the waste; and waste dumping areas.

E.L.1.2 *Drained free liquids* - aqueous wastes drained from waste containers (e.g., drums) prior to landfilling.

E.L.1.3 *Landfill wastewater* - as defined in 40 CFR Part 445 (Landfills Point Source Category) all wastewater associated with, or produced by, landfilling activities except for sanitary wastewater, non-contaminated stormwater, contaminated groundwater, and wastewater from recovery pumping wells. Landfill process wastewater includes, but is not limited to, leachate; gas collection condensate; drained free liquids; laboratory-derived wastewater; contaminated stormwater; and contact washwater from washing truck, equipment, and railcar exteriors and surface areas that have come in direct contact with solid waste at the landfill facility.

E.L.1.4 *Leachate* - liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

E.L.1.5 *Non-contaminated stormwater* - stormwater that does not come into direct contact with landfill wastes, the waste handling and treatment areas, or landfill wastewater. Non-contaminated stormwater includes stormwater that flows off the cap, cover, intermediate cover, daily cover, and/or final cover of the landfill.

E.L.2 Additional Technology-Based Effluent Limits

E.L.2.1 *Preventive Maintenance Program.* As part of your preventive maintenance program, maintain the following: all elements of leachate collection and treatment systems, to prevent commingling of leachate with stormwater; the integrity and effectiveness of any intermediate or final cover (including repairing the cover as necessary), to minimize the effects of settlement, sinking, and erosion.

E.L.2.2 *Erosion and Sedimentation Control*. Provide temporary stabilization (e.g., temporary seeding, mulching, and placing geotextiles on the inactive portions of stockpiles) for the following: materials stockpiled for daily, intermediate, and final cover; inactive areas of the landfill or open dump; landfills or open dump areas that have gotten final covers but where vegetation has yet to establish itself; and land application sites where waste application has been completed but final vegetation has not yet been established.

E.L.2.3 *Unauthorized Discharge Test Certification*. The discharge test and certification must also be conducted for the presence of leachate and vehicle washwater.

E.L.3 Additional SWPCP Requirements

E.L.3.1 *Drainage Area Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: active and closed landfill cells or trenches, active and closed land application areas, locations where open dumping is occurring or has occurred,

locations of any known leachate springs or other areas where uncontrolled leachate may commingle with discharge, and leachate collection and handling systems.

E.L.3.2 *Summary of Potential Pollutant Sources.* Document in your SWPCP the following sources and activities that have potential pollutants associated with them: fertilizer, herbicide, and pesticide application; earth and soil moving; waste hauling and loading or unloading; outdoor storage of significant materials, including daily, interim, and final cover material stockpiles as well as temporary waste storage areas; exposure of active and inactive landfill and land application areas; uncontrolled leachate flows; and failure or leaks from leachate collection and treatment systems.

E.L.4 Additional Inspection Requirements

E.L.4.1 *Inspections of Active Sites.* Except in arid and semi-arid climates, inspect operating landfills, open dumps, and land application sites at least once every 7 days. Focus on areas of landfills that have not yet been finally stabilized; active land application areas, areas used for storage of material and wastes that are exposed to precipitation, stabilization, and structural control measures; leachate collection and treatment systems; and locations where equipment and waste trucks enter and exit the site. Ensure that sediment and erosion control measures are operating properly. For stabilized sites and areas where land application has been completed, or where the climate is arid or semi-arid, conduct inspections at least once every month.

E.L.4.2 *Inspections of Inactive Sites.* Inspect inactive landfills, open dumps, and land application sites at least monthly. Qualified personnel must inspect landfill (or open dump) stabilization and structural erosion control measures, leachate collection and treatment systems, and all closed land application areas.

E.L.5 Additional Post-Authorization Documentation Requirements

E.L.5.1 *Recordkeeping and Internal Reporting*. Keep records with your SWPCP of the types of wastes disposed of in each cell or trench of a landfill or open dump. For land application sites, track the types and quantities of wastes applied in specific areas.

E.L.6 Sector-Specific Benchmarks

Table E.L-1 identifies benchmarks that apply to the specific subsectors of Sector L. These benchmarks apply to both your primary industrial activity and any co-located industrial activities, which describe your site activities.

Table E.L-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration[1]
All Landfill, Land Application Sites and Open Dumps, except Municipal Solid Waste Landfill (MSWLF) Areas Closed in Accordance with 40 CFR 258.60 (Industrial Activity Code "LF")	Total Suspended Solids (TSS)	Statewide benchmark
	E. coli	406 organisms/100 mL

[1]Benchmark monitoring required only for discharges not subject to effluent limitations in 40 CFR Part 445 Subpart B (see Table L-2 below).

E.L.7. Effluent Limitations Based on Effluent Limitations Guidelines

Table E.L-2 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other wastestreams that may be covered under this permit.

Table E.L-2[1]

Industrial Activity	Parameter	Effluent Limit
Discharges from non-hazardous waste landfills subject to effluent limitations in 40 CFR Part 445 Subpart B.	Biochemical Oxygen Demand (BOD_5)	140 mg/L, daily maximum
		37 mg/L, monthly avg. maximum
	Total Suspended Solids (TSS)	88 mg/L, daily maximum
		27 mg/L, monthly avg. maximum
	Ammonia	10 mg/L, daily maximum
		4.9 mg/L, monthly avg. maximum
	Alpha Terpineol	0.033 mg/L, daily maximum
		0.016 mg/L monthly avg. maximum
	Benzoic Acid	0.12 mg/L, daily maximum
		0.071 mg/L, monthly avg. maximum
	p-Cresol	0.025 mg/L, daily maximum
		0.014 mg/L, monthly avg. maximum
	Phenol	0.026 mg/L, daily maximum
		0.015 mg/L, monthly avg. maximum
	Total Zinc	0.20 mg/L, daily maximum
		0.11 mg/L, monthly avg. maximum
	pH	Within the range of 6-9 standard pH units (s.u.)

[1] Monitor semi-annually. As set forth at 40 CFR Part 445 Subpart B, these numeric limitations apply to contaminated stormwater discharges from MSWLFs that have not been closed in accordance with 40 CFR 258.60, and to contaminated stormwater discharges from those landfills that are subject to the provisions of 40 CFR Part 257 except for discharges from any of the following facilities:

(a) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives only wastes generated by the industrial or commercial operation directly associated with the landfill;

(b) landfills operated in conjunction with other industrial or commercial operations, when the landfill receives wastes generated by the industrial or commercial operation directly associated with the landfill and also receives other wastes, provided that the other wastes received for disposal are generated by a facility that is subject to the same provisions in 40 CFR Subchapter N as the industrial or commercial operation, or that the other wastes received are of similar nature to the wastes generated by the industrial or commercial operation;

(c) landfills operated in conjunction with CWT facilities subject to 40 CFR Part 437, so long as the CWT facility commingles the landfill wastewater with other non-landfill wastewater for discharge. A landfill directly associated with a CWT facility is subject to this part if the CWT facility discharges landfill wastewater separately from other CWT wastewater or commingles the wastewater from its landfill only with wastewater from other landfills; or

(d) landfills operated in conjunction with other industrial or commercial operations when the landfill receives wastes from public service activities, so long as the company owning the landfill does not receive a fee or other remuneration for the disposal service.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector M – Motor Vehicle Parts, Used

E.M.1 Additional Technology-Based Effluent Limits

E.M.1.1 *Spill and Leak Prevention Procedures.* Drain vehicles intended to be dismantled of all fluids upon arrival at the site (or as soon thereafter as feasible), or employ some other equivalent means to prevent spills and leaks.

E.M.1.2 *Employee Training.* If applicable to your facility, address the following areas (at a minimum) in your employee training program: proper handling (collection, storage, and disposal) of oil, used mineral spirits, anti-freeze, mercury switches, and solvents.

E.M.1.3 *Management of Discharge.* Consider the following management practices: berms or drainage ditches on the property line (to help prevent run-on from neighboring properties); berms for uncovered outdoor storage of oily parts, engine blocks, and above-ground liquid storage; installation of detention ponds; and installation of filtering devices and oil and water separators.

E.M.2 Additional SWPCP Requirements

E.M.2.1 *Drainage Area Site Map.* Identify locations used for dismantling, storage, and maintenance of used motor vehicle parts. Also identify where any of the following may be exposed to precipitation or stormwater: dismantling areas, parts (e.g., engine blocks, tires, hub caps, batteries, hoods, mufflers) storage areas, and liquid storage tanks and drums for fuel and other fluids.

E.M.2.2 *Potential Pollutant Sources.* Assess the potential for the following to contribute pollutants to stormwater discharges: vehicle storage areas, dismantling areas, parts storage areas (e.g., engine blocks, tires, hub caps, batteries, hoods, mufflers), and fueling stations.

E.M.3 Additional Inspection Requirements

Immediately (or as soon thereafter as feasible) inspect vehicles arriving at the site for leaks. Inspect monthly for signs of leakage all equipment containing oily parts, hydraulic fluids, any other types of fluids, or mercury switches. Also, inspect monthly for signs of leakage all vessels and areas where hazardous materials and general automotive fluids are stored, including, but not limited to, mercury switches, brake fluid, transmission fluid, radiator water, and antifreeze.

E.M.4 Sector-Specific Benchmarks

Table E.M-1 identifies benchmarks that apply to the specific subsectors of Sector M. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.M-1

Subsector (You may be subject to requirements for more than one sector/subsector)	**Parameter**	**Benchmark Monitoring Concentration**
Automobile Salvage Yards (SIC code 5015)	Total Aluminum	1.10 mg/L
	Total Suspended Solids (TSS)	Total Suspended Solids (TSS)
	Total lead freshwater	Statewide benchmark
	Total lead saltwater	1.10 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector N – Scrap and Waste Materials

E.N.1 Additional Technology-Based Effluent Limits

E.N.1.1 *Scrap and Waste Recycling Facilities (Non-Source Separated, Nonliquid Recyclable Materials).* Requirements for facilities that receive, process, and do wholesale distribution of nonliquid recyclable wastes (e.g., ferrous and nonferrous metals, plastics, glass, cardboard, and paper). These facilities may receive both nonrecyclable and recyclable materials. This section is not intended for those facilities that accept recyclables only from primarily non-industrial and residential sources.

E.N.1.1.1 *Inbound Recyclable and Waste Material Control Program.* Minimize the chance of accepting materials that could be significant sources of pollutants by conducting inspections of inbound recyclables and waste materials. Following are some control measure options: (a) provide information and education to suppliers of scrap and recyclable waste materials on draining and properly disposing of residual fluids (e.g., from vehicles and equipment engines, radiators and transmissions, oil filled transformers, and individual containers or drums) and removal of mercury switches from vehicles before delivery to your facility; (b) establish procedures to minimize the potential of any residual fluids from coming into contact with precipitation or stormwater; (c) establish procedures for accepting scrap lead-acid batteries (additional requirements for the handling, storage, and disposal or recycling of batteries are contained in the scrap lead-acid battery program provisions in E.N.3.1.6); (d) provide training targeted for those personnel engaged in the inspection and acceptance of inbound recyclable materials; and (e) establish procedures to ensure that liquid wastes, including used oil, are stored in materially compatible and non-leaking containers and are disposed of or recycled in accordance with the Resource Conservation and Recovery Act (RCRA).

E.N.1.1.2 *Scrap and Waste Material Stockpiles and Storage (Outdoor).* Minimize contact of stormwater discharge with stockpiled materials, processed materials, and nonrecyclable wastes. Following are some control measure options: (a) permanent or semi-permanent covers; (b) sediment traps, vegetated swales and strips, catch basin filters, and sand filters to facilitate settling or filtering of pollutants; (c) dikes, berms, containment trenches, culverts, and surface grading to divert runoff from storage areas; (d) silt fencing; and (e) oil and water separators, sumps, and dry absorbents for areas where potential sources of residual fluids are stockpiled (e.g., automobile engine storage areas).

E.N.1.1.3 *Stockpiling of Turnings Exposed to Cutting Fluids (Outdoor Storage).* Minimize contact of stormwater with residual cutting fluids by: (a) storing all turnings exposed to cutting fluids under some form of permanent or semi-permanent cover, or (b) establishing dedicated containment areas for all turnings that have been exposed to cutting fluids. Any containment areas must be constructed of concrete, asphalt, or other equivalent types of impermeable material and include a barrier (e.g., berms, curbing, elevated pads) to prevent contact with stormwater run-on. Stormwater discharge from these areas can be discharged, provided that any discharge is first collected and treated by an oil and water separator or its equivalent. You must regularly maintain the oil and water separator (or its equivalent) and properly dispose of or recycle collected residual fluids.

E.N.1.1.4 *Scrap and Waste Material Stockpiles and Storage (Covered or Indoor Storage).* Minimize stormwater discharge contact of residual liquids and particulate matter from materials stored indoors or under cover. Following are some control measure options: (a) good housekeeping measures, including the use of dry absorbents or wet vacuuming to contain, dispose of, or recycle residual liquids originating from recyclable containers, or mercury spill kits for spills from storage of mercury switches; (b) not allowing washwater from tipping floors or other processing areas to discharge to the storm sewer system; and (c) disconnecting or sealing off all floor drains connected to the storm sewer system.

E.N.1.1.5 *Scrap and Recyclable Waste Processing Areas.* Minimize stormwater discharge from coming in contact with scrap processing equipment. Pay attention to operations that generate visible amounts of particulate residue (e.g., shredding) to minimize the contact of accumulated particulate matter and residual fluids with stormwater (i.e., through good housekeeping, preventive maintenance, etc.). Following are some control measure options: (a) regularly inspect equipment for spills or leaks and malfunctioning, worn, or corroded parts or equipment; (b) establish a preventive maintenance program for processing equipment; (c) use dry-absorbents or other cleanup practices to collect and dispose of or recycle spilled or leaking fluids or use mercury spill kits for spills from storage of mercury switches; (d) on unattended hydraulic reservoirs over 150 gallons in capacity, install protection devices such as low-level alarms or equivalent devices, or secondary containment that can hold the entire volume of the reservoir; (e) containment or diversion structures such as dikes, berms, culverts, trenches, elevated concrete pads, and grading to minimize contact of stormwater runoff with outdoor processing equipment or stored materials; (f) oil and water separators or sumps; (g) permanent or semi-permanent covers in processing areas where there are residual fluids and grease; (h) retention or detention ponds or basins; sediment traps, and vegetated swales or strips (for pollutant settling and filtration); (i) catch basin filters or sand filters.

E.N.1.1.6 *Scrap Lead-Acid Battery Program.* Properly handle, store, and dispose of scrap lead-acid batteries. Following are some control measure options (a) segregate scrap lead-acid batteries from other scrap materials; (b) properly handle, store, and dispose of cracked or broken batteries; (c) collect and dispose of leaking lead-acid battery fluid; (d) minimize or eliminate (if possible) exposure of scrap lead-acid batteries to precipitation or stormwater; and (e) provide employee training for the management of scrap batteries.

E.N.1.1.7 *Spill Prevention and Response Procedures*. (See also Schedule A.1.h) Install alarms and/or pump shutoff systems on outdoor equipment with hydraulic reservoirs exceeding 150 gallons in the event of a line break. Alternatively, a secondary containment system capable of holding the entire contents of the reservoir plus room for precipitation can be used. Use a mercury spill kit for any release of mercury from switches, anti-lock brake systems, and switch storage areas.

E.N.1.1.8 *Supplier Notification Program.* As appropriate, notify major suppliers which scrap materials will not be accepted at the facility or will be accepted only under certain conditions.

E.N.1.2 *Waste Recycling Facilities* (Liquid Recyclable Materials).

E.N.1.2.1 *Waste Material Storage (Indoor).* Minimize or eliminate contact between residual liquids from waste materials stored indoors and from stormwater. The plan may refer to applicable portions of other existing plans, such as Spill Prevention, Control, and

Countermeasure (SPCC) plans required under 40 CFR Part 112. Following are some control measure options (a) procedures for material handling (including labeling and marking); (b) clean up spills and leaks with dry absorbent materials, a wet vacuum system; (c) appropriate containment structures (trenching, curbing, gutters, etc.); and (d) a drainage system, including appurtenances (e.g., pumps or ejectors, manually operated valves), to handle discharges from diked or bermed areas. Drainage must be discharged to an appropriate treatment facility or sanitary sewer system, or otherwise disposed of properly. These discharges may require coverage under a separate NPDES wastewater permit or industrial user permit under the pretreatment program.

E.N.1.2.2 *Waste Material Storage (Outdoor).* Minimize stormwater discharge contact between stored residual liquids. The plan may refer to applicable portions of other existing plans, such as SPCC plans required under 40 CFR Part 112. Discharges of precipitation from containment areas containing used oil must also be in accordance with applicable sections of 40 CFR Part 112. Following are some control measure options (a) appropriate containment structures (e.g., dikes, berms, curbing, pits) to store the volume of the largest tank, with sufficient extra capacity for precipitation; (b) drainage control and other diversionary structures; (c) corrosion protection and/or leak detection systems for storage tanks; and (d) dry-absorbent materials or a wet vacuum system to collect spills.

E.N.1.2.3 *Trucks and Rail Car Waste Transfer Areas.* Minimize pollutants in discharges from truck and rail car loading and unloading areas. Include measures to clean up minor spills and leaks resulting from the transfer of liquid wastes. Following are two control measure options: (a) containment and diversionary structures to minimize contact with precipitation, and (b) dry clean-up methods, wet vacuuming, roof coverings, or runoff controls.

E.N.1.3 *Recycling Facilities (Source-Separated Materials).* The following identifies considerations for facilities that receive only source-separated recyclables, primarily from non-industrial and residential sources.

E.N.1.3.1 *Inbound Recyclable Material Control.* Minimize the chance of accepting nonrecyclables (e.g., hazardous materials) that could be a significant source of pollutants by conducting inspections of inbound materials. Following are some control measure options: (a) providing information and education measures to inform suppliers of recyclables about acceptable and non-acceptable materials, (b) training drivers responsible for pickup of recycled material, (c) clearly marking public drop-off containers regarding which materials can be accepted, (d) rejecting nonrecyclable wastes or household hazardous wastes at the source, and (e) establishing procedures for handling and disposal of nonrecyclable material.

E.N.1.3.2 *Outdoor Storage.* Minimize exposure of recyclables to stormwater. Use good housekeeping measures to prevent accumulation of particulate matter and fluids, particularly in high traffic areas. Following are some control measure options (a) provide totally enclosed drop-off containers for the public; (b) install a sump and pump with each container pit and treat or discharge collected fluids to a sanitary sewer system; (c) provide dikes and curbs for secondary containment (e.g., around bales of recyclable waste paper); (d) divert stormwater away from outside material storage areas; (e) provide covers over containment bins, dumpsters, and roll-off boxes; and (f) store the equivalent of one day’s volume of recyclable material indoors.

E.N.1.3.3 *Indoor Storage and Material Processing.* Minimize the release of pollutants from indoor storage and processing areas. Following are some control measure options (a) schedule routine good housekeeping measures for all storage and processing areas, (b) prohibit tipping floor washwater from draining to the storm sewer system, and (c) provide employee training on pollution prevention practices.

E.N.1.3.4 *Vehicle and Equipment Maintenance.* Following are some control measure options for areas where vehicle and equipment maintenance occur outdoors (a) prohibit vehicle and equipment washwater from discharging to the storm sewer system, (b) minimize or eliminate outdoor maintenance areas whenever possible, (c) establish spill prevention and clean-up procedures in fueling areas, (d) avoid topping off fuel tanks, (e) divert stormwater from fueling areas, (f) store lubricants and hydraulic fluids indoors, and (g) provide employee training on proper handling and storage of hydraulic fluids and lubricants.

E.N.2 Additional SWPCP Requirements

E.N.2.1 *Drainage Area Site Map.* Document in your SWPCP the locations of any of the following activities or sources that may be exposed to precipitation or stormwater: scrap and waste material storage, outdoor scrap and waste processing equipment; and containment areas for turnings exposed to cutting fluids.

E.N.2.2 *Maintenance Schedules/Procedures for Collection, Handling, and Disposal or Recycling of Residual Fluids at Scrap and Waste Recycling Facilities.* If you are subject to E.N.1.1.3, your SWPCP must identify any applicable maintenance schedule and the procedures to collect, handle, and dispose of or recycle residual fluids.

E.N.3 Sector-Specific Benchmarks

Table E.N-1 identifies benchmarks that apply to the specific subsectors of Sector N. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.N-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Scrap Recycling and Waste Recycling Facilities except Source-Separated Recycling (SIC code 5093)	Chemical Oxygen Demand (COD)	120 mg/L
	Total Aluminum	1.10 mg/L
	Total Suspended Solids (TSS)	Statewide benchmark
	Total copper freshwater	Statewide benchmark
	Total copper saltwater	0.025 mg/L
	Total lead freshwater	Statewide benchmark
	Total lead saltwater	1.10 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector O – Steam Electric Generating Facilities.

E.O.1 Additional Technology-Based Effluent Limits.

E.Q.1.1 *Good Housekeeping Measures.* You must implement the following good housekeeping measures in addition to requirements in Schedule A.1 of the permit:

E.O.1.1.1 *Fugitive Dust Emissions.* Minimize fugitive dust emissions from coal handling areas. To minimize the tracking of coal dust offsite, consider procedures such as installing specially designed tires or washing vehicles in a designated area before they leave the site and controlling the wash water.

E.O.1.1.2. *Delivery Vehicles.* Minimize contamination of stormwater discharge from delivery vehicles arriving at the plant site. Consider procedures to inspect delivery vehicles arriving at the plant site and ensure overall integrity of the body or container and procedures to deal with leakage or spillage from vehicles or containers.

E.O.1.1.3 *Fuel Oil Unloading Areas.* Minimize contamination of precipitation or stormwater from fuel oil unloading areas. Consider using containment curbs in unloading areas, having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up, and using spill and overflow protection devices (e.g., drip pans, drip diapers, or other containment devices placed beneath fuel oil connectors to contain potential spillage during deliveries or from leaks at the connectors).

E.O.1.1.4 *Chemical Loading and Unloading.* Minimize contamination of precipitation or stormwater from chemical loading and unloading areas. Consider using containment curbs at chemical loading and unloading areas to contain spills, having personnel familiar with spill prevention and response procedures present during deliveries to ensure that any leaks or spills are immediately contained and cleaned up, and loading and unloading in covered areas and storing chemicals indoors.

E.O.1.1.5 *Miscellaneous Loading and Unloading Areas.* Minimize contamination of precipitation or stormwater from loading and unloading areas. Consider covering the loading area; grading, berming, or curbing around the loading area to divert run-on; locating the loading and unloading equipment and vehicles so that leaks are contained in existing containment and flow diversion systems; or equivalent procedures.

E.O.1.1.6 *Liquid Storage Tanks*. Minimize contamination of stormwater from above-ground liquid storage tanks. Consider protective guards around tanks, containment curbs, spill and overflow protection, dry cleanup methods, or equivalent measures.

E.O.1.1.7 *Large Bulk Fuel Storage Tanks.* Minimize contamination of stormwater from large bulk fuel storage tanks. Consider containment berms (or their equivalent). You must also comply with applicable State and Federal laws, including Spill Prevention, Control and Countermeasure (SPCC) Plan requirements.

E.O.1.1.8 *Spill Reduction Measures.* Minimize the potential for an oil or chemical spill, or reference the appropriate part of your SPCC plan. Visually inspect as part of your routine facility inspection the structural integrity of all above-ground tanks, pipelines, pumps, and related equipment that may be exposed to stormwater, and make any necessary repairs immediately.

E.O.1.1.9 *Oil-Bearing Equipment in Switchyards.* Minimize contamination of stormwater from oil-bearing equipment in switchyard areas. Consider using level grades and

gravel surfaces to retard flows and limit the spread of spills, or collecting runoff in perimeter ditches.

E.O.1.1.10 *Residue-Hauling Vehicles.* Inspect all residue-hauling vehicles for proper covering over the load, adequate gate sealing, and overall integrity of the container body. Repair vehicles without load covering or adequate gate sealing, or with leaking containers or beds.

E.O.1.1.11 *Ash Loading Areas.* Reduce or control the tracking of ash and residue from ash loading areas. Clear the ash building floor and immediately adjacent roadways of spillage, debris, and excess water before departure of each loaded vehicle.

E.O.1.1.12 *Areas Adjacent to Disposal Ponds or Landfills.* Minimize contamination of stormwater from areas adjacent to disposal ponds or landfills. Reduce ash residue that may be tracked on to access roads traveled by residue handling vehicles, and reduce ash residue on exit roads leading into and out of residue handling areas.

E.O.1.1.13 *Landfills, Scrap yards, Surface Impoundments, Open Dumps, General Refuse Sites.* Minimize the potential for contamination stormwater from these areas.

E.O.2 Additional SWPCP Requirements

E.O.2.1 *Drainage Area Site Map.* Document in your SWPCP the locations of any of the following activities or sources that may be exposed to precipitation or stormwater: storage tanks, scrap yards, and general refuse areas; short- and long-term storage of general materials (including but not limited to supplies, construction materials, paint equipment, oils, fuels, used and unused solvents, cleaning materials, paint, water treatment chemicals, fertilizer, and pesticides); landfills and construction sites; and stock pile areas (e.g., coal or limestone piles).

E.O.3 Additional Inspection Requirements

E.O.3.1 *Inspection.* Inspect the following areas monthly: coal handling areas, loading or unloading areas, switchyards, fueling areas, bulk storage areas, ash handling areas, areas adjacent to disposal ponds and landfills, maintenance areas, liquid storage tanks, and long term and short term material storage areas.

E.O.4 Effluent Limitations Based on Effluent Limitations Guidelines

Table E.O-1 identifies effluent limits that apply to the industrial activities described below. Compliance with these effluent limits is to be determined based on discharges from these industrial activities independent of commingling with any other wastestreams that may be covered under this permit.

Table E.O-1[1]

Industrial Activity	Parameter	Effluent Limit
Discharges from coal storage piles at Steam Electric Generating Facilities	TSS	50 mg/l[2]
	pH	6.0 min - 9.0 max

[1] Monitor semi-annually.

[2] If your facility is designed, constructed, and operated to treat the volume of coal pile discharge that is associated with a 10-year, 24-hour rainfall event, any untreated overflow of coal pile discharge from the treatment unit is not subject to the 50 mg/L limitation for total suspended solids.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector P – Land Transportation and Warehousing.

E.P.1 Additional Technology-Based Effluent Limits

E.P.1.1 *Good Housekeeping Measures.* In addition to the Good Housekeeping requirements in Schedule A.1 of the permit, you must do the following:

E.P.1.1.1 *Vehicle and Equipment Storage Areas.* Minimize the potential for stormwater exposure to leaky or leak-prone vehicles/equipment awaiting maintenance. Consider the following (or other equivalent measures): use of drip pans under vehicles/equipment, indoor storage of vehicles and equipment, installation of berms or dikes, use of absorbents, roofing or covering storage areas, and cleaning pavement surfaces to remove oil and grease.

E.P.1.1.2 *Fueling Areas.* Minimize contamination of stormwater discharge from fueling areas. Consider the following (or other equivalent measures): Covering the fueling area; using spill/overflow protection and cleanup equipment; minimizing stormwater run-on/runoff to the fueling area; using dry cleanup methods; and treating and/or recycling collected stormwater.

E.P.1.1.3 *Material Storage Areas.* Maintain all material storage vessels (e.g., for used oil/oil filters, spent solvents, paint wastes, hydraulic fluids) to prevent contamination of stormwater and plainly label them (e.g., "Used Oil," "Spent Solvents," etc.). Consider the following (or other equivalent measures): storing the materials indoors; installing berms/dikes around the areas; minimizing stormwater to the areas; using dry cleanup methods; and treating and/or recycling collected stormwater.

E.P.1.1.4 *Vehicle and Equipment Cleaning Areas.* Minimize contamination of stormwater discharge from all areas used for vehicle/equipment cleaning. Consider the following (or other equivalent measures): performing all cleaning operations indoors; covering the cleaning operation, ensuring that all washwater drains to a proper collection system (i.e., not the stormwater drainage system); treating and/or recycling collected washwater, or other equivalent measures.

E.P.1.1.5 *Vehicle and Equipment Maintenance Areas.* Minimize contamination of stormwater discharge from all areas used for vehicle/equipment maintenance. Consider the following (or other equivalent measures): performing maintenance activities indoors; using drip pans; keeping an organized inventory of materials used in the shop; draining all parts of fluid prior to disposal; prohibiting wet clean up practices if these practices would result in the discharge of pollutants to stormwater drainage systems; using dry cleanup methods; treating and/or recycling collected stormwater, minimizing run on/runoff of stormwater to maintenance areas.

E.P.1.1.6 *Locomotive Sanding (Loading Sand for Traction) Areas.* Consider the following (or other equivalent measures): covering sanding areas; minimizing stormwater run on/runoff; or appropriate sediment removal practices to minimize the offsite transport of sanding material by stormwater.

E.P.1.2 *Employee Training.* Address the following activities, as applicable: used oil and spent solvent management; fueling procedures; general good housekeeping practices; proper painting procedures; and used battery management.

E.P.2 Additional SWPCP Requirements

E.P.2.1 *Drainage Area Site Map.* Identify in the SWPCP the following areas of the facility and indicate whether activities occurring there may be exposed to precipitation/stormwater: Fueling stations; vehicle/equipment maintenance or cleaning areas; storage areas for vehicle/equipment with actual or potential fluid leaks; loading/unloading areas; areas where treatment, storage or disposal of wastes occur; liquid storage tanks; processing areas; and storage areas.

E.P.2.2 *Potential Pollutant Sources.* Assess the potential for the following activities and facility areas to contribute pollutants to stormwater discharges: Onsite waste storage or disposal; dirt/gravel parking areas for vehicles awaiting maintenance; illicit plumbing connections between shop floor drains and the stormwater conveyance system(s); and fueling areas. Describe these activities in the SWPCP.

E.P.2.3 *Description of Good Housekeeping Measures.* You must document in your SWPCP the good housekeeping measures you implement consistent with E.P.1.

E.P.2.4 *Vehicle and Equipment Wash Water Requirements.* If wash water is handled in a manner that does not involve separate NPDES permitting (e.g., hauled offsite), describe the disposal method and include all pertinent information (e.g., frequency, volume, destination, etc.) in your SWPCP. Discharges of vehicle and equipment wash water, including tank cleaning operations, are not authorized by this permit for this sector.

E.P.3 Additional Inspection Requirements Inspect all the following areas/activities: storage areas for vehicles/equipment awaiting maintenance, fueling areas, indoor and outdoor vehicle/equipment maintenance areas, material storage areas, vehicle/equipment cleaning areas and loading/unloading areas.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector Q – Water Transportation

E.Q.1 Additional Technology-Based Effluent Limits

E.Q.1.1 *Good Housekeeping Measures.* You must implement the following good housekeeping measures in addition to requirements in Schedule A.1 of the permit:

E.Q.1.1.1 *Pressure Washing Area.* If pressure washing is used to remove marine growth from vessels, the discharge water must be permitted by a separate NPDES permit. Collect or contain the discharges from the pressure washing area so that they are not commingled with stormwater discharges authorized by this permit.

E.Q.1.1.2 *Blasting and Painting Area.* Minimize the potential for spent abrasives, paint chips, and overspray to discharge into receiving waters or the storm sewer systems. Consider containing all blasting and painting activities or use other measures to minimize the discharge of contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). When necessary, regularly clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.

E.Q.1.1.3 *Material Storage Areas.* Store and plainly label all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) in a protected, secure location away from drains. Minimize the contamination of precipitation or stormwater from the storage areas. Specify which materials are stored indoors, and consider containment or enclosure for those stored outdoors. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility. Consider implementing an inventory control plan to limit the presence of potentially hazardous materials onsite.

E.Q.1.1.4 *Engine Maintenance and Repair Areas.* Minimize the contamination of precipitation or stormwater from all areas used for engine maintenance and repair. Consider the following (or their equivalents): performing all maintenance activities indoors, maintaining an organized inventory of materials used in the shop, draining all parts of fluid prior to disposal, prohibiting the practice of hosing down the shop floor, using dry cleanup methods, and treating and/or recycling stormwater collected from the maintenance area.

E.Q.1.1.5 *Material Handling Area.* Minimize the contamination of precipitation or stormwater from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels). Consider the following (or their equivalents): covering fueling areas, using spill and overflow protection, mixing paints and solvents in a designated area (preferably indoors or under a shed), and minimizing stormwater to material handling areas.

E.Q.1.1.6 *Drydock Activities.* Routinely maintain and clean the drydock to minimize pollutants in stormwater. Address the cleaning of accessible areas of the drydock prior to flooding, and final cleanup following removal of the vessel and raising the dock. Include procedures for cleaning up oil, grease, and fuel spills occurring on the drydock. Consider the following (or their equivalents): sweeping rather than hosing off debris and spent blasting material from accessible areas of the drydock prior to flooding and making absorbent materials and oil containment booms readily available to clean up or contain any spills.

E.Q.1.2 *Employee Training.* At a minimum, address the following activities (as applicable): used oil management, spent solvent management, disposal of spent abrasives, disposal of vessel

wastewaters, spill prevention and control, fueling procedures, general good housekeeping practices, painting and blasting procedures, and used battery management.

E.Q.1.3 *Preventive Maintenance.* As part of your preventive maintenance program, perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators and sediment traps to ensure that spent abrasives, paint chips, and solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

E.Q.2 Additional SWPCP Requirements

E.Q.2.1 *Drainage Area Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: fueling; engine maintenance and repair; vessel maintenance and repair; pressure washing; painting; sanding; blasting; welding; metal fabrication; loading and unloading areas; locations used for the treatment, storage, or disposal of wastes; liquid storage tanks; liquid storage areas (e.g., paint, solvents, resins); and material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

E.Q.2.2 *Summary of Potential Pollutant Sources.* Document in the SWPCP the following additional sources and activities that have potential pollutants associated with them: outdoor manufacturing or processing activities (e.g., welding, metal fabricating) and significant dust or particulate generating processes (e.g., abrasive blasting, sanding, and painting.)

E.Q.3 Additional Inspection Requirements

Inspect pressure washing area; blasting, sanding, and painting areas; material storage areas; engine maintenance and repair areas; material handling areas; drydock area; and general yard area.

E.Q.4 Sector-Specific Benchmarks

Table E.Q-1 identifies benchmarks that apply to the specific subsectors of Sector Q. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.Q-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Water Transportation Facilities (SIC 4412-4499)	Total Aluminum	1.10 mg/L
	Total lead freshwater	Statewide benchmark
	Total lead saltwater	1.10 mg/L
	Total zinc freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector R – Ship and Boat Building and Repair Yards

E.R.1 Additional Technology-Based Effluent Limits

E.R.1.1 *Good Housekeeping Measures.*

E.R.1.1.1 *Pressure Washing Area.* If pressure washing is used to remove marine growth from vessels, the discharged water must be permitted as a process wastewater by a separate NPDES permit.

E.R.1.1.2 *Blasting and Painting Area.* Minimize the potential for spent abrasives, paint chips, and overspray to discharging into the receiving water or the storm sewer systems. Consider containing all blasting and painting activities, or use other measures to prevent the discharge of the contaminants (e.g., hanging plastic barriers or tarpaulins during blasting or painting operations to contain debris). When necessary, regularly clean stormwater conveyances of deposits of abrasive blasting debris and paint chips.

E.R.1.1.3 *Material Storage Areas.* Store and plainly label all containerized materials (e.g., fuels, paints, solvents, waste oil, antifreeze, batteries) in a protected, secure location away from drains. Minimize the contamination of precipitation or stormwater from the storage areas. If abrasive blasting is performed, discuss the storage and disposal of spent abrasive materials generated at the facility. Consider implementing an inventory control plan to limit the presence of potentially hazardous materials onsite.

E.R.1.1.4 *Engine Maintenance and Repair Areas.* Minimize the contamination of precipitation or stormwater from all areas used for engine maintenance and repair. Consider the following (or their equivalents): performing all maintenance activities indoors, maintaining an organized inventory of materials used in the shop, draining all parts of fluid prior to disposal, prohibiting the practice of hosing down the shop floor, using dry cleanup methods, and treating and/or recycling stormwater collected from the maintenance area.

E.R.1.1.5 *Material Handling Area.* Minimize the contamination of precipitation or stormwater from material handling operations and areas (e.g., fueling, paint and solvent mixing, disposal of process wastewater streams from vessels). Consider the following (or their equivalents): covering fueling areas, using spill and overflow protection, mixing paints and solvents in a designated area (preferably indoors or under a shed), and minimizing stormwater run-on to material handling areas.

E.R.1.1.6 *Drydock Activities.* Routinely maintain and clean the drydock to minimize pollutants in stormwater. Clean accessible areas of the drydock prior to flooding and final cleanup following removal of the vessel and raising the dock. Include procedures for cleaning up oil, grease, or fuel spills occurring on the drydock. Consider the following (or their equivalents): sweeping rather than hosing off debris and spent blasting material from accessible areas of the drydock prior to flooding, and having absorbent materials and oil containment booms readily available to clean up and contain any spills.

E.R.1.2 *Employee Training.* As part of your employee training program, address, at a minimum, the following activities (as applicable): used oil management, spent solvent management, disposal of spent abrasives, disposal of vessel wastewaters, spill prevention and control, fueling procedures, general good housekeeping practices, painting and blasting procedures, and used battery management.

E.R.1.3 *Preventive Maintenance.* As part of your preventive maintenance program, perform timely inspection and maintenance of stormwater management devices (e.g., cleaning oil and water separators and sediment traps to ensure that spent abrasives, paint chips, and solids will be intercepted and retained prior to entering the storm drainage system), as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters.

E.R.2 Additional SWPCP Requirements

E.R.2.1 *Drainage Area Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: fueling; engine maintenance or repair; vessel maintenance or repair; pressure washing; painting; sanding; blasting; welding; metal fabrication; loading and unloading areas; treatment, storage, and waste disposal areas; liquid storage tanks; liquid storage areas (e.g., paint, solvents, resins); and material storage areas (e.g., blasting media, aluminum, steel, scrap iron).

E.R.2.2 *Potential Pollutant Sources.* Document in your SWPCP the following additional sources and activities that have potential pollutants associated with them (if applicable): outdoor manufacturing or processing activities (e.g., welding, metal fabricating) and significant dust or particulate generating processes (e.g., abrasive blasting, sanding, and painting).

E.R.2.3 *Documentation of Good Housekeeping Measures.* Document in your SWPCP any good housekeeping measures implemented to meet the effluent limits in E.R.1.1.

E.R.2.3.1 *Blasting and Painting Areas.* Document in the SWPCP any standard operating practices relating to blasting and painting (e.g., prohibiting uncontained blasting and painting over open water or prohibiting blasting and painting during windy conditions, which can render containment ineffective).

E.R.2.3.2 *Storage Areas.* Specify in your SWPCP which materials are stored indoors, and consider containment or enclosure for those stored outdoors.

E.R.3 Additional Inspection Requirements

Include the following in all monthly inspections: pressure washing area; blasting, sanding, and painting areas; material storage areas; engine maintenance and repair areas; material handling areas; drydock area; and general yard area.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector S – Air Transportation

E.S.1 Limitation on Coverage

E.S.1.1 *Limitations on Coverage.* This permit authorizes stormwater discharges from only those portions of the air transportation facility that are involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling and lubrication), equipment cleaning operations or deicing operations.
Note: the term "deicing" in this permit will generally be used to mean both deicing (removing frost, snow or ice) and anti-icing (preventing accumulation of frost, snow or ice) activities, unless specific mention is made otherwise.

E.S.2 Multiple Operators at Air Transportation Facilities

Air transportation facilities often have more than one operator who could discharge stormwater associated with industrial activity. Operators include the airport authority and airport tenants, including air passenger or cargo companies, fixed based operators, and other parties who routinely perform industrial activities on airport property.
The airport authority and tenants of the airport are encouraged to work in partnership in the development of the SWPCP. Tenants of the airport facility include air passenger or cargo companies, fixed based operators and other parties who have contracts with the airport authority to conduct business operations on airport property and whose operations result in stormwater discharges associated with industrial activity. An airport tenant may obtain authorization under this permit and develop a SWPCP for discharges from his/her own areas of the airport.

E.S.3 Additional Technology-Based Effluent Limits

E.S.3.1 *Good Housekeeping Measures.*

E.S.3.1.1 *Aircraft, Ground Vehicle and Equipment Maintenance Areas*. Minimize the contamination of stormwater from all areas used for aircraft, ground vehicle and equipment maintenance (including the maintenance conducted on the terminal apron and in dedicated hangers). Consider the following practices (or their equivalents): performing maintenance activities indoors; maintaining an organized inventory of material used in the maintenance areas; draining all parts of fluids prior to disposal; prohibiting the practice of hosing down the apron or hanger floor; using dry cleanup methods; and collecting the stormwater from the maintenance area and providing treatment or recycling.

E.S.3.1.2 *Aircraft, Ground Vehicle and Equipment Cleaning Areas*. Clearly demarcate these areas on the ground using signage or other appropriate means. Minimize the contamination of stormwater from cleaning areas.

E.S.3.1.3 *Aircraft, Ground Vehicle and Equipment Storage Areas*. Store all aircraft, ground vehicles and equipment awaiting maintenance in designated areas only and minimize the contamination of stormwater from these storage areas. Consider the following control measures, including any BMPs (or their equivalents): storing aircraft and ground vehicles indoors; using drip pans for the collection of fluid leaks; and perimeter drains, dikes or berms surrounding the storage areas.

E.S.3.1.4 *Material Storage Areas*. Maintain the vessels of stored materials (e.g., used oils, hydraulic fluids, spent solvents, and waste aircraft fuel) in good condition, to prevent or minimize contamination of stormwater. Also plainly label the vessels (e.g., "used oil," "Contaminated Jet A," etc.). Minimize contamination of stormwater from these areas. Consider the following control measures (or their equivalents): storing materials indoors; storing waste materials in a centralized location; and installing berms/dikes around storage areas.

E.S.3.1.5 *Airport Fuel System and Fueling Areas*. Minimize the discharge of fuel to the storm sewer/surface waters resulting from fuel servicing activities or other operations conducted in support of the airport fuel system. Consider the following control measures (or their equivalents): implementing spill and overflow practices (e.g., placing absorptive materials beneath aircraft during fueling operations); using only dry cleanup methods; and collecting stormwater.

E.S.3.1.6 *Source Reduction*. Minimize, and where feasible eliminate, the use of urea and glycol-based deicing chemicals, in order to reduce the aggregate amount of deicing chemicals used and/or lessen the environmental impact. Chemical options to replace ethylene glycol, propylene glycol and urea include: potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.

E.S.3.1.6.1 *Runway Deicing Operation*: To minimize the discharge of pollutants in stormwater from runway deicing operations, implement source reduction control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): metered application of chemicals; pre-wetting dry chemical constituents prior to application; installing a runway ice detection system; implementing anti-icing operations as a preventive measure against ice buildup; heating sand; and product substitution. Chemical options to replace pavement deicers (urea or glycol) include (list not exclusive): potassium acetate; magnesium acetate; calcium acetate; and anhydrous sodium acetate.

E.S.3.1.6.2 *Aircraft Deicing Operations*. Minimize the discharge of pollutants in stormwater from aircraft deicing operations. Determine whether excessive application of deicing chemicals occurs and adjust as necessary, consistent with considerations of flight safety. Determine whether alternatives to glycol and whether containment measures for applied chemicals are feasible. Implement control measures for reducing deicing fluid such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): forced-air deicing systems, computer-controlled fixed-gantry systems, infrared technology, hot water, varying glycol content to air temperature, enclosed-basket deicing trucks, mechanical methods, solar radiation, hangar storage, aircraft covers, and thermal blankets for MD-80s and DC-9s. Consider using ice-detection systems and airport traffic flow strategies and departure slot allocation systems where feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations. The evaluations and determinations required by this Part should be carried out by the personnel most familiar with the

particular aircraft and flight operations and related systems in question (versus an outside entity such as the airport authority.

E.S.3.1.7 *Management of Stormwater*. Minimize the discharge of pollutants in stormwater from deicing chemicals. To minimize discharges of pollutants in stormwater from aircraft deicing, implement runoff management control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): installing a centralized deicing pad to recover deicing fluid following application; plug-and-pump (PnP); using vacuum/collection trucks (glycol recovery vehicles); storing contaminated stormwater/deicing fluids in tanks; recycling collected deicing fluid where feasible; releasing controlled amounts to a publicly owned treatment works; separation of contaminated snow; conveying contaminated stormwater into an impoundment for biochemical decomposition (be aware of attracting wildlife that may prove hazardous to flight operations); and directing stormwater into vegetative swales or other infiltration measures. To minimize discharges of pollutants in stormwater from runway deicing, implement runoff management control measures such as the following, where determined to be feasible and that accommodate considerations of safety, space, operational constraints, and flight considerations (list not exclusive): mechanical systems (snow plows, brushes); conveying contaminated stormwater into swales and/or a stormwater impoundment; and pollution prevention practices such as ice detection systems, and airfield prewetting.

E.S.3.1.8 When applying deicing fluids during non-precipitation events (also referred to as "clear ice deicing"), implement control measures to prevent unauthorized discharge of pollutants (dry-weather discharges of pollutants would need coverage under an NPDES wastewater permit), or to minimize the discharge of pollutants from deicing fluids in later stormwater discharges, implement control measures such as the following, where determined to be feasible and that accommodate considerations safety, space, operational constraints, and flight considerations (list not exclusive): recovering deicing fluids; preventing the fluids from entering storm sewers or other stormwater discharge conveyances (e.g., covering storm sewer inlets, using booms, installing absorptive interceptors in the drains); releasing controlled amounts to a publicly owned treatment works Used deicing fluid should be recycled whenever practicable.

E.S.3.2 *Deicing Season.* You must determine the seasonal timeframe (e.g., December- February, October - March, etc.) during which deicing activities typically occur at the facility. Implementation of control measures, including any BMPs, facility inspections and monitoring must be conducted with particular emphasis throughout the defined deicing season. If you meet the deicing chemical usage thresholds of 100,000 gallons glycol and/or 100 tons of urea, the deicing season you identified is the timeframe during which you must obtain the four required benchmark monitoring event results for deicing-related parameters, i.e., BOD, COD, ammonia and pH.

E.S.4 Additional SWPCP Requirements

E.S.4.1 *Drainage Area Site Map*. Document in the SWPCP the following areas of the facility and indicate whether activities occurring there may be exposed to precipitation/stormwater: aircraft and runway deicing operations; fueling stations; aircraft, ground vehicle and equipment

maintenance/cleaning areas; storage areas for aircraft, ground vehicles and equipment awaiting maintenance.

E.S.4.2 *Potential Pollutant Sources.* In your inventory of exposed materials, describe in your SWPCP the potential for the following activities and facility areas to contribute pollutants to stormwater discharges: aircraft, runway, ground vehicle and equipment maintenance and cleaning; aircraft and runway deicing operations (including apron and centralized aircraft deicing stations, runways, taxiways and ramps). If you use deicing chemicals, you must maintain a record of the types (including the Safety Data Sheets [SDS]) used and the monthly quantities, either as measured or, in the absence of metering, as estimated to the best of your knowledge. This includes all deicing chemicals, not just glycols and urea (e.g., potassium acetate), because large quantities of these other chemicals can still have an adverse impact on receiving waters. Tenants or other fixed-based operations that conduct deicing operations must provide the above information to the airport authority for inclusion with any comprehensive airport SWPCPs.

E.S.4.3 *Vehicle and Equipment Washwater Requirements.* Attach to or reference in your SWPCP, a copy of the NPDES permit issued for vehicle/equipment washwater, if applicable. If an industrial user permit is issued under a local pretreatment program, include a copy in your SWPCP. If washwater is handled in another manner (e.g., hauled offsite, retained onsite), describe the disposal method and attach all pertinent documentation/information (e.g., frequency, volume, destination, etc.) in your SWPCP.

E.S.4.4 *Documentation of Control Measures Used for Management of Stormwater:* Document in your SWPCP the control measures used for collecting or containing contaminated melt water from collection areas used for disposal of contaminated snow.

E.S.5 Sector-Specific Benchmarks

At a minimum conduct facility inspections at least monthly during the deicing season (e.g., October through April for most mid-latitude airports). If your facility needs to deice before or after this period, expand the monthly inspections to include all months during which deicing chemicals may be used. DEQ may specifically require you to increase inspection frequencies.

E.S.6 Sector-Specific Benchmarks

Table E.S-1 identifies benchmarks that apply to the specific subsectors of Sector S. These benchmarks apply to both your primary industrial activity and any co-located industrial activities, unless a facility has an Individual NPDES Permit for de-icing activities.

Table E.S-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
For airports where a single permittee, or a combination of permitted facilities, use more than 100,000 gallons of glycol-based deicing chemicals and/or 100 tons or more of urea on an average annual basis, monitor these parameters at discharge points that collect stormwater from areas where deicing activities occur (SIC 4512-4581) and when deicing activities are occurring	Biochemical Oxygen Demand (BOD_5)	30 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L
	Ammonia	2.14 mg/L
	pH	Statewide benchmark

E.S.7 Effluent Limitations Based on Effluent Limitations Guidelines and New Source Performance Standards

E.S.7.1 *Airfield Pavement Deicing*. For both existing and new "primary airports" (as defined at 40 CFR 449.2) with 1,000 or more annual non-propeller aircraft departures that discharge stormwater from airfield pavement deicing activities, there shall be no discharge of airfield pavement deicers containing urea. To comply with this limitation, such airports must do one of the following: (1) certify annually on the annual report that you do not use pavement deicers containing urea, or (2) meet the effluent limitation in Table E.S-2.

E.S.7.2 *Aircraft Deicing*. Airports that are both "primary airports" (as defined at 40 CFR 449.2) and new sources ("new airports") with 1,000 or more annual non-propeller aircraft departures must meet the applicable requirements for aircraft deicing at 40 CFR 449.11(a). Discharges of the collected aircraft deicing fluid directly to waters of the state are not eligible for coverage under this permit.

E.S.7.3 Monitoring, Reporting and Recordkeeping. For new and existing airports subject to the effluent limitations in E.S.7.1 or E.S.7.2 of this permit, you must comply with the applicable monitoring, reporting and recordkeeping requirements outlined in 40 CFR 449.20.

Table E.S-2[1]

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Effluent Limitation
Discharge containing urea from airfield pavement deicing at existing and new primary airports with 1,000 or more annual non-propeller aircraft departures	Ammonia as Nitrogen	14.7 mg/L. daily maximum

[1]Monitor semi-annually.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector T – Treatment Works

E.T.1 Additional Technology-Based Effluent Limits

E.T.1.1 *Control Measures.* In addition to the other control measures, consider the following: routing stormwater to the treatment works; or covering exposed materials (i.e., from the following areas: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; and septage or hauled waste receiving station).

E.T.1.2 *Employee Training.* At a minimum, training must address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and controls; fueling procedures; general good housekeeping practices; and proper procedures for using fertilizer, herbicides, and pesticides.

E.T.2 Additional SWPCP Requirements

E.T.2.1 *Site Map*. Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station; and storage areas for process chemicals, petroleum products, solvents, fertilizers, herbicides, and pesticides.

E.T.2.2 *Potential Pollutant Sources*. Document in your SWPCP the following additional sources and activities that have potential pollutants associated with them, as applicable: grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; septage or hauled waste receiving station; and access roads and rail lines.

E.T.2.3 *Wastewater and Washwater Requirements.* If wastewater and/or vehicle and equipment wash-water is not covered by another NPDES permit but is handled in another manner (e.g., hauled offsite, retained onsite), the disposal method must be described and all pertinent information (e.g., frequency, volume, destination) must be included in your SWPCP. Discharges of vehicle and equipment washwater, including tank cleaning operations, are not authorized by this permit for this sector.

E.T.3 Additional Inspection Requirements

Include the following areas in all inspections: access roads and rail lines; grit, screenings, and other solids handling, storage, or disposal areas; sludge drying beds; dried sludge piles; compost piles; and septage or hauled waste receiving station.

E.T.4 Sector-Specific Benchmarks

Table E.T.1

Subsector (You may be subject to requirements for more than one Sector / Subsector)	Parameter	Benchmark Monitoring Concentration
Treatment Works	E. coli	406 organisms/100 mL

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector U – Food and Kindred Products

E.U.1 Additional Technology-Based Limitations

E.U.1.1 *Employee Training*. Address pest control in your employee training program.

E.U.2 Additional SWPCP Requirements

E.U.2.1 *Drainage Area Site Map.* Document in your SWPCP the locations of the following activities if they are exposed to stormwater: vents and stacks from cooking, drying, and similar operations; dry product vacuum transfer lines; animal holding pens; spoiled product; and broken product container storage areas.

E.U.2.2 *Potential Pollutant Sources.* Document in your SWPCP, in addition to food and kindred products processing-related industrial activities, application and storage of pest control chemicals (e.g., rodenticides, insecticides, fungicides) used on plant grounds.

E.U.3 Additional Inspection Requirements

Inspect on a monthly basis, at a minimum, the following areas where the potential for exposure to stormwater exists: loading and unloading areas for all significant materials; storage areas, including associated containment areas; waste management units; vents and stacks emanating from industrial activities; spoiled product and broken product container holding areas; animal holding pens; staging areas; and air pollution control equipment.

E.U.4 Sector-Specific Benchmarks

Table E.U-1 identifies benchmarks that apply to the specific subsectors of Sector U. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.U-1

Subsector (You may be subject to requirements for more than one Sector / Subsector)	Parameter	Benchmark Monitoring Concentration
Grain Mill Products (SIC codes 2041-2048)	Total Suspended Solids (TSS)	Statewide benchmark
Fats and Oils Products (SIC 2074-2079)	Total Suspended Solids (TSS)	Statewide benchmark
	Biochemical Oxygen Demand (BOD_5)	30 mg/L
	Chemical Oxygen Demand (COD)	120 mg/L
	Nitrate plus Nitrite Nitrogen	10 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector V – Textile Mills, Apparel, and Other Fabric Products

E.V.1 Additional Technology-Based Limitations

E.V.1.1 *Good Housekeeping Measures.*

E.V.1.1.1 *Material Storage Areas.* Plainly label and store all containerized materials (e.g., fuels, petroleum products, solvents, and dyes) in a protected area, away from drains. Minimize contamination of the stormwater from such storage areas. Also consider an inventory control plan to prevent excessive purchasing of potentially hazardous substances. For storing empty chemical drums or containers, ensure that the drums and containers are clean (consider triple-rinsing) and that there is no contact of residuals with stormwater. Collect and dispose of washwater from these cleanings properly.

E.V.1.1.2 *Material Handling Areas.* Minimize contamination of stormwater from material handling operations and areas. Consider the following (or their equivalents): use of spill and overflow protection; covering fueling areas; and covering or enclosing areas where the transfer of material may occur. When applicable, address the replacement or repair of leaking connections, valves, transfer lines, and pipes that may carry chemicals, dyes, or wastewater.

E.V.1.1.3 *Fueling Areas.* Minimize contamination of stormwater from fueling areas. Consider the following (or their equivalents): covering the fueling area, using spill and overflow protection, minimizing run-on of stormwater to the fueling areas, using dry cleanup methods, and treating and/or recycling stormwater collected from the fueling area.

E.V.1.1.4 *Above-Ground Storage Tank Area.* Minimize contamination of the stormwater runoff from above-ground storage tank areas, including the associated piping and valves. Consider the following (or their equivalents): regular cleanup of these areas; including measures for tanks, piping and valves explicitly in your SPCC program; minimizing runoff of stormwater from adjacent areas; restricting access to the area; inserting filters in adjacent catch basins; providing absorbent booms in unbermed fueling areas; using dry cleanup methods; and permanently sealing drains within critical areas that may discharge to a storm drain.

E.V.1.2 *Employee Training.* As part of your employee training program, address, at a minimum, the following activities (as applicable): use of reused and recycled waters, solvents management, proper disposal of dyes, proper disposal of petroleum products and spent lubricants, spill prevention and control, fueling procedures, and general good housekeeping practices.

E.V.2 Additional SWPCP Requirements

E.V.2.1 *Potential Pollutant Sources. Document in your SWPCP the following additional sources* and activities that have potential pollutants associated with them: industry-specific significant materials and industrial activities (e.g., backwinding, beaming, bleaching, backing bonding, carbonizing, carding, cut and sew operations, desizing, drawing, dyeing locking, fulling, knitting, mercerizing, opening, packing, plying, scouring, slashing, spinning, synthetic-felt processing, textile waste processing, tufting, turning, weaving, web forming, winging, yarn spinning, and yarn texturing).

E.V.2.2 *Description of Good Housekeeping Measures for Material Storage Areas.* Document in the SWPCP your containment area or enclosure for materials stored outdoors.

E.V.3 Additional Inspection Requirements

Inspect, at least monthly, the following activities and areas (at a minimum): transfer and transmission lines, spill prevention, good housekeeping practices, management of process waste products, and all structural and nonstructural management practices.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector W – Furniture and Fixtures

E.W.1 Additional Technology-Based Limitations

E.W.1.1 *Drainage Area Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: material storage (including tanks or other vessels used for liquid or waste storage) areas; outdoor material processing areas; areas where wastes are treated, stored, or disposed of; access roads; and rail spurs.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector X – Printing and Publishing

E.X.1 Additional Technology-Based Effluent Limits

E.X.1.1 *Good Housekeeping Measures*.

E.X.1.1.1 *Material Storage Areas.* Plainly label and store all containerized materials (e.g., skids, pallets, solvents, bulk inks, hazardous waste, empty drums, portable and mobile containers of plant debris, wood crates, steel racks, and fuel oil) in a protected area, away from drains. Minimize contamination of the stormwater from such storage areas. Also, consider an inventory control plan to prevent excessive purchasing of potentially hazardous substances.

E.X.1.1.2 *Material Handling Area.* Minimize contamination of stormwater from material handling operations and areas (e.g., blanket wash, mixing solvents, loading and unloading materials). Consider the following (or their equivalents): using spill and overflow protection, covering fueling areas, and covering or enclosing areas where the transfer of materials may occur. When applicable, address the replacement or repair of leaking connections, valves, transfer lines, and pipes that may carry chemicals or wastewater.

E.X.1.1.3 *Fueling Areas.* Minimize contamination of stormwater runoff from fueling areas. Consider the following (or their equivalents): covering the fueling area, using spill and overflow protection, minimizing runoff of stormwater to the fueling areas, using dry cleanup methods, and treating and/or recycling stormwater collected from the fueling area.

E.X.1.1.4 *Above Ground Storage Tank Area.* Minimize contamination of the stormwater runoff from above-ground storage tank areas, including the associated piping and valves. Consider the following (or their equivalents): regularly cleaning these areas, explicitly addressing tanks, piping and valves in the SPCC program, minimizing stormwater runoff from adjacent areas, restricting access to the area, inserting filters in adjacent catch basins, providing absorbent booms in unbermed fueling areas, using dry cleanup methods, and permanently sealing drains within critical areas that may discharge to a storm drain.

E.X.1.2 *Employee Training.* As part of your employee training program, address, at a minimum, the following activities (as applicable): spent solvent management, spill prevention and control, used oil management, fueling procedures, and general good housekeeping practices.

E.X.2 Additional SWPCP Requirements

E.X.2.1 *Description of Good Housekeeping Measures for Material Storage Areas.* In connection with E.X.1.1.1, describe in the SWPCP the containment area or enclosure for materials stored outdoors.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector Y – Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries

E.Y.1 Additional Technology-Based Effluent Limits

E.Y.1.1 *Controls for Rubber Manufacturers.* Minimize the discharge of zinc in your stormwater discharges. Following are some general control measure options to consider: using chemicals purchased in pre-weighed, sealed polyethylene bags; storing in-use materials in sealable containers, ensuring an airspace between the container and the cover to minimize "puffing" losses when the container is opened, and using automatic dispensing and weighing equipment.

E.Y.1.1.1 *Zinc Bags.* Ensure proper handling and storage of zinc bags at your facility. Following are some control measure options: employee training on the handling and storage of zinc bags, indoor storage of zinc bags, cleanup of zinc spills without washing the zinc into the storm drain, and the use of 2,500-pound sacks of zinc rather than 50- to 100-pound sacks.

E.Y.1.1.2 *Dumpsters.* Minimize discharges of zinc from dumpsters through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering the dumpster; moving the dumpster indoors; and providing a lining for the dumpster.

E.Y.1.1.3 *Dust Collectors and Baghouses.* Minimize contributions of zinc to stormwater from dust collectors and baghouses. Replace or repair, as appropriate, improperly operating dust collectors and baghouses.

E.Y.1.1.4 *Grinding Operations.* Minimize contamination of stormwater as a result of dust generation from rubber grinding operations. Where determined to be feasible, install a dust collection system.

E.Y.1.1.5 *Zinc Stearate Coating Operations.* Minimize the potential for stormwater contamination from drips and spills of zinc stearate slurry that may be released to the storm drain. Where determined to be feasible, use alternative compounds to zinc stearate.

E.Y.1.2 *Controls for Plastic Products Manufacturers.* Minimize the discharge of plastic resin pellets in your stormwater discharges through implementation of control measures such as the following, where determined to be feasible (list not exclusive): minimizing spills; cleaning up of spills promptly and thoroughly; sweeping thoroughly; pellet capturing; employee education; and disposal precautions.

E.Y.2 Additional SWPCP Requirements

E.Y.2.1 *Potential Pollutant Sources for Rubber Manufacturers.* Document in your SWPCP the use of zinc at your facility and the possible pathways through which zinc may be discharged in stormwater.

E.Y.3 Sector-Specific Benchmarks

Table E.Y-1 identifies benchmarks that apply to the specific subsectors of Sector Y. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.Y-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Rubber Products Manufacturing (SIC codes 3011, 3021, 3052, 3053, 3061, 3069)	Total zinc Freshwater	Statewide benchmark
	Total zinc Saltwater	0.46 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector Z – Leather Tanning and Finishing

E.Z.1 Additional Technology-Based Effluent Limits

E.Z.1.1 *Good Housekeeping Measures.*

E.Z.1.1.1 *Storage Areas for Raw, Semiprocessed, or Finished Tannery By-products.* Minimize contamination of stormwater from pallets and bales of raw, semiprocessed, or finished tannery by-products (e.g., splits, trimmings, shavings). Store or protect indoors with polyethylene wrapping, tarpaulins, roofed storage, etc. where practicable. Place materials on an impermeable surface and enclose or put berms (or equivalent measures) around the area to prevent stormwater run-on and runoff where practicable.

E.Z.1.1.2 *Material Storage Areas.* Label storage containers of all materials (e.g., specific chemicals, hazardous materials, spent solvents, waste materials) minimize contact of such materials with stormwater.

E.Z.1.1.3 *Buffing and Shaving Areas.* Minimize contamination of stormwater discharge with leather dust from buffing and shaving areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): implementing dust collection enclosures; implementing preventive inspection and maintenance programs; or other appropriate preventive measures.

E.Z.1.1.4 *Receiving, Unloading, and Storage Areas.* Minimize contamination of stormwater discharge from receiving, unloading, and storage areas. If these areas are exposed, implement control measures such as the following, where determined to be feasible (list not exclusive): covering all hides and chemical supplies; diverting drainage to the process sewer; or grade berming or curbing the area to prevent stormwater discharge.

E.Z.1.1.5 *Outdoor Storage of Contaminated Equipment*. Minimize contact of stormwater with contaminated equipment through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering equipment, diverting drainage to the process sewer, and cleaning thoroughly prior to storage.

E.Z.1.1.6 *Waste Management.* Minimize contamination of stormwater discharge from waste storage areas through implementation of control measures such as the following, where determined to be feasible (list not exclusive): covering dumpsters; moving waste management activities indoors; covering waste piles with temporary covering material such as tarpaulins or polyethylene; and minimizing stormwater discharge by enclosing the area or building berms around the area.

E.Z.2 Additional SWPCP Requirements

E.Z.2.1 *Drainage Area Site Map.* Identify in your SWPCP where any of the following may be exposed to precipitation or stormwater: processing and storage areas of the beamhouse, tanyard, and re-tan wet finishing and dry finishing operations.

E.Z.2.2 *Potential Pollutant Sources.* Document in your SWPCP the following sources and activities that have potential pollutants associated with them (as appropriate): temporary or permanent storage of fresh and brine-cured hides; extraneous hide substances and hair; leather dust, scraps, trimmings, and shavings.

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector AA – Fabricated Metal Products

E.AA.1 Additional Technology-Based Effluent Limits

E.AA.1.1 *Good Housekeeping Measures.*

E.AA.1.1.1 *Raw Steel Handling Storage.* Minimize the generation of and/or recover and properly manage scrap metals, fines, and iron dust. Include measures for containing materials within storage handling areas.

E.AA.1.1.2 *Paints and Painting Equipment.* Minimize exposure of paint and painting equipment to stormwater.

E.AA.1.2 *Spill Prevention and Response Procedures.* Ensure that the necessary equipment to implement a cleanup is available to personnel. The following areas should be addressed

E.AA.1.2.1 *Metal Fabricating Areas.* Maintain clean, dry, orderly conditions in these areas. Consider using dry clean-up techniques.

E.AA.1.2.2 *Storage Areas for Raw Metal.* Keep these areas free of conditions that could cause, or impede appropriate and timely response to, spills or leakage of materials through implementation of control measures such as the following, where determined to be feasible (list not exclusive): maintaining storage areas so that there is easy access in the event of a spill, and labeling stored materials to aid in identifying spill contents.

E.AA.2.2.3 *Metal Working Fluid Storage Areas.* Minimize the potential for stormwater contamination from storage areas for metal working fluids.

E.AA.1.2.4 *Cleaners and Rinse Water.* Control and clean up spills of solvents and other liquid cleaners, control sand buildup and disbursement from sand-blasting operations, and prevent exposure of recyclable wastes. Substitute environmentally benign cleaners when possible.

E.AA.1.2.5 *Lubricating Oil and Hydraulic Fluid Operations.* Minimize the potential for stormwater contamination from lubricating oil and hydraulic fluid operations. Use monitoring equipment or other devices to detect and control leaks and overflows where feasible. Install perimeter controls such as dikes, curbs, grass filter strips, or equivalent measures where feasible.

E.AA.1.2.6 *Chemical Storage Areas.* Minimize stormwater contamination and accidental spillage in chemical storage areas. Include a program to inspect containers and identify proper disposal methods.

E.AA.1.3 *Spills and Leaks.* In your spill prevention and response procedures, pay attention to the following materials (at a minimum): chromium, toluene, pickle liquor, sulfuric acid, zinc and other water priority chemicals, and hazardous chemicals and wastes.

E.AA.2 Additional SWPCP Requirements

E.AA.2.1 *Drainage Area Site Map.* Document in your SWPCP where any of the following may be exposed to precipitation or stormwater: raw metal storage areas; finished metal storage areas; scrap disposal collection sites; equipment storage areas; retention and detention basins; temporary and permanent diversion dikes or berms; right-of-way or perimeter diversion devices; sediment traps and barriers; processing areas, including outside painting areas; wood preparation; recycling; and raw material storage.

E.AA.2.2 *Potential Pollutant Sources.* Document in your SWPCP the following additional sources and activities that have potential pollutants associated with them: loading and unloading operations for paints, chemicals, and raw materials; outdoor storage activities for raw materials, paints, empty containers, corn cobs, chemicals, and scrap metals; outdoor manufacturing or processing activities such as grinding, cutting, degreasing, buffing, and brazing; onsite waste disposal practices for spent solvents, sludge, pickling baths, shavings, ingot pieces, and refuse and waste piles.

E.AA.3 Additional Inspection Requirements

E.AA.3.1 *Inspections.* At a minimum, include the following areas in all inspections: raw metal storage areas, finished product storage areas, material and chemical storage areas, recycling areas, loading and unloading areas, equipment storage areas, paint areas, and vehicle fueling and maintenance areas. Also, inspect areas associated with the storage of raw metals, spent solvents and chemicals storage areas, outdoor paint areas, and drainage from roof. Potential pollutants include chromium, zinc, lubricating oil, solvents, aluminum, oil and grease, methyl ethyl ketone, steel, and related materials.

E.AA.4 Sector-Specific Benchmarks

Table E.AA-1 identifies benchmarks that apply to the specific subsectors of Sector AA. These benchmarks apply to both your primary industrial activity and any co-located industrial activities.

Table E.AA-1

Subsector (You may be subject to requirements for more than one sector/subsector)	Parameter	Benchmark Monitoring Concentration
Fabricated Metal Products, except Coating (SIC 3411-3499; 3911-3915)	Total Aluminum	1.10 mg/L
	Nitrate plus Nitrite Nitrogen	10 mg/L
	Total zinc Freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L
Fabricated Metal coating and Engraving (SIC 3479)	Nitrate plus Nitrite Nitrogen	10 mg/L
	Total zinc Freshwater	Statewide benchmark
	Total zinc saltwater	0.46 mg/L

Schedule E – Sector-Specific Requirements for Industrial Activity
Sector AB – Transportation Equipment, Industrial or Commercial Machinery

E.AB.1 Additional SWPCP Requirements

E.AB.1.1 *Drainage Area Site Map.* Identify in your SWPCP where any of the following may be exposed to precipitation or stormwater: vents and stacks from metal processing and similar operations.

SCHEDULE F
NPDES GENERAL CONDITIONS

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to $25,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to $25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to $250,000, imprisonment for not more than 10 years, or both.

The Clean Water Act provides that any person who violates permit condition, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation.

The Clean Water Act provides that any person who *negligently* violates any condition, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both.

In the case of a second or subsequent conviction for a *negligent* violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

Any person who *knowingly* violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both.

In the case of a second or subsequent conviction for a *knowing* violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

Any person who *knowingly* violates section any permit condition, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both.

In the case of a second or subsequent conviction for a *knowing* endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both.

An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

Any person may be assessed an administrative penalty by the Administrator for violating any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act.

Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000.

Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

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 have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).

e. New information or regulations.
f. Modification of compliance schedules.
g. Requirements of permit reopener conditions
h. Correction of technical mistakes made in determining permit conditions.
i. Determination that the permitted activity endangers human health or the environment.
j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
k. For communities with combined sewer overflows (CSOs):
   (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.
   (2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
   (3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants
The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, 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.

A7. Property Rights and Other Legal Requirements
The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References
Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees
The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance
The permittee must 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.

B2. Need to Halt or Reduce Activity Not a Defense

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not 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.

B3. Bypass of Treatment Facilities

a. Definitions
   (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.
   (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become 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. Prohibition of bypass.
   (1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:
      i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
      ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup 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 preventative maintenance; and
      iii. The permittee submitted notices and requests as required under General Condition B3.c.
   (2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).

c. Notice and request for bypass.
   (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.
   (2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

a. Definition. "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 operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
   (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
   (2) The permitted facility was at the time being properly operated;
   (3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
   (4) The permittee complied with any remedial measures required under General Condition A3 hereof.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

a. Definition. "Overflow" means any spill, release or diversion of sewage including:
   (1) An overflow that results in a discharge to waters of the state; and
   (2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the state.

b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8.

Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
e. Provide emergency operations; and
f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most

recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal 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 may, upon conviction, be punished by a fine of not more than $10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than $20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a Discharge Monitoring Report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. 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, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, 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 must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

a. The date, exact place, time, and methods 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.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials 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 purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.
   (1) Oral Reporting within 24 hours.
      i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
         (a) The location of the overflow;
         (b) The receiving water (if there is one);
         (c) An estimate of the volume of the overflow;
         (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
         (e) The estimated date and time when the overflow began and stopped or will be stopped.
      ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
         (a) The OERS incident number (if applicable); and
         (b) A brief description of the event.
   (2) Written reporting postmarked within 5 days.
      i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
         (a) The OERS incident number (if applicable);
         (b) The cause or suspected cause of the overflow;
         (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
         (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
         (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

      DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.
   (1) The following instances of noncompliance must be reported:
      i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
      ii. Any upset that exceeds any effluent limitation in this permit;
      iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
      iv. Any noncompliance that may endanger human health or the environment.
   (2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).

(3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
   i. A description of the noncompliance and its cause;
   ii. The period of noncompliance, including exact dates and times;
   iii. The estimated time noncompliance is expected to continue if it has not been corrected;
   iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
   v. Public notification steps taken, pursuant to General Condition B**7.**

(4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance
The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports 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; and
d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information
The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements
All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information
Under ORS 468.953, any person who knowingly makes any false statement, representation, 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, is subject to a Class C felony punishable by a fine not to exceed $125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, 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 non-compliance will, upon conviction, be punished by a federal civil penalty not to exceed $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;

b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

E1. *BOD* or BOD_5 means five-day biochemical oxygen demand.
E2. *CBOD* or $CBOD_5$ means five-day carbonaceous biochemical oxygen demand.
E3. *TSS* means total suspended solids.
E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
E5. *FC* means fecal coliform bacteria.
E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
E8. *mg/l* means milligrams per liter.
E9. *µg/l* means microgram per liter.
E10. *kg* means kilograms.
E11. m^3/d means cubic meters per day.
E12. *MGD* means million gallons per day.
E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
E18. *Quarter* means January through March, April through June, July through September, or October through December.
E19. *Month* means calendar month.

E20. *Week* means a calendar week of Sunday through Saturday.
E21. *POTW* means a publicly-owned treatment works.

APPENDIX A: BASIN-SPECIFIC pH CONCENTRATIONS

pH Basin-Specific Criteria (OAR 340-041-0101 through 340-041-0350) Impairment Monitoring Concentrations and Water Quality-based Effluent Limit

Basin or Water Body	OAR	Water	Criteria Range
General	**340-041-0021(1)(a)**	Marine	7.0 to 8.5
General	**340-041-0021(1)(b)**	Estuarine and fresh waters	See basin-specific criteria
Columbia River	**340-041-0104(1)**	Main stem Columbia River (mouth to river mile 309):	7.0 to 8.5
Snake River	**340-041-0124(1)**	Main stem Snake River (river miles 260 to 335)	7.0 to 9.0
Deschutes Basin	**340-041-0135(1)(a)**	All other basin streams (except Cascade lakes)	6.5 to 8.5
	340-041-0135(1)(b)	Cascade lakes above 3,000 feet altitude	6.0 to 8.5
Goose and Summer Lakes Basin	**340-041-0145(1)(a)**	Goose Lake	7.5 to 9.5
	340-041-0145(1)(b)	All other basin waters	7.0 to 9.0
Grande Ronde Basin	**340-041-0156(1)**	All basin streams (other than main stem Snake River)	6.5 to 9.0
Hood Basin	**340-041-0165(1)(a)**	Hood River Basin streams (except main stem Columbia River and Cascade lakes)	6.5 to 8.5
	340-041-0165(1)(b)	Cascade lakes above 3,000 feet altitude	6.0 to 8.5
John Day Basin	**340-041-0175(1)**	All basin streams (other than the main stem Colombia River)	6.5 to 9.0
Klamath Basin	**340-041-0185(1)(a)**	Fresh waters except Cascade lakes	6.5 to 9.0
	340-041-0185(1)(b)	Cascade lakes above 5,000 feet altitude	6.0 to 8.5
Malheur Lake Basin	**340-041-0195(1)**	All	7.0 to 9.0
Malheur River Basin	**340-041-0207(1)**	All	7.0 to 9.0
Mid Coast Basin	**340-041-0225(1)(a)**	Marine waters	7.0 to 8.5

Basin or Water Body	OAR	Water	Criteria Range
	340-041-0225(1)(b)	Estuarine and fresh waters	6.5 to 8.5
North Coast Basin	**340-041-0235(1)(a)**	Marine waters	7.0 to 8.5
	340-041-0235(1)(b)	Estuarine and fresh waters	6.5 to 8.5
Owyhee Basin	**340-041-0256(1)**	All	7.0 to 9.0
Powder/Burnt Basins	**340-041-0265(1)**	All basin streams (other than main stem Snake River)	6.5 to 9.0
Rogue Basin	**340-041-0275(1)(a)**	Marine waters	7.0 to 8.5
	340-041-0275(1)(b)	Estuarine and fresh waters (except Cascade lakes)	6.5 to 8.5
	340-041-0275(1)(c)	Cascade lakes above 3,000 feet altitude	6.0 to 8.5
Sandy Basin	**340-041-0290(1)(a)**	All basin waters (except main stem Columbia River and Cascade lakes)	6.5 to 8.5
	340-041-0290(1)(b)	Cascade lakes above 3,000 feet altitude	6.0 to 8.5
South Coast Basin	**340-041-0305(1)(a)**	Estuarine and fresh waters	6.5 to 8.5
	340-041-0305(1)(b)	Marine waters	7.0 to 8.5
Umatilla Basin	**340-041-0315(1)**	All basin streams (other than main stem Columbia River)	6.5 to 9.0
Umpqua Basin	**340-041-0326(1)(a)**	Marine waters	7.0 to 8.5
	340-041-0326(1)(b)	Estuarine and fresh waters (except Cascade lakes)	6.5 to 8.5
	340-041-0326(1)(c)	Cascade lakes above 3,000 feet altitude	6.0 to 8.5
Walla Walla Basin	**340-041-0336**	All	6.5 to 9.0
Willamette Basin	**340-041-0345(1)(a)**	All basin waters (except main stem Columbia River and Cascade lakes)	6.5 to 8.5
	340-041-0345(1)(b)	Cascade lakes above 3,000 feet altitude	6.0 to 8.5

ATTACHMENT 2: 2014 ENGINEERING EVALUATION

ENGINEERING EVALUATIONOF CONTROL AND TREATMENT MEASURES

Owens-Brockway Glass Container Inc.
Plant No. 21
Portland, Oregon

Prepared For:
Owens-Brockway Glass Container Inc.

Prepared by:
Dalton, Olmsted & Fuglevand

DOF DALTON OLMSTED FUGLEVAND

December 2014

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

BMP	Best management practices
BOD	Biological oxygen demand
BES	Bureau of Environmental Services
DEQ	Department of Environmental Quality
DOF	Dalton, Olmsted & Fuglevand
DOT	Department of Transportation
ft^2	Square feet
MSDS	Material Safety Data Sheet
MS/MSD	Matrix spike/matrix spike duplicate
NPDES	National Pollution Discharge Elimination System
Owens	Owens-Brockway Glass Container Inc.
SOP	Standard operating procedure
SPCC	Spill Prevention, Control and Countermeasure
SWPCP	Storm Water Pollution Control Plan
TSS	Total suspended solids

1 INTRODUCTION

Owens-Brockway Glass Container Inc. (Owens) contracted Dalton, Olmsted & Fuglevand, Inc. (DOF) to perform an engineering evaluation of its control and treatment measures related to the industrial stormwater discharge permit for their Portland Plant.

Owens Portland Plant is located at the following address:

Owens-Brockway Glass Container Inc. Plant #21
9710 NE Glass Plant Road
Portland, Oregon 97220

2 PURPOSE OF ENGINEERING EVALUATION

Owens is required to operate under the 1200-COLS National Discharge Pollution Elimination System Stormwater Discharge General Permit issued by the Oregon Department of Environmental Quality, effective October 1, 2011 and expires September 30, 2016 (hereafter referred to as the 1200-COLS General Permit).

The 1200-COLS General Permit requires Owens to collect stormwater discharge samples from each outfall (Outfalls 2, 4, 5, 6, and 7) and compare the results to the benchmark levels in Schedule A.9 of the permit.

Owens previously collected the discharge samples and determined that some of the samples in the 2nd year Geometric Mean Benchmark Evaluation exceeded the benchmarks in Schedule A.9 of the 1200-COLS General Permit. Appendix A includes the 2014 Industrial Stormwater Discharge Monitoring Report, which includes the values that exceeded benchmarks. The pollutants of concern that exceeded permit benchmarks at respective outfalls include:

- Outfall 2 – Phosphorus
- Outfall 4 – TSS
- Outfall 6 – TSS and E. coli

All of these parameters, with the exception of TSS at Outfall 4, previously exceeded benchmarks based on the 4th year Benchmark Compliance Evaluation required by the 1200-COLS permit that expired August 2011; these parameters are exempt from the Tier II Corrective Action Response based on 2nd year Geometric Mean Evaluation.

Hence, the only parameter addressed in this engineering review is:

- Outfall 4 – TSS

2.1 METHODOLOGY

A DOF engineer visited the Facility on several occasions to observe the onsite operations, existing best management practices (BMPs), treatment controls, and stormwater discharge points.

DOF also reviewed the following documents:

- Previous SWPCP and engineering evaluation dated May 2012
- Previous Discharge Monitoring Reports

DOF reviewed the stormwater discharge data and the locations of the benchmark exceedances and has made the following conclusions:

2.2 OUTFALL 4 – TSS

Outfall 4 drains the western portion of the facility which includes Building 31 and the Paper Truck Dock. There are several possible sources onsite that could contribute TSS, including trucks passing through this area creating airborne dust, and dust from the batch house area on the eastern side of the Facility.

3 REVIEW OF TECHNOLOGICALLY AVAILABLE AND ECONOMICALLY ACHIEVABLE CONTROL MEASURES

DOF reviewed several different potential stormwater control measures to address the pollutant(s) of concern that exceeded permit benchmarks. Table 1 includes a summary of the technically available and economically achievable control measures that were reviewed for the Facility's stormwater discharge controls and a comparison of relative treatment effectiveness for treating TSS. Some of the control measures listed in Tables 1 have already been implemented at the Facility, as shown on the table.

During the November 18, 2014 site walkthrough, DOF and Owens observed the outdoor industrial areas and the control measures/BMPs being used onsite. A summary of these control measures that pertain to Outfall 4 is provided below.

3.1.1 HOUSEKEEPING

A large amount of dust accumulates around the Facility, particularly around the batch house area on the eastern side of the property. On a windy day, this dust can become airborne and potentially enter the stormwater system at any of the different outfalls. The Facility has employees sweep problematic areas on a regular basis, as documented in monitoring logs. They also have a contractor come and sweep every other week. The cleanliness of the Facility has improved since increasing sweeping frequency and buying a more effective sweeper.

3.1.2 PREVENTATIVE MAINTENANCE

Per Owens preventative maintenance program, the Facility regularly inspects and cleans the stormwater catch basins to ensure effective operation. During the November 18, 2014 site walkthrough, both DOF and Owens observed the drains on the northeast side of Building 31 by the Paper Truck Dock. There were no obvious items visible from ground level that would appear to cause the TSS exceedances in this area that were not present in other similar truck areas onsite.

The catch basins on the west side of the truck loading dock area, which is an area that is similar to the area that drains to Outfall 4, have catch basin filters in them.

There are six catch basins in the Outfall 4 drainage area, which are located in a high traffic area (Figure 1). Catch basin inserts in these basins could reduce the load of suspended solids that discharges to Outfall 4.

4 RECOMMENDATIONS

Based on the information obtained during the site visit and the review of documents, DOF has the following recommendations for the Facility:

- The Facility should insert proper filtration media (similar to those used on the west side of Building 31) into the three catch basins northeast of Building 31 and the three catch basins east of Building 31. The Facility will have to periodically remove sediment that collects in the filtration media.

The Facility should update its SWPCP to incorporate the findings, conclusions, and recommendations of this report and submit it to the Oregon DEQ prior to December 31, 2014.

5 CERTIFICATION

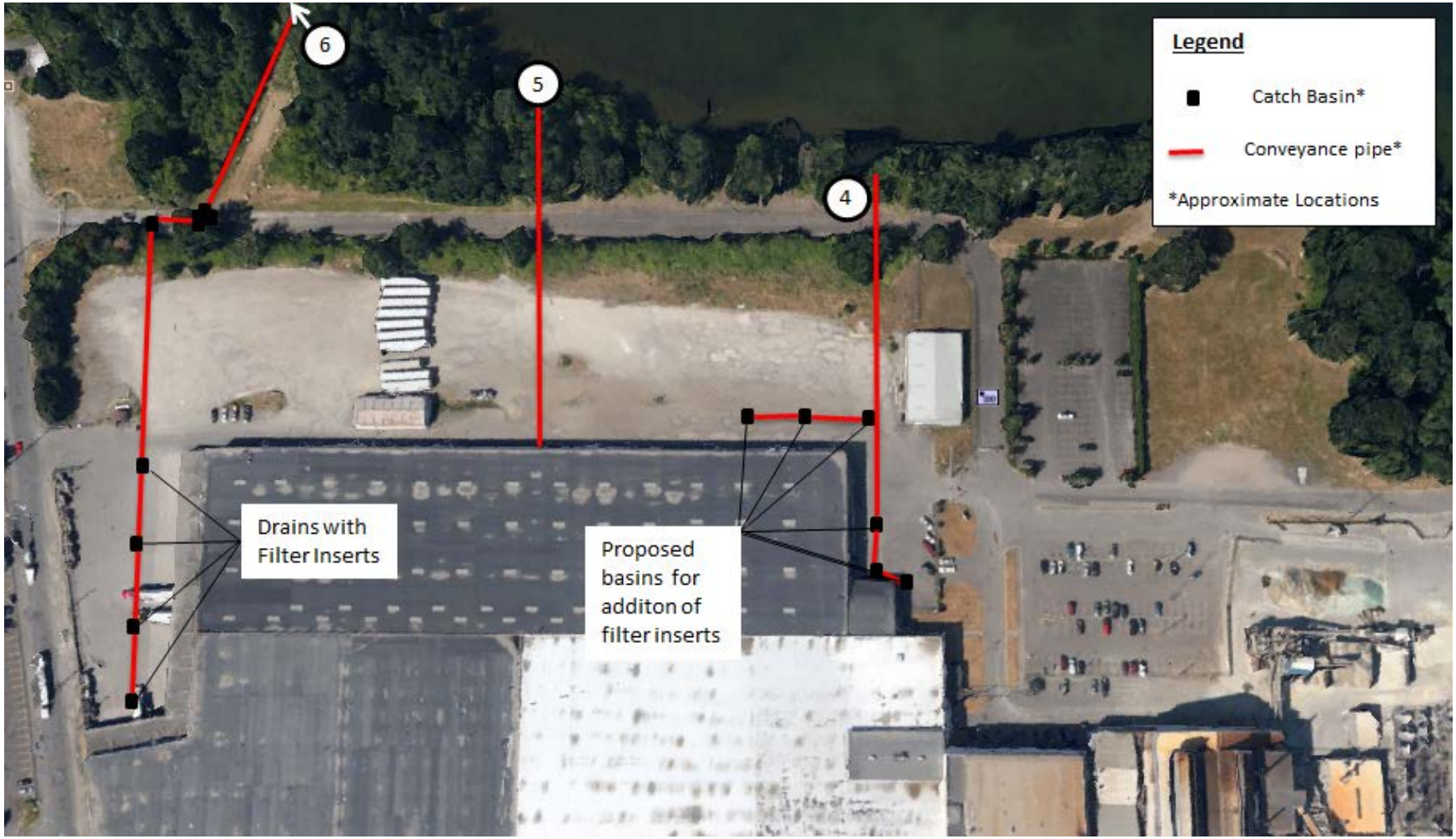


FIGURE 1 PROPOSED CATCH BASINS FOR ADDITION OF FILTER INSERTS IN OUTFALL 4 DRAINAGE AREA.

Table 1. Review of Technologically Available and Reasonably Achievable Control Measures

Owens-Brockway
Portland, Oregon

Control Method	Technologically Available?	Economically Achievable?	Advantages	Disadvantages	Feasibility* (1-5)	TSS Removal Effectiveness** (percent)	Selected for Facility?	Conclusion/Notes
Treatment Options								
Sand Filter	Y	Y	Simple, low cost system. Can remove a wide variety of pollutants.	High maintenance cost and would require frequent change out of material or back flushing.	4	65-90+	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation.
Biofilter (swale)	Y	Y	Biofiltration swales are highly effective in reducing sediment, heavy metals, and stormwater runoff volumes	Biofilter swales require maintenance and vegetation experts to assure proper pollutant reductions	5	81	Y	The Facility installed biofilter swales at Outfalls 2 and 6. This option is not feasible for OF 4 due to space availability.
Wet Pond	Y	Y	Wet ponds are effective in removing TSS.	They require maintenance and can attract wildlife, which could increase E. coli sample results.	4	67	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation.
Wet Vault	Y	Y	Similar to Wet Pond.	Similar to Wet Pond.	2	50-80	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation at this time.
Infiltration	Y	Y	Infiltration can be an effective treatment method when soil conditions are favorable.	Infiltration treatment methods require periodic maintenance of the system bottom to retain ability to allow contaminants to percolate from the storm water drainage.	5	75	Y	The biofilter swales that were already installed onsite were built to allow infiltration and reduce pollutant loading flowing offsite to surface waters. This option is not feasible for OF 4 due to space availability.
Catch Basin Insert	Y	Y	Simple units that are installed at or near the pollutant sources. Relatively low cost to purchase and maintain.	Requires maintenance to ensure no build-up of sediment in the basin. Solids loading should be minimized by other source controls.	1	32; 60-97	Y	The Facility has already installed catch basin inserts on the west side of the property by the loading docks and in the parking lot area in the center of the site, as well as in three shallow catch basins near raw material loading area. The inserts were designed to remove solid particulates. Addition of inserts to some of the high traffic catch basins on the east side of the loading dock area could help reduce TSS in the Outfall 4 drainage area
Engineered Wetland	Y	Y	Similar to biofilter swales	Similar to biofilter swales	5	69	N	The Facility has already installed biofilter swales at Outfalls 2 and 6. This option is not feasible for OF 4 due to space availability.
Aboveground Collection and Treatment System	Y	Y	System can be designed to treat most types of pollutants with successive treatment trains in series.	The facilities location and overall size creates a large volume of stormwater which would require a large tank accumulation system. Operational costs could be significant.	3	65-100	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation at this time.
Collection and Underground Injection System	Y	Y	Eliminates offsite discharge to surface waters. Should eliminate need for discharge permit and monitoring.	May be difficult to receive agency permission to use underground injection. If permitted, monitoring requirements may be onerous.	4	75	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation.
Other Control Measures								
Retain all stormwater onsite	Y	N	Eliminates offsite discharge to surface waters. Should eliminate need for discharge permit and monitoring.	Significant capital and operational costs	5	N/A	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation.
Pave the parking area north of building 31	Y	N	Can prevent dust from unpaved parking area to become airborne.	Significant capital cost	3	N/A	N	The disadvantages outweigh the advantages for this item. It will not be further considered for implementation at this time.

*Feasibility ratings are based on affordability, required maintenance, overall effectiveness, and ease of implementation. 1 = very feasible, 5 = challenging to implement

**Treatment effectiveness based on EPA guidelines for stormwater BMPs; http://water.epa.gov/polwaste/npdes/swbmp/

ATTACHMENT 3: 2019 TIER II REPORT

TIER II REPORT: ENGINEERING EVALUATION OF CONTROL AND TREATMENT MEASURES

Owens-Brockway Glass Container Inc.
Plant No. 21
Portland, Oregon

Prepared For:
Owens-Brockway Glass Container Inc.

Prepared by:
Dalton, Olmsted & Fuglevand

DOF DALTON OLMSTED FUGLEVAND

Revised April 2021

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

BMP	Best management practices
BOD	Biological oxygen demand
BES	Bureau of Environmental Services
DEQ	Department of Environmental Quality
DOF	Dalton, Olmsted & Fuglevand
DOT	Department of Transportation
ft^2	Square feet
MSDS	Material Safety Data Sheet
MS/MSD	Matrix spike/matrix spike duplicate
NPDES	National Pollution Discharge Elimination System
Owens	Owens-Brockway Glass Container Inc.
SOP	Standard operating procedure
SPCC	Spill Prevention, Control and Countermeasure
SWPCP	Storm Water Pollution Control Plan
TSS	Total suspended solids

1 INTRODUCTION

Owens-Brockway Glass Container Inc. (Owens) contracted Dalton, Olmsted & Fuglevand, Inc. (DOF) to perform an engineering evaluation of its control and treatment measures related to the industrial stormwater discharge permit for their Portland Plant.

Owens Portland Plant is located at the following address:

Owens-Brockway Glass Container Inc. Plant #21
9710 NE Glass Plant Road
Portland, Oregon 97220

1.1 PURPOSE OF ENGINEERING EVALUATION

Owens is required to operate under the 1200-Z National Discharge Pollution Elimination System Industrial Stormwater Discharge General Permit issued by the Oregon Department of Environmental Quality, effective August 1, 2017 and expires July 31, 2022 (hereafter referred to as the ISGP).

The ISGP requires Owens to collect stormwater discharge samples from each outfall (Outfalls 2, 4, 5, 6, and 8) and compare the results to the benchmark levels in Schedule A.9 of the permit. Per Schedule B.2 of the permit, two samples must be collected between July 1st and December 31st and two samples between January 1st and June 30th for each permit year, with each sample event being separated by at least 14 calendar days.

Per Schedule A.11 of the ISGP, permit registrants must evaluate the sampling results collected during the second monitoring year of permit coverage and determine if the geometric mean of the qualifying samples collected at each monitored discharge point exceeds any applicable statewide benchmarks in Schedule A.9 of the ISGP. Owens previously collected the discharge samples and determined that some of the samples geometric means exceeded the benchmarks in Schedule A.9 of the ISGP in the 2nd year Geometric Mean Benchmark Evaluation. Appendix A includes the 2018/2019 Industrial Stormwater Discharge Monitoring Report, which includes the values that exceeded benchmarks. The pollutants of concern with geometric means that exceeded permit benchmarks at respective outfalls include:

- Outfall 2 – Phosphorus and E. coli
- Outfall 6 – TSS

If the geometric mean of the qualifying sample results for any monitored discharge point exceeds any applicable state-wide benchmark in Schedule A.9, the permit registrant must submit a Tier II report. The Tier II report must include the following:

- A proposal for active or passive treatment
- Rationale for the selection of the control and treatment measures
- Projected reduction of pollutant concentration(s)
- Schedule for implementing the treatment measures

An Oregon registered professional engineer (PE) must design and stamp the portion of the Stormwater Pollution Control Plan (SWPCP) that addresses these measures.

2 FACILITY INDUSTRIAL STORMWATER OVERVIEW

This section provides details on the current stormwater drainage at the facility, 2018-2019 discharge monitoring results, and results of the pollutants of concern source investigation.

2.1 FACILITY STORMWATER DRAINAGE DESCRIPTION

The majority of the stormwater from the facility discharges to Johnson Lake, which is part of the Whitaker Slough/Columbia Slough drainage system. This drainage system is Stormwater Hierarchy Category 3.a under the 2016 Portland Stormwater Management Manual (SWMM).

The facility is located on the eastern side of Portland and the plant occupies approximately 43 acres (Figure 1). Approximately 62 percent of this area is impervious as it is covered by buildings or pavement. Stormwater in these impervious areas is divided among three primary drainage areas. The facility has six stormwater discharge monitoring points. Figure 2 shows the drainage basins and monitoring points. A description of the three drainage basins is given below:

- Drainage Basin A (14.6 acres):
    - Consists primarily of paved surfaces and buildings, with a small amount of graveled area.
    - This area includes Buildings 3, 27, 30, 31, and 37, and the truck loading docks. Three stormwater lines exit the drainage area and discharge stormwater to either one of two outfall aprons or to a bioswale, all of which discharge to Johnson Lake with monitoring samples collected at MP-004, MP-005, or MP-006. MP-008 is located behind Building 30 where no industrial activity occurs. MP-008 meets up with the City MS4 system.
- Drainage Basin B (11.3 acres):
    - Consists primarily of impervious surfaces including buildings, the main parking lot, and the main outdoor industrial area. This drainage area also includes a gravel-lined transformer yard.
    - This drainage area directs stormwater from catch basins to a series of on-site stormwater lines, which all get directed to a stormwater vault and sedimentation basin, that then gets directed to the Outfall 2 bioswale which discharges to Johnson Lake with monitoring samples collected at MP-002.
- Drainage Basin C (0.9 acres):
    - This area consists of paved portions along with a grassy area that is used as a spill containment berm for a diesel AST.
    - This area directs stormwater through catch basins and stormwater lines to the containment berm. Water is not discharged from the berm to the Oregon Department of Transportation (ODOT) stormwater line unless a valve is manually opened. If the valve is manually opened, which only occurs if there is high water within the berm, water is discharged through the ODOT line and ultimately to the Columbia Slough at NE Clark Street near the I-205 overpass. The monitoring point is sampled only if the valve is opened at MP-007.

2.2 DISCHARGE MONITORING RESULTS SUMMARY

During the 2018-2019 monitoring year (the second year of permit coverage under the current permit), Owens triggered Tier II Corrective Actions for the following parameters at the respective outfalls:

- Outfall 2 – Phosphorus and E. coli
- Outfall 6 – Total Suspended Solids (TSS)

Results are summarized in Table 1 and were previously reported as part of routine Discharge Monitoring Reports (DMRs) submitted to DEQ. The full DMR is included as Appendix A.

2.3 POLLUTANTS OF CONCERN SOURCE INVESTIGATION

2.3.1 METHODOLOGY

A DOF engineer visited the Facility on several occasions to observe the onsite operations, existing best management practices (BMPs), treatment controls, and stormwater discharge points.

DOF also reviewed the following documents:

- Previous SWPCP and engineering evaluation dated May 2012 and December 2014
- Previous Discharge Monitoring Reports and additional sampling that has been done in recent years; historical sampling data for Outfalls 2 and 6 are included in Tables 2-5.

2.4 OUTFALL 2 – PHOSPHORUS

Samples from MP-002 exceeded the permit benchmark for phosphorus in all but one of the sample events from the 2018-2019 permit year; exceedances ranged from 25% to 49% above the benchmark. The Outfall 2 drainage basin includes the eastern portion of the site where the majority of the industrial activities that happen outdoors occur. This area is also home to the raw materials cullet storage area, which is potentially the primary source of industrial phosphorus for the discharge point. Investigative sampling was performed at the facility by DOF in 2014 and 2016 and results showed increased phosphorus concentrations in the samples taken near the cullet piles (see Tables 3-4).

2.5 OUTFALL 2 – E. COLI

Samples from MP-002 exceeded the permit benchmark for E. coli in three out of the four sample events from the 2018-2019 permit year by between 47% and 83%. The Outfall 2 drainage basin also includes an approximately 540-foot long bioswale which terminates at the discharge point to Johnson Lake. There is a large presence of wildlife within the swale, which is potentially a significant contributor to the exceedances of E. coli in the stormwater samples from MP-002. However, there is also potential for E. coli from the raw cullet to be a contributing factor to the high E. coli concentrations.

2.6 OUTFALL 6 – TSS

Only three samples were taken from MP-006 during the 2018-2019 permit year due to lack of flow. Of the three samples taken, all of them exceeded for TSS by between 58% and 66%. Outfall 6 drains the western portion of the facility which includes Building 31 and the Paper Truck Dock. There are several possible sources onsite that could contribute to TSS, including trucks passing

through this area creating airborne dust, and dust from the batch house area on the eastern side of the Facility. The Outfall 6 swale is also primarily bare soil, which can get dislodged and contribute to heightened TSS levels in the samples.

During the 2018-2019 permit year, there was also construction going on onsite that included building a new transformer. Some sediment stockpiles were stored within Drainage Basin A, which could have also increased the amount of solids that were entering the Outfall 6 swale.

The facility has recently made updates to the swale, including adding six (6) rock check dams north of the concrete weir located within the swale and a rock apron just prior to the discharge point into Johnson Lake. These updates will allow for stormwater to move more slowly through the swale, allowing for a longer settling time for solids. The swale has also received maintenance and some of the loose sediment was removed.

A permanent sample port was also built at the end of the Outfall 6 swale in November 2019 so that samples no longer needed to be taken off the lip of the bare soil, which could have been biasing the samples high for TSS.

Since these updates have been made, six sampling events have been performed and all results for TSS at MP-006 have been below the state benchmark of 30 mg/L (Table 5), with a geometric for these samples of 15 mg/L.

3 DESIGN PARAMETERS AND ASSUMPTIONS

Treatment design was based on the City of Portland Stormwater Management Manual August 2016 Edition (2016 Portland SWMM). The Performance Approach for pollution reduction was used for the design of the treatment BMPs. As the site already has a stormwater vault and vegetated swale for Outfall 2, the facility is proposing a phased approach using a combination of source control and manufactured stormwater treatment technologies (MSTT) per Section 2.3.4.17 of the 2016 Portland SWMM.

3.1 DESIGN ASSUMPTIONS

3.1.1 DESIGN STORMS USED

Per the 2016 Portland SWMM, a storm event of I=0.19 inches per hour (T_c=5 minutes) was applied for pollution reduction design and a 2-year 24-hour storm of 2.54 inches (NOAA 2020). Storm design calculations are included in Appendix B.

3.1.2 COMPUTATION METHODS

Per the 2016 Portland SWMM, the design of treatment BMPs was done for flow-rate based facilities using the Rational Method. These calculations are included in Appendix B.

3.1.3 SOFTWARE USED

Excel spreadsheets were used for design.

3.1.4 SAFETY FACTORS, CURVE NUMBERS, AND DESIGN COEFFICIENTS

The following values were applied to the design:

- Contributing area (acres): 11.34
- Runoff coefficients for rational method: 0.95, based on paved surface with 5-10% ground slope, *2020 Portland Sewer and Drainage Facilities Design Manual, Table 6-4*
- Post-developed time of concentration T_c minutes: 5 minutes
- Pollution reduction design rainfall intensity: 0.19 inches per hour, *2016 Portland SWMM, Table A-8*

4 REVIEW OF TECHNOLOGICALLY AVAILABLE AND ECONOMICALLY ACHIEVABLE CONTROL MEASURES

Based on the effectiveness of the stormwater swale upgrades that have already occurred in the Outfall 6 swale, as described in Section 2.6 above, DOF is proposing that no further action be taken for MP-006. A full list of treatment options that were considered for Outfall 6 is shown on Table 7.

The review of BMPs and treatment measures for the rest of this document will focus on Outfall 2.

DOF reviewed several different potential stormwater control measures to address the pollutants of concern that exceeded permit benchmarks for Outfall 2. Table 6 includes a summary of the control measures that were reviewed for the Facility's stormwater discharge controls and a comparison of relative treatment effectiveness for treating E. coli and phosphorus. Some of the control measures listed in Table 6 have already been implemented at the Facility, as shown on the table.

The following control measures were selected for the facility to address the exceedances at MP-002.

4.1 SOURCE CONTROL – STRUCTURE(S) TO COVER RAW MATERIALS

Based on the assumption that the majority of the industrial phosphorus that is causing the exceedances at Outfall 2 is coming from the raw cullet piles, one option that was selected is to cover a portion of the raw material piles so that they are no longer exposed to stormwater. The facility has agreed to cover some of the long-term storage areas with tarp, installed by a contractor and maintained as needed, as shown on Figure 4. This measure has already been implemented as of May 2020.

A permanent structure will be constructed over a portion of the short-term storage area, as shown on Figure 4.

With this approach, it is anticipated that a significant portion of the raw materials will no longer be exposed to stormwater, which will reduce the amount of phosphorus and E. coli at MP-002 by up to 50%.

4.2 TREATMENT OPTIONS - UPSTREAM

Catch Basin 11 receives the majority of the stormwater adjacent to the cullet piles, so adding treatment here would reduce the contaminant concentrations in the stormwater in this area prior to comingling with the rest of the stormwater in Outfall 2. The advantage with this is that the treatment design would not have to treat the entire volume of stormwater for the Outfall 2 drainage basin, but just the portion that has the highest concentrations of phosphorus and industrial E. coli. Treatment options were selected for implementation at the facility, as described below.

At catch basin 11, a Modular Wetland system will be installed. The system is designed to target both dissolved and suspended phosphorus, as well as E. coli. (Appendix C)

Treatment effectiveness calculations are provided in Appendix B, and show that treating water at this catch basin could reduce the overall concentration of phosphorus at the outfall by approximately 22% to 56% depending on the concentration of phosphorus at the catch basin. In addition, the Modular Wetland has also been shown to reduce E. coli by 60% to 83%, and the

combination of source control and treatment could reduce the concentration of E. coli at the outfall by 85%.

5 CONCLUSIONS

Based on the information obtained during the site visit, the review of documents, and the treatment effectiveness information provided by the manufacturers of the MSTTs, the following stormwater treatment measures have been selected and are going to be implemented prior to June 30, 2021:

- Temporary covering of the long-term cullet storage piles during the wet season using tarps
- Permanent structure over the short-term cullet storage area
- A Modular Wetland system installed at Catch Basin 11

6 CERTIFICATION

The proposed treatment is based on sound engineering through the use of experience from similar installations, vendor treatment data, and site specific data. The proposed treatment is reasonably expected to meet the permit benchmarks in the 1200-Z.

This report was prepared by the staff of Dalton, Olmsted, & Fuglevand, Inc., under the supervision of the engineer whose seal and signature appear hereon.

The findings, recommendations, specifications, or professional opinions have been prepared in are presented within the limits described by the client, in accordance with generally accepted professional engineering and geologic practices in Western Washington for the nature of services authorized by the client at the time the services were provided. No warranty is expressed or implied.

X EXPIRES:

Teal Dreher, PE
Engineer

TABLES

Table 1. Discharge Monitoring Results Summary for Outfalls 2 and 6

Monitoring Location(s)	Sample Date	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5
		s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	counts/ 100 ml	mg/L	mg/L
002	10/31/18	Waiver	ND (2.50)	Waiver	0.0183	Waiver	0.0448	56.5	0.213	Waiver
002	11/28/18	Waiver	35	Waiver	0.0246	Waiver	0.142	1203.3	0.292	Waiver
002	02/14/19	Waiver	130	Waiver	0.0217	Waiver	0.316	2419.6	0.313	Waiver
002	04/05/19	Waiver	8.5	Waiver	0.0154	Waiver	0.0711	770.1	0.14	Waiver
Geometric Mean		**-**	**15**	**-**	**0.020**	**-**	**0.11**	**597**	**0.23**	**-**
006	04/05/19	7.6	71	Waiver	Waiver	Waiver	Waiver	14.5	Waiver	Waiver
006	02/14/19	8	88	Waiver	Waiver	Waiver	Waiver	56.5	Waiver	Waiver
006	12/18/18	7.6	84	Waiver	Waiver	Waiver	Waiver	214.2	Waiver	Waiver
Geometric Mean		**-**	**81**	**-**	**-**	**-**	**-**	**56**	**-**	**-**
Columbia Slough Benchmarks		**5.5-8.5**	**30**	**10**	**0.020**	**0.060**	**0.24**	**406**	**0.16**	**33**

1.0 - indicates an exceedance in a Tier II Benchmark Parameter

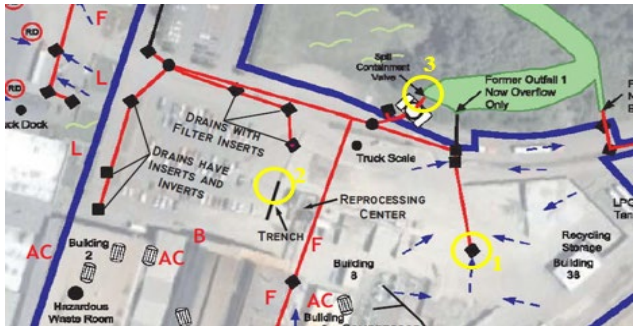
Table 2. Outfall 2 Historical Sampling Data

Sample Date	pH (s.u.)		Total Suspended Solids		Total Oil & Grease		Total Copper		Total Lead		Total Zinc		E. coli			Total Phosphorus			BOD_5		Iron	
	002	Upstream	002	Upstream	002	Upstream	002	Upstream	002	Upstream	002	Upstream	002	Percent decrease to meet benchmark	Upstream	002	Percent decrease to meet benchmark	Upstream	002	Upstream	002	Upstream
04/01/20	Waiver		Waiver		Waiver		Waiver		Waiver		Waiver		24.3			0.245	35%		Waiver		0.257	
12/13/19	Waiver		Waiver		Waiver		Waiver		Waiver		Waiver		46.4			0.379	58%		Waiver		1.15	
11/19/19	Waiver		Waiver		Waiver		Waiver		Waiver		Waiver		2419.6	83%		0.336	52%		Waiver		0.522	
04/05/19	Waiver		8.5		Waiver		0.0154		Waiver		0.0711		770.1	47%		0.14			Waiver		0.976	
02/14/19	Waiver		130		Waiver		0.0217		Waiver		0.316		2419.6	83%		0.313	49%		Waiver		2.67	
11/28/18	Waiver		35		Waiver		0.0246		Waiver		0.142		1203.3	66%		0.292	45%		Waiver		5.73	
10/31/18	Waiver		ND (2.50)		Waiver		0.0183		Waiver		0.0448		56.5	-619%		0.213	25%		Waiver		0.786	
03/23/18	7.9		75		ND (1.51)		0.0085		0.0115		0.0769		770.1	47%		0.119			ND (2.00)			
01/25/18	8.4		102		ND (5.68)		0.0337		0.0481		0.213		2420	83%		0.413	61%		3.36		3.67	
12/04/17	7.9		7		ND (5.15)		0.0168		0.0037		0.0521		12.2			0.197	19%		ND (2.00)			
10/20/17	8.1		12		ND (7.09)		0.0205		0.0122		0.0716		1986.3	80%		0.366	56%		ND (2.00)		2.27	
04/13/17	7		Waiver		Waiver		Waiver		Waiver		Waiver		48.7			0.121			Waiver		0.319	
02/23/17	8.2	7.2	Waiver		Waiver		Waiver		Waiver		Waiver		167		>2420	0.189	15%	0.242	Waiver			
12/20/16	9.1		Waiver		Waiver		Waiver		Waiver		Waiver		2420	83%	>2420	0.16	0%	0.84	Waiver		1.14	
11/09/16	7.9		Waiver		Waiver		Waiver		Waiver		Waiver		411	1%	1990	0.966	83%	1.33	Waiver		3.64	20.9
06/23/16	7.6		Waiver		Waiver		Waiver		Waiver		Waiver		2420	83%	**345**	0.197	19%	**0.153**	Waiver			
02/18/16	7.02	7.12	Waiver		Waiver		Waiver		Waiver		Waiver		137		>2420	0.213	25%	**0.161**	Waiver		1.66	
11/19/15	7.8	7.8	Waiver		Waiver		Waiver		Waiver		Waiver		980.4	59%	>2420	0.355	55%	**0.335**	Waiver		1.32	4.17
09/02/15	7.3	7.6	Waiver		Waiver		Waiver		Waiver		Waiver		2420	83%	**687.7**	0.66	76%	**0.381**	Waiver			
05/12/15	9.02	9.49	Waiver		Waiver		Waiver		Waiver		Waiver		2420	83%	>2420	0.347	54%	**0.242**	Waiver			
02/02/15	8.11	9.09	Waiver		Waiver		Waiver		Waiver		Waiver		1986.3	80%	>2420	0.301	47%	0.403	Waiver			
10/31/14	7.07		3.6	112	ND (6.21)	ND	0.03	0.0663	ND (0.01)	0.0334	0.0909	0.513	2420	83%	>2420	0.659	76%	**0.572**	3.51	5.6	1.74	2.85
09/24/14	7.17	9.55	20	79	ND (5.99)	ND	0.0623	0.04	0.0448	0.252	0.116	0.569	2420	83%	>2420	1.45	89%	0.411	15	13.3	2.55	3.07
04/24/14	9.2		50		ND (4.95)		0.0105		0.0263		0.112		1986.3	80%		0.223	28%		ND (2)			
02/18/14	8.32		14		ND (5.08)		0.0338		0.0262		0.127		27.5			0.525	70%		ND (2)			
12/20/13	NS		NS		NS		NS		NS		NS		NS			NS			NS			
09/25/13	7.87	6.76	8	99	ND (9.62)	ND	0.0239	0.0334	0.00845	0.062	0.0846	0.462	344.8		>2420	0.49	67%	**0.212**	ND (2)	4.18		2.29

	Sampling from Monitoring Point 002 (downstream of swale)
	Sampling from the entrance to the Outfall 2 swale
0.212	**Increased concentration post-treatment through swale**

DOF

Table 3. 2016 and 2020 Additional Samples for MP 002 Drainage Basin



Sample Date: 12/20/2016

Outfall 2 Drainage Area			
Total:	494000	sf	
Cullet Area*:	78408	sf	16%
Area 2*:	25036	sf	5%

* These areas represent the approximate drainage area that goes to the sample location

Sample Location: 1 - Cullet Area

Sample Date	Total Phosphorus	Total Dissolved Phosphorus	Percent Dissolved Phosphorus	Total Suspended Phosphorus	Total Suspended Solids	Total Dissolved Solids	Total Hardness	Calcium	Magnesium	pH
	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
12/20/2016	0.838	0.542	65%	0.296	72	240	101	32.6	4.86	8.2
4/22/2020**	0.497	0.347	70%	0.15	280	320	50.4	18	1.31	-
5/12/2020	3.19	2.4	75%	0.79	645	713	116	37.7	5.28	-
6/12/2020	0.56	0.242	43%	0.318	228	364	48	16.2	1.83	-

Sample Location: 2 - Area 2

Sample Date	Total Phosphorus	Total Dissolved Phosphorus	Percent Dissolved Phosphorus	Total Suspended Phosphorus	Total Suspended Solids	Total Dissolved Solids	Total Hardness	Calcium	Magnesium	pH
	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
12/20/2016	0.325	-	-	-	136	392	42.2	13.4	2.11	10.5
4/22/2020**	0.731	0.454	62%	0.277	1120	760	165	60.9	3.19	-
5/12/2020	0.611	0	0%	0.611	1290	516	109	40	2.26	-
6/12/2020	0.739	0	0%	0.739	980	720	88.2	32	2.02	-

Sample Location: 3 - Total (upstream of Outfall 2 swale)

Sample Date	Total Phosphorus	Total Dissolved Phosphorus	Percent Dissolved Phosphorus	Total Suspended Phosphorus	Total Suspended Solids	Total Dissolved Solids	Total Hardness	Calcium	Magnesium	pH
	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
12/20/2016	0.393	0.172	44%	0.221	196	272	45.1	14.4	2.22	9.01
4/22/2020**	3.69	2.82	76%	0.87	2370	760	135	46.4	4.54	-
5/12/2020	0.164	0.06	37%	0.104	58	164	31	10.8	0.984	-
6/12/2020	0.277	0.0832	30%	0.1938	208	376	40.5	14.3	1.17	-

Notes:

- Not sampled

** Removed from engineering calculations due to high TSS for the sample location 3, which biases total phosphorus high, likely due to sample error

Table 4. December 2014 Additional Samples

Sample Date: 12/5/2014

Sample Location	pH	Phosphorus, Total (mg/L)
#1 – Cullet Bin (empty)	7.5	0.869
#2 – Batchhouse	9.6	0.52
#3 – NE Roof Drain	6.4	ND (0.05)
#4 – NW Stormwater Drain	9.4	0.385
#5 – S Cullet Pile	8.8	0.402
#6 – N Cullet Pile	8.5	1.34
#7 – Inlet to OF 2 Bioswale	9.2	0.413
Permit Benchmark	**6.5 to 8.5**	**0.16**

Sample Locations:

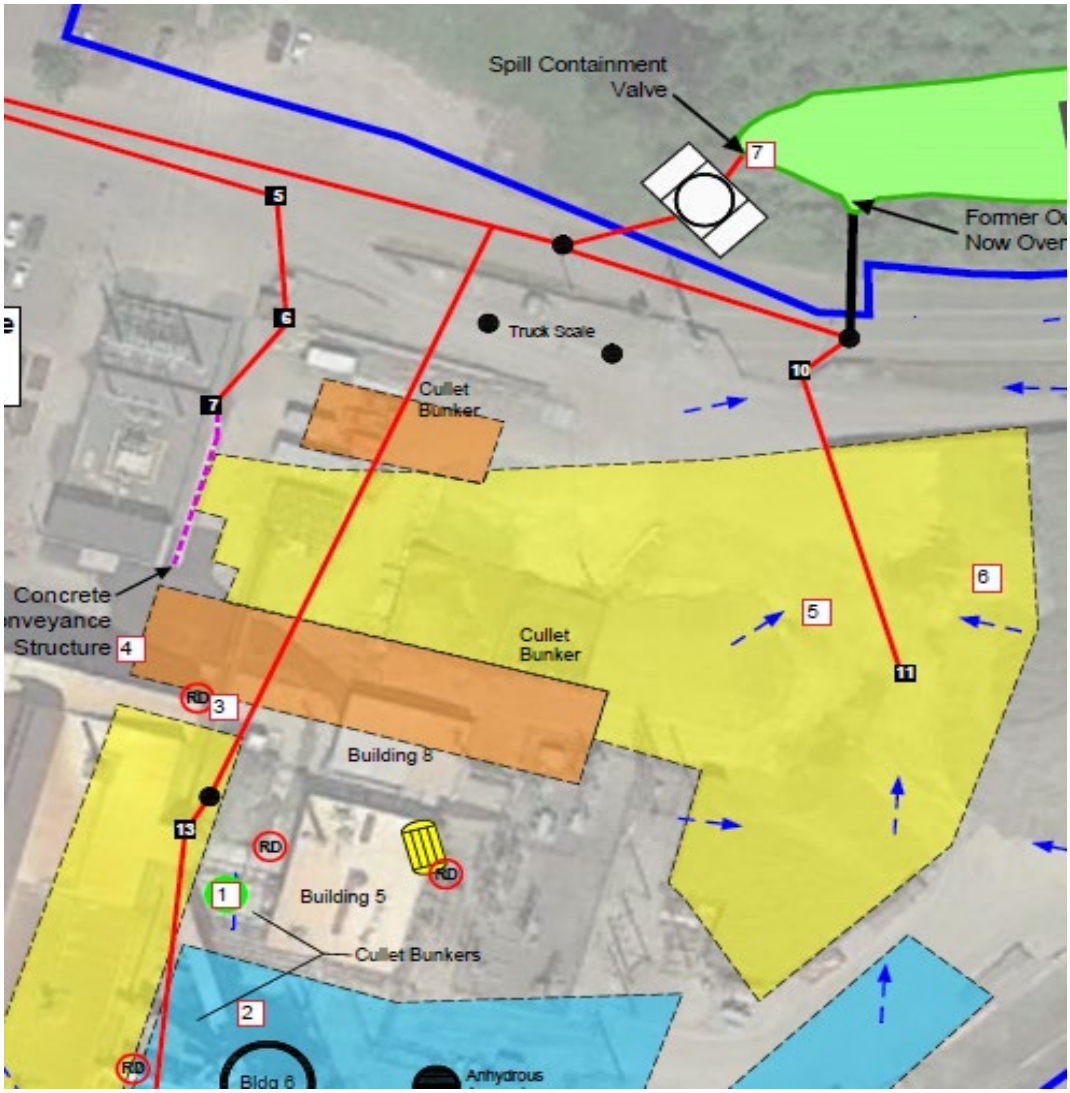


Table 5. Outfall 6 Historical Sampling Data

Sample Date	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5	Iron
	s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	counts/100 mL	mg/L	mg/L	mg/L
01/08/21	Waiver	8	Waiver	Waiver	Waiver	Waiver	62	Waiver	Waiver	1.8
12/21/20	Waiver	10	Waiver	Waiver	Waiver	Waiver	25	Waiver	Waiver	0.5
11/18/20	Waiver	21	Waiver	Waiver	Waiver	Waiver	23	Waiver	Waiver	0.3
04/01/20	Waiver	10	Waiver	Waiver	Waiver	Waiver	7	Waiver	Waiver	0.9
12/20/19	Waiver	18	Waiver	Waiver	Waiver	Waiver	88	Waiver	Waiver	0.8
11/19/19	Waiver	21	Waiver	Waiver	Waiver	Waiver	238	Waiver	Waiver	0.7
04/05/19	7.6	71	Waiver	Waiver	Waiver	Waiver	15	Waiver	Waiver	2.8
02/14/19	8	88	Waiver	Waiver	Waiver	Waiver	57	Waiver	Waiver	4.1
12/18/18	7.6	84	Waiver	Waiver	Waiver	Waiver	214	Waiver	Waiver	3.1
03/23/18	8	42	ND (1.36)	0.0068	0.003	0.0672	66	0.091	ND (2.00)	
01/25/18	8.2	22	ND (5.10)	0.0046	0.0022	0.0509	980	0.0526	ND (2.00)	1.0
12/19/17	8.8	91	ND (5.26)	0.0148	0.0074	0.136	921	0.213	2.47	
10/20/17	7.9	8	ND (3.55)	0.0064	0.0019	0.0579	2420	0.0829	2.47	0.8
05/05/17	7.6	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	6.8
02/23/17	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	
12/20/16	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	
11/09/16	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	
06/23/16	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	
02/18/16	7.4	56	Waiver	Waiver	Waiver	Waiver	71	0.13	Waiver	2.3
11/19/15	6.9	32	Waiver	Waiver	Waiver	Waiver	291	0.1	Waiver	1.1
09/02/15	6.4	ND (20.0)	Waiver	Waiver	Waiver	Waiver	2420	0.18	Waiver	
05/12/15	6.3	15	Waiver	Waiver	Waiver	Waiver	326	0.06	Waiver	
02/02/15	5.6	262	Waiver	Waiver	Waiver	Waiver	147	0.05	Waiver	
10/31/14	6.3	79	ND (6.13)	0.138	0.007	0.087	921	0.26	ND (2.00)	5.5
09/24/14	6.2	63	ND (5.68)	0.101	0.002	0.06	2420	0.31	6	2.1
04/24/14	8.3	96	ND	0.006	0	0.05	1300	ND	ND (2.00)	
02/18/14	6.9	45	ND	0.011	0.01	0.09	210	0.15	ND (2.00)	

Table 6. Outfall 2 - Review of Technologically Available and Reasonably Achievable Control Measures

Control Method	Technologically Available?	Economically Achievable?	Advantages	Disadvantages	Selected for Facility?	Conclusion/Notes
Source Control						
Cover Raw Materials Pile - Permanent Structures	Y	Y	Covering the cullet piles with permanent roof structures would significantly reduce the materials exposure to stormwater and require very little maintenance.	The capital costs would be high and the structures may impede the flow of work at the facility.	Y	Permanently covering a portion of the raw materials, where feasible, would be beneficial to reducing the cullet piles exposure to stormwater
Cover Raw Materials Pile - temporary Structures	Y	Y	Covering the cullet piles with temporary structures, such as tarps, would significantly reduce the materials exposure to stormwater and should have low capital costs	The operational costs to cover and uncover the piles as necessary for the work would be high. Also difficult to keep covered during operation because trucks are continuously moving material from the raw materials area.	Y	Temporary structures, such as tarps, would be beneficial to reducing cullet piles exposure to stormwater. Low capital costs and the tarping could be done during the wet seasons.
Wash cullet piles and discharge to sanitary sewer	Y	N	Washing the cullet piles and discharging the wastewater to sanitary sewer would significantly reduce the amount of contaminants that would come in contact with stormwater	Operational costs would be high and it would be difficult to capture the water and divert from stormwater without significant capital costs	N	Not economically feasible
Purchase a mechanical sweeper for the facility	Y	Y	Purchasing a mechanical sweeper and increasing sweeping activities to a daily basis (versus every other week from a contractor) would reduce contaminant dust in the drainage area as the cullet is moved around the drainage basin	High capital costs and O&M costs. Likely would not be enough to meet benchmark limits as the cullet is moved around throughout the day at the facility, so dust generation is constant	N	Not selected due to high capital and O&M costs. Facility already has a small mechanical sweeper that works on dry pavement, but the uneven ground and the nature of the operations makes a sweeper less effective.
Increase contractor sweeping	Y	Y	Increasing the sweeping activities from the contractor could reduce the contaminant dust from the drainage area	Would not be enough to meet benchmarks as the facility operations move cullet throughout the facility constantly, so sweeping operations would not be able to keep up with dust generation	N	Not selected because more effective treatment options were chosen.
Discharge untreated stormwater to sanitary sewer	Y	N	Capturing the stormwater from the cullet area would significantly reduce the amount of contaminants that would enter the stormwater system headed to MP-002	High capital costs to retrofit area to capture stormwater and reroute to sanitary sewer	N	Not economically feasible

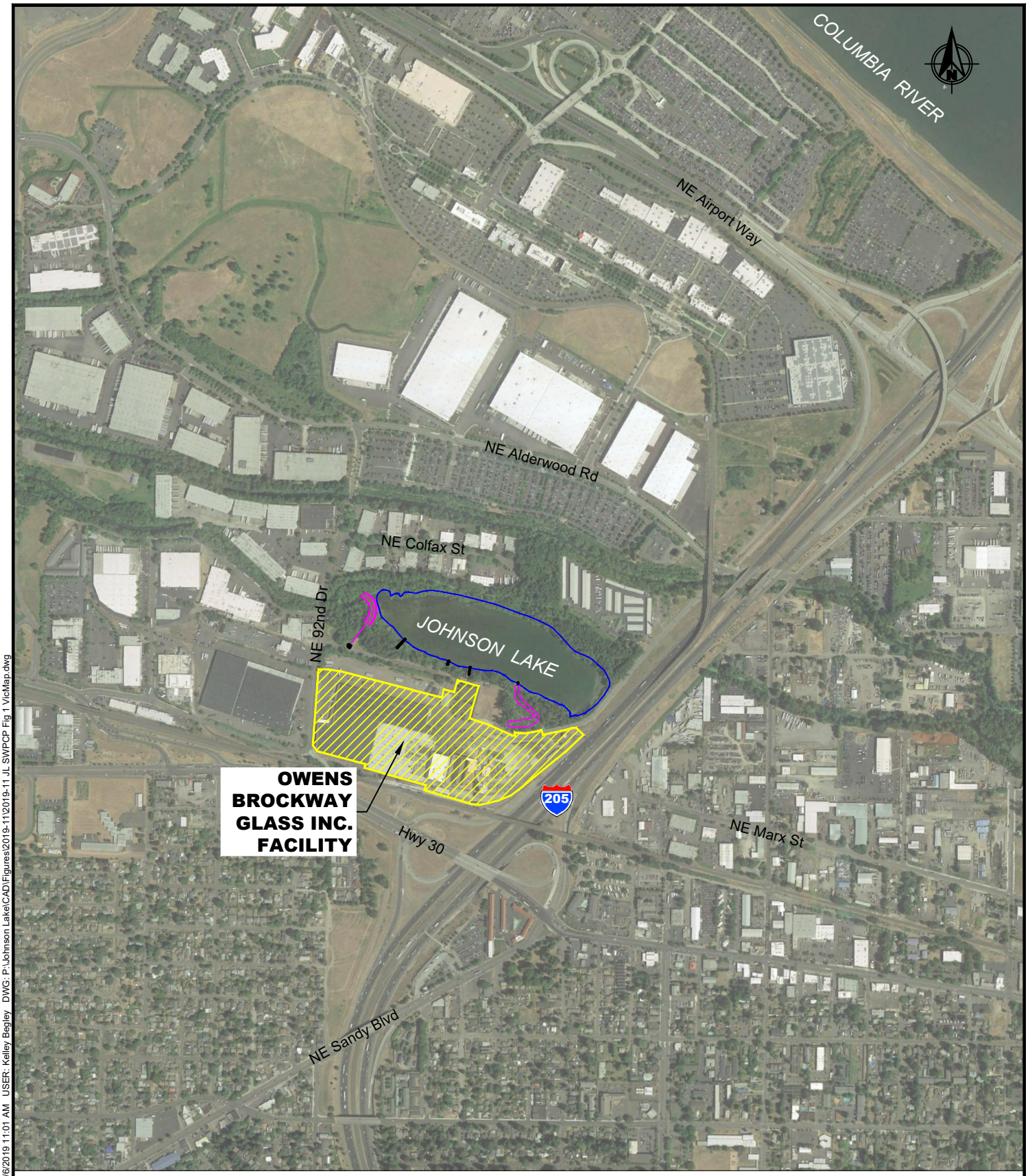
Control Method	Technologically Available?	Economically Achievable?	Advantages	Disadvantages	Selected for Facility?	Conclusion/Notes
Treatment Options - Upstream						
Treatment vault for catch basin in cullet storage area	Y	Y	Reducing pollutants from this catch basin would likely cause a large reduction in pollutants downstream since this area is likely the main source of the industrial phosphorus and E. coli	The cullet gets moved throughout the Outfall 2 drainage basin, so it's likely that just treating this area would not be enough to meet benchmarks. Moderate capital cost and long term O&M costs	Y	Could reduce total phosphorus concentrations by as much as 30%
Hydrodynamic separator for catch basin in cullet storage area	Y	Y	Reducing pollutants from this catch basin would likely cause a large reduction in pollutants downstream since this area is likely the main source of the industrial phosphorus and E. coli. A hydrodynamic separator would help reduce suspended contaminants.	This would not help with dissolved contaminants. Moderate capital cost as well as O&M.	N	Since this would only target suspended contaminates, it likely wouldn't make a significant enough difference in treatment to justify costs.
Treatment Options - Downstream						
StormwaterRx treatment vault	Y	Y	This system could be used to target phosphorus and E. coli prior to the Outfall 2 swale. A similar system is used at Glass to Glass and has been shown to be effective with similar raw materials	High capital costs and O&M costs. Upper sand layer has to be raked on a frequent basis and filtration media has to be changed out periodically	N	Not selected due to high capital and O&M costs.
Revegitation of Swale	Y	Y	Vegitating the swale as it was designed would help in targeting nutrient removal and help the swale perform as it was intended. Low capital cost and O&M costs	Vegetation needs to be planted in the appropriate season and results can vary depending on the concentration of different pollutants in the incoming stormwater	Y	Selected in combination with other measures
Wet Pond	Y	Y	Wet ponds are effective in removing TSS, which could help with removing suspended phosphorus	Wet ponds are not known to be effective at dissolved Phosphorus removal. They require maintenance and can attract wildlife, which could increase E. coli sample results.	N	Not selected due to high capital and O&M costs, as well as possible contribution to E. coli
Wet Vault	Y	Y	Similar to Wet Pond.	Similar to Wet Pond.	Y	The Facility has already installed sedimentation vaults in the pre-treatment system for each biofilter swale.

Control Method	Technologically Available?	Economically Achievable?	Advantages	Disadvantages	Selected for Facility?	Conclusion/Notes
Catch Basin Insert	Y	Y	Simple units that are installed at or near the pollutant sources. Relatively low cost to purchase and maintain.	Requires maintenance to ensure no build-up of sediment in the basin. Solids loading should be minimized by other source controls. Not effective at removing dissolved contaminates	Y	The Facility has already installed catch basin inserts in the majority of the catch basins in the Outfall 2 drainage basins. The inserts were designed to remove solid particulates.
Infiltration	Y	Y	Infiltration can be an effective treatment method when soil conditions are favorable.	Infiltration treatment methods require periodic maintenance of the system bottom to retain ability to allow contaminants to percolate from the storm water drainage. Swale 2 is lined, so infiltration is limited.	Y	The biofilter swales that were already installed onsite were built to allow infiltration and reduce pollutant loading flowing offsite to surface waters.
Treatment Options - Downstream						
Engineered Wetland	Y	Y	Similar to biofilter swales	Similar to biofilter swales	N	The Facility has already installed biofilter swales at Outfalls 2 and 6.
Aboveground Collection and Treatment System	Y	N	System can be designed to treat most types of pollutants with successive treatment trains in series.	The facilities location and overall size creates a large volume of stormwater which would require a large tank accumulation system. Capital and O&M costs would be highest of all options	N	Not selected due to high capital and O&M costs
Collection and Underground Injection System	Y	N	Eliminates offsite discharge to surface waters. Should eliminate need for discharge permit and monitoring.	High capital costs and technical limitations with soil type. Likely not permittable given previous site contamination.	N	Not selected due to high cost and technical limitations

Table 7. Outfall 6 - Review of Technologically Available and Reasonably Achievable Control Measures

Control Method	Technologically Available?	Economically Achievable?	Advantages	Disadvantages	Selected for Facility?	Conclusion/Notes
Source Control						
Purchase a mechanical sweeper for the facility	Y	Y	Purchasing a mechanical sweeper and increasing sweeping activities to a daily basis (versus every other week from a contractor) would greatly reduce contaminant dust in the drainage area from truck traffic, and would likely be effective at meeting TSS benchmarks in Outfall 6	High capital costs and O&M costs.		Could be used in combination with other measures
Treatment Measures						
Aboveground Collection and Treatment System	Y	Y	System can be designed to treat most types of pollutants with successive treatment trains in series.	The facilities location and overall size creates a large volume of stormwater which would require a large tank accumulation system. Operational costs could be significant.	No	High capital costs and O&M costs make this option less desirable since this area is not the main industrial area.
Other Control Measures						
Make updates to current swale	Y	Y	Low capital costs and operation and maintenance	None	Yes	The facility has already placed rock check dams in the swale to slow the flow of stormwater and allow for solids to better settle

FIGURES



NOTE:
1. Aerial Background Image from Google Earth Pro, dated July 16, 2018. Use for visual reference only.

0 1000
Scale in Feet

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

VICINITY MAP

DALTON OLMSTED FUGLEVAND

FIGURE 1

11/06/2019

PLOT TIME: 11/6/2019 11:29 AM MOD TIME: 11/6/2019 11:01 AM USER: Kelley Begley DWG: P:\Johnson Lake\CAD\Figures\2019-11\2019-11 JL SWPCP Fig 1 VicMap.dwg

City of Portland Swale
O-I Swale
O-I Swale Centerline
Division Between Two Separate Swales
City of Portland Manholes
Pipe Decommissioned (Overflow Only)
Open pipe through hillside
Wood Container
005
NE 92nd Dr
NE Glass Plant Rd
004
006
Rock Check Dams
O-I Swale
Conc Weir
City of Portland Swale
Sediment Trap
Spill Containment valves
JOHNSON LAKE
Garbage Dumpster
Building 28
Truck Loading Dock
Building 31
Building 30
Drainage Basin A
Paper Truck Dock
Building 3
To City MS4
Road Run-on Infiltration
008
NE Columbia Blvd
Building 37
Building 25
Abandoned Pipe
Drainage Basin B
Garbage Dumpster
Metal Scrap Bin
Oily Waste Container
Building 2
Concrete Conveyance Structure
Hazardous Waste Room
Building 1
Building 20
Building 7A
Building 7B
Soda Ash
Sand
Old Caustic Tank (Contains H_2O)
Limestone
Anhydrous Ammonia
Metal Scrap Bin
Waste/Raw Dust Container
Building 8
Building 5
Cullet Bunkers
Building 6
002
Rock Check Dams
Former Outfall 1 Now Overflow Only
Spill Containment Valve
Discharge point 007 is not a regular compliance monitoring point. Stormwater discharge only occurs at this location when containment valve is manually opened, as detailed in Section 2.1.5 of the SWPCP
Former Outfall 8 Now Rerouted to Bio-Swale
007
Truck Scale
LPG Tanks
Recycling Storage
Building 38
Cullet Bunkers
Spill Containment Valve
Drainage Basin C
Spill Drain (drains to containment)
205

Legend

- 007 Outfall Sampling Location
- Catch Basin
- Cleanway Filter
- Filter Sock
- Debris Screen
- Manhole
- RD Roof Drain
- Approximate Impervious Drainage Basin Boundary
- Approximate Overflow Pipe Location
- Approximate Conveyance Pipe Location
- Swale (Area Approx.)
- Sheet Runoff Flow Direction
- Pervious Area
- Oil/Solids Separator
- Bulk Diesel Tank
- Oil Storage/Spill Kit
- Aboveground Storage Tank (AST)

Approximate Drainage Areas

Outfall 2	494,000 sq.ft.
Outfalls 4, 5, & 6	637,000 sq.ft.
Outfall 7	39,000 sq.ft.

0 40 80 120 160
Scale in Feet

NOTES:
1. This map recreated from figure titled "Owens-Illinois Brockway Glass - Stormwater Site Specific Map" in July 21, 2009 report by StormwaterRx, LLC. All piping and basins approximate, based on Owens Site Stormwater Map, 8/21/01 and Weddle Surveying, Inc. September 24, 2009 investigative survey.
2. Aerial Background Image from Google Earth Pro, dated May 08, 2019. Use for visual reference only.

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

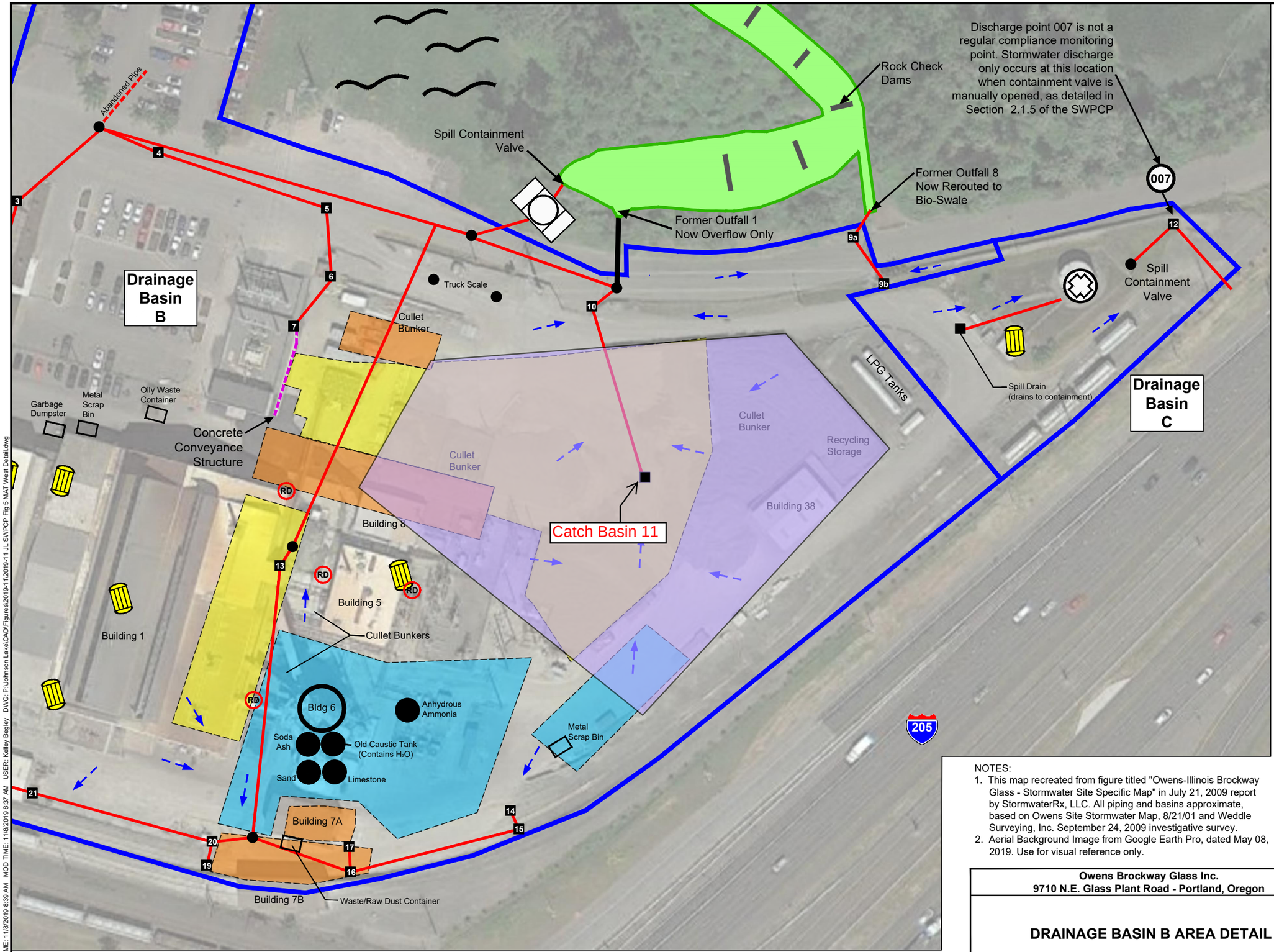
STORMWATER SITE SPECIFIC MAP

DALTON OLMSTED FUGLEVAND

FIGURE 2

11/06/2019

PLOT TIME: 11/8/2019 8:26 AM MOD TIME: 11/8/2019 8:25 AM USER: Kelley Begley DWG: P:\Johnson Lake\CAD\Figures\2019-11\2019-11 JL SWPCP Fig 3 Site Specific SW.dwg



Legend

- Cullet Storage Areas
- Raw Material Storage
- Loading Areas
- Approximate Area that Drains to Catch Basin 11
- 007 Outfall Sampling Location
- Catch Basin
- Manhole
- Approximate Impervious Drainage Basin Boundary
- Approximate Overflow Pipe Location
- Approximate Conveyance Pipe Location
- Swale (area Approx.)
- Sheet Runoff Flow Direction
- Pervious Area
- Oil/Solids Separator
- Bulk Diesel Tank
- Oil Storage/Spill Kit
- Aboveground Storage Tank (AST)

Approximate Drainage Areas

Outfall 2	494,000 sq.ft.
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2. Aerial Background Image from Google Earth Pro, dated May 08, 2019. Use for visual reference only.

0 40 80
Scale in Feet

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

DRAINAGE BASIN B AREA DETAIL

DALTON OLMSTED FUGLEVAND

FIGURE 3

11/06/2019

PLOT TIME: 11/8/2019 8:39 AM MOD TIME: 11/8/2019 8:37 AM USER: Kelley Begley DWG: P:\Johnson Lake\CAD\Figures\2019-11\2019-11 JL SWPCP Fig 5 MAT West Detail.dwg

LEGEND

- Temporary covering (long-term storage)
- Permanent Structure (short-term storage)

NOTES:

1. Aerial Background Image from Google Earth, dated October 2019. Use for visual reference only.

Owens Brockway Glass Inc.
9710 N.E. Glass Plant Road - Portland, Oregon

CULLET PILES FOR SOURCE CONTROL

DOF DALTON OLMSTED FUGLEVAND

FIGURE 4
January 21, 2021

APPENDIX A: 2018-2019 DISCHARGE MONITORING REPORT

Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report
1200-Z Permit

National Pollutant Discharge Elimination System Permit
Industrial Stormwater Discharge General Permit

Instructions: This report must be completed for each monitoring year, July 1 to June 30, and submitted to the appropriate DEQ regional or agent office annually by July 31st. The report must contain the results of all stormwater monitoring conducted during the year. Sample for the pollutants at monitoring location(s) specified in your SWPCP and use the monitoring location(s) number from your SWPCP. You must include the laboratory results, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed. You must also submit pH field notes and chain of custody.

Facility Information

Legal name: Owens Brockway Glass Container Inc
DEQ File No: 65610
Common name: OI (Owens-Illinois)
EPA #: ORR210011
Facility address: 9710 NE Glass Plant Rd
Monitoring Period: July 1, 2018 - June 30, 2019
Facility City, Zip: Portland, 97220
Select DEQ or Agent: ☑ DEQ ☐ Clean Water Services ☑ City of Portland ☐ City of Eugene
Geo-Region: ☑ Columbia Slough ☐ Columbia River ☐ Portland Harbor ☐ Regional
2nd Geo-Region ☐ Columbia Slough ☐ Columbia River ☐ Portland Harbor ☐ Regional
Primary SIC Code: 3221
Secondary SIC Code(s):

Monitoring Information

Number of discharge point(s): 4
Number of monitoring location(s): 4

If different, you certify that the facility has established either: 1) the area has no exposure of stormwater to industrial activities, or 2) the effluent is substantially similar to effluent(s) monitored and the same BMPs are implemented and maintained. (See permit pg 23)

Monitoring Waiver(s) If yes list date on DEQ or Agent approval letter.

9/12/2018			
7/2/2019			

DMR Submittal Checklist Please check all applicable documents are included with you DMR submittal:

☑ Original Signature ☑ Laboratory Reports ☑ Chain of Custody ☑ QA/QC form Lab ☑ pH field sheets

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 (40 CFR 122.22(d)).

Signature:
Date:
Printed Name: Daniel Steele
Legally Authorized Representative
Title: Plant Manager
Email: daniel.steele@o-i.com
Telephone : 503-336-3422

Oregon Department of Environmental Quality
Stormwater Program

State of Oregon Department of Environmental Quality

Discharge Monitoring Report
1200-Z Permit

For offical use only:
Legal Name: Owens Brockway Glass Container Inc
DEQ File No: 65610

Instructions: This report must be completed for each monitoring year, July 1 to June 30, and submitted to the appropriate DEQ regional or agent office annually by July 31st. The report must contain the results of all stormwater monitoring conducted during the year. Sample for the pollutants at monitoring location(s) specified in your SWPCP and use the monitoring location(s) number from your SWPCP. You must include the laboratory results, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed. You must also submit pH field notes and chain of custody.

Columbia Slough Benchmarks

Monitoring Location(s)	Sample Date	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5
		s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	counts/ 100 ml	mg/L	mg/L
002	10/31/18	Waiver	ND (2.50)	Waiver	0.0183	Waiver	0.0448	56.5	0.213	Waiver
002	11/28/18	Waiver	35	Waiver	0.0246	Waiver	0.142	1203.3	0.292	Waiver
002	02/14/19	Waiver	130	Waiver	0.0217	Waiver	0.316	2419.6	0.313	Waiver
002	04/05/19	Waiver	8.5	Waiver	0.0154	Waiver	0.0711	770.1	0.14	Waiver
Geometric Mean			15	ERROR	0.020	ERROR	0.11	597	0.23	ERROR
004	11/02/18	7.6	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
004	11/30/18	7.7	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
004	02/14/19	7.2	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
004	04/05/19	7.6	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
Geometric Mean			ERROR	ERROR	ERROR	ERROR	ERROR	ERROR	ERROR	ERROR
005	11/30/18	8.5	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
005	12/18/18	8.3	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
005	02/14/19	7.6	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
005	04/05/19	7.4	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver	Waiver
Geometric Mean			ERROR	ERROR	ERROR	ERROR	ERROR	ERROR	ERROR	ERROR
006	10/09/19	o Dischar	No Discharge	Waiver	Waiver	Waiver	Waiver	No Discharge	Waiver	Waiver
006	10/26/19	o Dischar	No Discharge	Waiver	Waiver	Waiver	Waiver	No Discharge	Waiver	Waiver
006	11/28/19	o Dischar	No Discharge	Waiver	Waiver	Waiver	Waiver	No Discharge	Waiver	Waiver
006	11/30/19	o Dischar	No Discharge	Waiver	Waiver	Waiver	Waiver	No Discharge	Waiver	Waiver
006	12/11/19	o Dischar	No Discharge	Waiver	Waiver	Waiver	Waiver	No Discharge	Waiver	Waiver
006	12/18/18	7.6	84	Waiver	Waiver	Waiver	Waiver	214.2	Waiver	Waiver
Geometric Mean			81	ERROR	ERROR	ERROR	ERROR	56	ERROR	ERROR
Columbia Slough Benchmarks		**5.5-8.5**	**30**	**10**	**0.020**	**0.060**	**0.24**	**406**	**0.16**	**33**

Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report
1200-Z Permit

For offical use only:
Legal Name: Owens Brockway Glass Container Inc
DEQ File No: 65610

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Columbia Slough Benchmarks

Monitoring Location(s)	Sample Date	pH	Total Suspended Solids	Total Oil & Grease	Total Copper	Total Lead	Total Zinc	E. coli	Total Phosphorus	BOD_5
		s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	counts/ 100 ml	mg/L	mg/L
006	02/14/19	8	88	Waiver	Waiver	Waiver	Waiver	14.5	Waiver	Waiver
006	04/05/19	7.6	71	Waiver	Waiver	Waiver	Waiver	56.5	Waiver	Waiver
Geometric Mean										
Geometric Mean										
Geometric Mean										
Geometric Mean										
Columbia Slough Benchmarks		**5.5-8.5**	**30**	**10**	**0.020**	**0.060**	**0.24**	**406**	**0.16**	**33**

Oregon Department of Environmental Quality
Stormwater Program

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1200-Z Permit

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Impairment Pollutants and Reference Concentrations (see permit assigment letter for identification of required parameters)

Monitoring Location(s)	Sample Date	Aldrin	Ammonia	Arsenic. Total Recoverable	BOD_5	Cadmium, Dissolved	Chlordane	Chlorpyrifos	Chromium III, Dissolved
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
002					Waiver				
002					Waiver				
002					Waiver				
002					Waiver				
Geometric Mean					ERROR				
004					Waiver				
004					Waiver				
004					Waiver				
004					Waiver				
Geometric Mean					ERROR				
005					Waiver				
005					Waiver				
005					Waiver				
005					Waiver				
Geometric Mean					ERROR				
006					Waiver				
006					Waiver				
006					Waiver				
006					Waiver				
Geometric Mean					ERROR				

Impairment Ref. Concentration	**0.003**	**1.0**	**0.34**	**30**	**See Letter**	**0.0024**	**0.000083**	**See Letter**

Oregon Department of Environmental Quality
Stormwater Program

Discharge Monitoring Report
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Legal Name: Owens Brockway Glass Container Inc
DEQ File No: 65610

Instructions: This report must be completed for each monitoring year, July 1 to June 30, and submitted to the appropriate DEQ regional or agent office annually by July 31st. The report must contain the results of all stormwater monitoring conducted during the year. Sample for the pollutants at monitoring location(s) specified in your SWPCP and use the monitoring location(s) number from your SWPCP. You must include the laboratory results, including minimum detection level, Quality Assurance/Quality Control and analytical methods for the parameters analyzed. You must also submit pH field notes and chain of custody.

Impairment Pollutants and Reference Concentrations (see permit assigment letter for identification of required parameters)

Monitoring Location(s)	Sample Date	Guthion	Heptachlor	Hexachlo-robenzene	Iron, Total	Lead, Dissolved	Malathion	Mercury, Total	Nickel, Dissolved
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
002	10/31/18				0.976				
002	11/28/18				2.67				
002	02/14/19				5.73				
002	04/05/19				0.786				
Geometric Mean					1.9				
004	11/02/18				0.101				
004	11/30/18				0.726				
004	02/14/19				0.881				
004	04/05/19				1.18				
Geometric Mean					0.5				
005	11/30/18				0.289				
005	12/18/18				0.163				
005	02/14/19				0.204				
005	04/05/19				0.392				
Geometric Mean					0.2				
006	12/18/18				3.09				
006	02/14/19				4.05				
006	04/05/19				2.77				
006									
Geometric Mean					3.3				

Impairment Ref. Concentration	**0.001**	**0.00052**	**0.001**	**1.0**	**See Letter**	**0.0002**	**0.0024**	**See Letter**

APPENDIX B: STORMWATER DESIGN CALCULATIONS

Owens-Brockway Glass Container Inc.
Stormwater BMP Design for Entire Drainage Basin

Calculation of Total Flow for Drainage Basin B

Rational Method

$Q = CiA$

Q:	Peak discharge	2.0	cfs	
C:	Runoff coefficient	0.95		Reference: City of Portland 2020 Sewer and Drainage Facilities Design Manual
i:	Rainfall intensity	0.19	in/hr	Reference: 2016 Portland SWMM, Table A-8
A:	Drainage Area	11.34	Acre	Reference: SWPCP
	Q =	918.7	GPM	Total flow for drainage basin

Calculation for required treatment effectiveness needed for MP-002

	Concentration	Permit Benchmark	% decrease needed in order to meet benchmark
	mg/L	mg/L	%
Geometric Mean for Phosphorus from MP-002	0.23	0.16	30%
Geometric Mean for E. coli from MP-002	597	406	32%

Owens-Brockway Glass Container Inc.

Stormwater BMP Design for Catch Basin 11 using average data from Table 3 and incorporating source control prior to treatment

50% reduction from source control (covering of raw materials)

Calculation of Flow through Catch Basin 11

Rational Method

$Q = CiA$

Q:	Peak discharge	0.3	cfs	
C:	Runoff coefficient	0.95		Reference: City of Portland 2020 Sewer and Drainage Facilities Design Manual
i:	Rainfall intensity	0.19	in/hr	Reference: 2016 Portland SWMM, Table A-8
A:	Drainage Area	1.8	Acre	Reference: SWPCP
Q =		145.8	GPM	for 100% water treatment

Mass Balance to find concentration of phosphorus contributed from areas in drainage basin B outside of Catch Basin 11

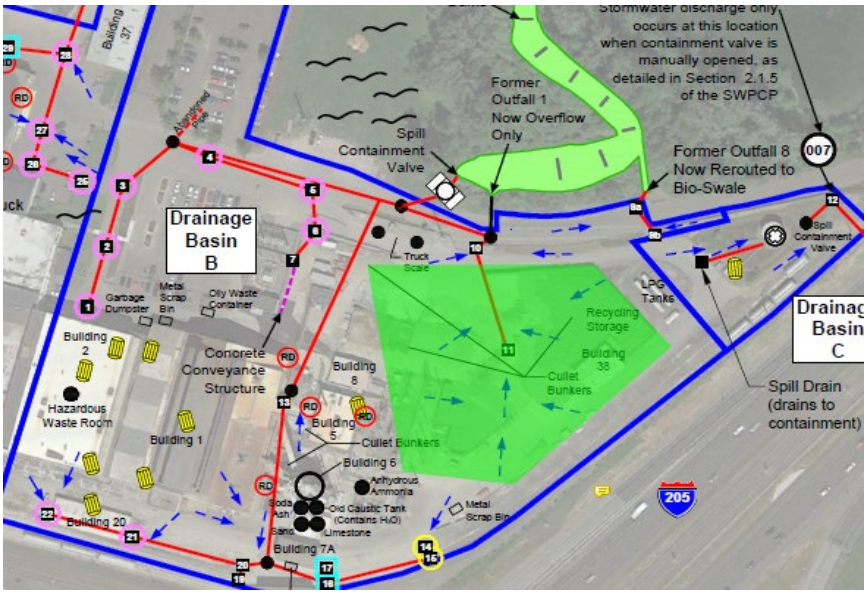
Before Treatment (using average data from Table 3, then accounting for reduction from source control)

$C_T A_T = C_1 A_1 + C_2 A_2$

C_T:	0.14	mg/L	Concentration of phosphorus at entrance to swale
C_1:	0.02	mg/L	Concentration of phosphorus for other contributing areas
C_2:	0.76	mg/L	Concentration of phosphorus at Catch Basin 11
A_T:	11.3	Acres	Total area for Drainage Basin B
A_1:	9.5	Acres	Other contributing areas for Drainage Basin B (less water going to CB 11)
A_2:	1.8	Acres	Drainage area that feeds to Catch Basin 11

Calculation of percent reduction in phosphorus after treatment using media filter and MSTT at Catch Basin 11

Modular Wetland	64% to 67% removal efficiency per literature	
Treatment alone:	64%	reduction in phosphorus for full design storm
Before treatment:	0.76	mg/L
After treatment:	0.28	mg/L
Concentration at Outfall:	0.06	mg/L
Percent total reduction:	56%	



Owens-Brockway Glass Container Inc.

Stormwater BMP Design for Catch Basin 11 using worst case data from Table 3 and incorporating source control prior to treatment

50% reduction from source control (covering of raw materials)

Sample date: 12/20/2016

Location	Total Phosphorus	Total Phosphorus (after source control)
	mg/L	mg/L
Upstream OF 2 (	0.393	0.197
Area 2	0.325	0.163
CB 11	0.838	0.419

Calculation of Flow through Catch Basin 11

Rational Method

$Q = CiA$

Q:	Peak discharge	0.3	cfs	
C:	Runoff coefficient	0.95		Reference: City of Portland 2020 Sewer and Drainage Facilities Design Manual
i:	Rainfall intensity	0.19	in/hr	Reference: 2016 Portland SWMM, Table A-8
A:	Drainage Area	1.8	Acre	Reference: SWPCP
Q =		145.8	GPM	for 100% water treatment

Mass Balance to find concentration of phosphorus contributed from areas in drainage basin B outside of Catch Basin 11

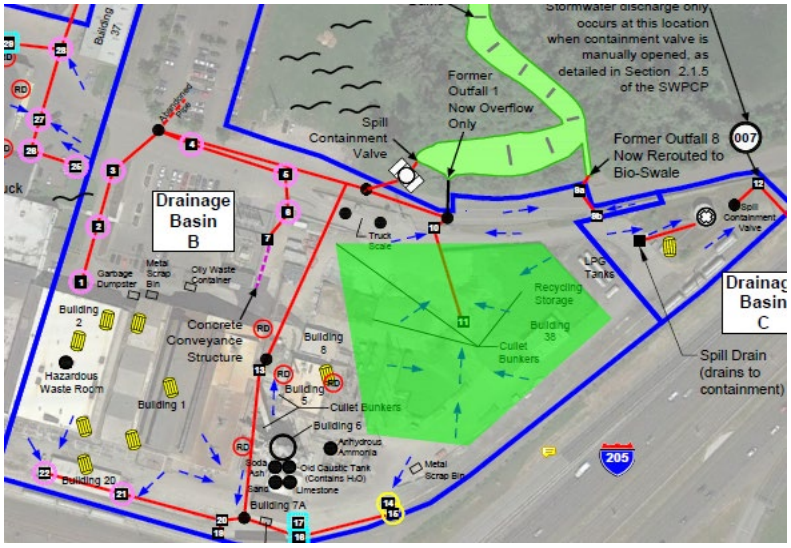
Before Treatment (using average data from Table 3)

$C_T A_T = C_1 A_1 + C_2 A_2$

C_T:	0.20	mg/L	Concentration of phosphorus at entrance to swale
C_1:	0.15	mg/L	Concentration of phosphorus for other contributing areas
C_2:	0.42	mg/L	Concentration of phosphorus at Catch Basin 11
A_T:	11.3	Acres	Total area for Drainage Basin B
A_1:	9.5	Acres	Other contributing areas for Drainage Basin B (less water going to CB 11)
A_2:	1.8	Acres	Drainage area that feeds to Catch Basin 11

Calculation of percent reduction in phosphorus after treatment using media filter and MSTT at Catch Basin 11

Modular Wetland	64% to 67% removal efficiency per literature	
Treatment alone:	64%	reduction in phosphorus for full design storm
Before treatment:	0.42	mg/L
After treatment:	0.15	mg/L
Concentration at Outfall:	0.15	mg/L
Percent total reduction:	22%	



Owens-Brockway Glass Container Inc.

Stormwater BMP Design CB 11 using source control and geometric mean for E. coli at MP-002

50% reduction from source control (covering of raw materials)

$Q = CiA$

Calculation for required treatment effectiveness needed for MP-002

	Concentration	Permit Benchmark	% decrease needed in order to meet benchmark	Concentration after source control
	counts/100 mL	counts/100 mL	%	counts/100 mL
Geometric Mean for E. coli from MP-002	597	406	32%	298.5

*No upstream results for E. coli are available. Assume 100% of industrial contribution to E. coli is from cullet area, which discharges to CB 11

Mass Balance to find concentration of phosphorus contributed from areas in drainage basin B outside of Catch Basin 11

Before Treatment (using average data from Table 3)

$C_T A_T = C_1 A_1 + C_2 A_2$

C_T:	298.50	counts/100	Concentration of E. coli at MP-002 after source control
C_1:	0.00	counts/100	Concentration of E. coli for other contributing areas, assumed zero
C_2:	1880.55	counts/100	Concentration of E. coli at Catch Basin 11
A_T:	11.3	Acres	Total area for Drainage Basin B
A_1:	9.5	Acres	Other contributing areas for Drainage Basin B (less water going to CB 11)
A_2:	1.8	Acres	Drainage area that feeds to Catch Basin 11

Calculation of percent reduction in phosphorus after treatment using media filter and MSTT at Catch Basin 11

Modular Wetland	60% to 83% removal efficiency per literature	
Treatment alone:	70%	reduction in phosphorus for full design storm
Before treatment:	1880.55	mg/L
After treatment:	564.17	mg/L
Concentration at Outfall:	89.55	mg/L
Percent total reduction:	85%	(from source control and treatment)

APPENDIX C: MANUFACTURED STORMWATER TREATMENT TECHNOLOGIES DATA SHEETS

PERFORMANCE SUMMARY

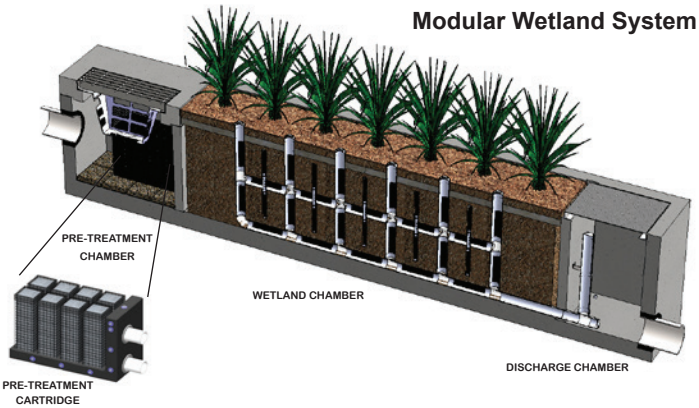
MWS-LINEAR 2.0

Application: Stand Alone Stormwater Treatment Best Management Practice
Type of Treatment: High Flow Rate Media Filtration and Biofiltration (dual-stage)

DESCRIPTION

Modular Wetland System Linear 2.0 (MWS-L 2.0) is an advanced dual-stage high flow rate media and biofiltration system for the treatment of urban stormwater runoff. Superior pollutant removal efficiencies are achieved by treating runoff through a pre-treatment chamber containing a screening device for trash and larger debris, a separation chamber for larger TSS and a series of media filter cartridges for removal of fine TSS and other particulate pollutants. Pre-treated runoff is transferred to the biofiltration chamber which contains an engineered ion exchange media designed to support an abundant plant and microbe community that captures, absorbs, transforms and uptakes pollutants through an array of physical, chemical, and biological mechanisms.

MWS-L 2.0 is a self-contained treatment train that is supplied to the job site completely assembled and ready for use. Once installed, stormwater runoff drains directly from impervious surfaces through an built-in curb inlet, drop in, or via pipe from upstream inlets or downspouts. Treated runoff is discharged from the system through an orifice control riser to assure the proper amount of flow is treated. The treated water leaving the system is connected to the storm drain system, infiltration basins, or to be re-used on site for irrigation or other uses.



Modular Wetland System Linear 2.0 (MWS-L 2.0) has been independently tested in laboratory and field conditions since 2008.

Oceanside Test Site

Portland Test Site

HEAVY METALS: Copper / Zinc

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
Waves Environmental - 1/4 Scale Lab Testing - 2007	Lab	.76 / .95	.06 / .19	92% / 80%	Majority Dissolved Fraction
City of Oceanside Boat Wash / Waves Environmental - 2008	Field	.04 / .24	< .02 / < .05	>50% / >79%	Effluent Concentrations Below Detectable Limits
Recycling Facility, Kileen, TX / CERL - 2011-2012	Field	.058 / .425	.032 / .061	44% / 86%	Test Unit 2
TAPE Field Testing / Portland, OR 2011/2012	Field	.017/ .120	.009 / .038	50% / 69%	Total Metals

TOTAL SUSPENDED SOLIDS:

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
Waves Environmental - 1/4 Scale Lab Testing - 2007	Lab	270	3	99%	Sil-co-sil 106 - 20 micron mean particle size
City of Oceanside Boat Wash / Waves Environmental - 2008	Field	45.67	8.24	82%	Mean Particle Size by Count < 8 Microns
Recycling Facility, Kileen, TX / CERL - 2011-2012	Field	676	39	94%	Test Unit 2
TAPE Field Testing / Portland, OR 2011/2012	Field	75.0	15.7	85%	Means particle size of 8 microns

Modular Wetland System, Inc.
2972 San Luis Rey Rd
Oceanside, CA 92058

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Nature & Technology Working Together In Perfect Harmony™

www.modularwetlands.com
P 760-433-7640
F 760-433-3179

PERFORMANCE SUMMARY

MWS-LINEAR 2.0

PHOSPHORUS:

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
TAPE Field Testing / Portland, OR 2011/2012	Field	.227	.074	64%	TOTAL P
TAPE Field Testing / Portland, OR 2011/2012	Field	.093	.031	67%	ORTHO P

BACTERIA:

Description	Type	Avg. Influent (MPN)	Avg. Effluent (MPN)	Removal Efficiency	Notes
Waves Environmental - 1/4 Scale Lab Testing - 2007	Lab	1600 / 1600	535 / 637	67% / 60%	Fecal / E. Coli
City of Oceanside Boat Wash / Waves Environmental - 2008	Field	31666 / 6280	8667 / 1058	73% / 83%	Fecal / E. Coli

LEAD:

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
Waves Environmental - 1/4 Scale Lab Testing - 2007	Lab	.54	.10	82%	Total
Recycling Facility, Kileen, TX / CERL - 2011-2012	Field	.01 / .043	.004 / .014	60% / 68%	Both Test Units
TAPE Field Testing / Portland, OR 2011/2012	Field	.011	.003	70%	Total

NITROGEN:

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
City of Oceanside Boat Wash / Waves Environmental - 2008	Field	.85	.21	75%	NITRATE
TAPE Field Testing / Portland, OR 2011/2012	Field	1.40	0.77	45%	TKN

HYDROCARBONS:

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
Waves Environmental - 1/4 Scale Lab Testing - 2007	Lab	10	1.625	84%	Oils & Grease
City of Oceanside Boat Wash / Waves Environmental - 2008	Field	.83	0	100%	TPH Motor Oil
TAPE Field Testing / Portland, OR 2011/2012	Field	24.157	1.133	95%	Motor Oil

TURBIDITY:

Description	Type	Avg. Influent (NTU)	Avg. Effluent (NTU)	Removal Efficiency	Notes
Waves Environmental - 1/4 Scale Lab Testing - 2007	Lab	21	1.575	93%	Field Measurement
City of Oceanside Boat Wash / Waves Environmental - 2008	Field	21	6	71%	Field Measurement

COD:

Description	Type	Avg. Influent (mg/L)	Avg. Effluent (mg/L)	Removal Efficiency	Notes
Recycling Facility, Kileen, TX / CERL - 2011-2012	Field	516 / 1450	90 / 356	83% / 75%	Both Test Units

All removal efficiencies and concentrations rounded up for easy viewing. Please call us for more information, including full copies of the reports reference above.

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ATTACHMENT 4: O&M PLAN

NE 92ND DR PRF AND STORMWATER BIO-SWALE

DOF DALTON OLMSTED FUGLEVAND

OPERATIONS & MAINTENANCE MANUAL

- **NE 92ND DRIVE POLLUTION REDUCTION FACILITY (PROJECT NO. E07161)**
- **STORMWATER BIO-SWALE (OUTFALL 2)**

JOHNSON LAKE

PORTLAND, OREGON

Prepared for:

Owens-Brockway Glass Container Inc.
5850 NE 92nd Drive
Portland OR 97222

Prepared by:

Dalton, Olmsted & Fuglevand, Inc. *Environmental Consultants*

Silverdale, Washington

September 25, 2009 Revised January 8, 2010

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ATTACHMENTS

- *NE 92nd Drive Pollution Reduction Facility (Project No. E07161)*
- *Stormwater Bio-Swale (Outfall 2)*

Attachment 2. PRF Re-vegetation Program

Attachment 3. OF2 Swale Planting Specification & Plan Sheets

I. DESCRIPTION

This Operation and Maintenance (O & M) Plan addresses two stormwater swales at the Owens Illinois (O-I) Glass Container Inc. glass plant in Portland Oregon. The two swales covered by this O&M Plan are shown on Figure 1 and described below:

1. The NE 92nd Drive Pollution Reduction Facility (PRF) was built in 2008 by the City of Portland to treat street runoff, and roof and parking lot runoff from O-I's existing Outfall # 6 before releasing the runoff into the Columbia Slough. The PRF consists of two pollution reduction facilities (swales), one for the City's street runoff (the swale on the west side) and the other for O-I's private runoff (the swale on the east side). O-I provided land and partial funding for construction of the PRF facilities. O-I is responsible for the O&M of the eastern swale only. The City has O&M responsibility for the western swale. Throughout this document, references to O-I performing O&M activities at the PRF are limited to the eastern swale and related components only.

   Each side of the PRF facility has several components to treat runoff into Columbia South Shore area including:

   a. A diversion manhole to divert the stormwater quality design storm to the facility.

   b. A sedimentation manhole to let heavy metals and other large size particles settle out before the runoff flows into the swale.

   c. A resilient wedge gate valve, located inside of a standard manhole between the sedimentation manhole and the swale, which is installed to control inflow into the swale in case of hazardous spills.

   d. A sedimentation box at the outlet of the pipe to prevent erosion and as a second settling point for heavy materials.

   e. A grass swale to treat and convey the runoff.

   f. An outfall to Columbia Slough is at the end of the swale.

2. The bio-swale constructed by O-I south of Johnson Lake and east of the ball field area. The purpose of the bioswale at the existing Outfall 2 ("OF2 Swale") is to collect and convey stormwater runoff from existing Outfall 2 drainage area. The OF2 Swale will slow stormwater flow from Outfall 2, which carries flow from former outfalls 1, 2 and 3allowing water to infiltrate into the ground thereby reducing the pollutant load to Johnson Lake.

   The OF2 Swale has several components to treat runoff into Johnson Lake including:

   a. A StormGate™ SGS 816 vault (referred to as the SGS 816 vault) that provides containment in the event of a spill, separates oil and grease from the stormwater, and allows heavy metals and other large size particles settle out before the runoff flows into the swale.

b. The butterfly valve located at Outfall 2 to control inflow into the swale in case of hazardous spills.

c. The semi-abandoned Outfall 1 serves as an overflow structure for Outfall 2 carries overflow during high flow storm events only. Overflow water exits Outfall 1 flows into OF2 Swale over rip rapped route.

d. A grassy swale with check dams and flow spreaders to slow the flow and promote infiltration and with vegetation to increase uptake.

e. The end of the swale is at the shore of Johnson Lake.

Figures 2 and 3 provide the configuration of the PRF and the OF2 Swale systems.

II. SCHEDULE

Each of the PRF system elements as described in the following sections shall be inspected and maintained as needed twice each year (spring and fall). The OF2 Swale system elements as described in the following sections shall be inspected and maintained quarterly for the first 2 years after the bioswale construction is completed and twice a year (spring and fall) thereafter.

To implement this schedule, both the PRF and OF2 Swale shall be inspected and maintained within 48 hours after each major storm event. For purposes of this O & M Plan, a major storm event is defined as a storm greater than a 25-year design storm, which is more than 3.8 inches of rain in a 24 hour period or greater than 1.29 inches per hour in intensity. Inspections shall also be performed after any significant maintenance activities are performed.

Vegetation at the OF2 Swale will be watered as required during first two years after planting and any plants that do not survive will be replaced by the contractor. Native species are being planted and it is not anticipated that irrigation at the OF2 swale will be required after the initial 2 year period except in extreme conditions. In extreme drought, the PRF eastern swale and the OF2 Swale will be watered as necessary and damaged plants replaced consistent with the replanting plan for that swale. The City of Portland Bureau of Environmental Services Watershed Revegetation Program will maintain the vegetation in the PRF swale areas and adjacent associated uplands through September 2012, after which time the vegetation at the PRF eastern swale will become O-I's responsibility.

The Contractor will warrantee all OF2 Swale vegetation for a 2 year period after completion of construction. Inspections will be performed by O-I in accordance with this O&M Plan.

III. PRF SEDIMENTATION MANHOLE & OF2 SWALE STORMGATE™ SGS 816

1. GENERAL

A sedimentation manhole[1] is designed to settle out sediments and separate oils and greases from the water before discharging the water to other water quality facilities such as a swale. This prolongs the life of the swale and helps prevent the contamination of soils within the swale. Stormwater is collected in catch basins and directed to the sedimentation manhole through underground pipes. Sediments, oils and greases are removed from the stormwater by the sedimentation manhole and the water then flows out of the sedimentation manhole into the swale, where it infiltrates into adjacent soil or drains into the waterway.

2. OPERATION

A. PRIMARY FUNCTION

The primary purpose of the sedimentation manhole is to remove coarse-grained sediment (e.g., grit and sand) from stormwater runoff before this stormwater is discharged into a swale. If the sediment is not removed, it will eventually clog the swale and reduce its ability to function as designed. Sedimentation manholes perform best in areas which do not have excessively high sediment loads.

The sedimentation manhole and related piping provide the 150 gallon capacity for each swale at the PRF.

The SGS 816 vault provides 150 gallon spill containment for the OF2 Swale facility. A minimum 150 gallon storage capacity shall be maintained (through proper maintenance) in the SGS 816 vault at all times.

B. GENERAL PERFORMANCE

Stormwater should be able to pass unrestricted into the sedimentation manhole. Dense granular material will settle out of the stormwater if turbulence in the sedimentation manhole can be minimized. The facilities are not as effective at removing fine, less dense materials. An inverted outlet or other design feature, such as a baffle wall, helps trap floating material within the sedimentation manhole. Sedimentation manhole performance (i.e., the ability of the facility to trap sediment) will vary considerably. The variability is a result of many factors, including: structure,

[1] Sedimentation manhole refers to both the PRF sedimentation manholes and the SGS 816 vault at the OF2 Swale unless otherwise specified.

depth, sediment loading rates, which are dependent on the soil erosion potential, quantities of construction in the area, and the maintenance frequency.

C. DESIGN CRITERIA

Sedimentation manholes at the PRF are standard 60″ manholes design. An inverted outlet on the outlet pipe helps prevent floating material from passing through the manhole.

The SGS 816 vault at the OF2 Swale dimensions are 8 feet by 16 feet with a 5.5 feet sump depth.

3. INSPECTION

Inspection of sedimentation manholes includes measuring the depth of sediment within the manhole and determining the structural and operational condition of the manhole. Functioning units should trap sediment and other debris before the material reaches downstream swales. Key conditions to look for during inspections include:

- Flow into sedimentation manhole should not be restricted by broken or damaged inlet pipes
- Amount of sediment and debris
- Outlet pipes should be clear
- Covers should not present safety hazards to the public or vehicles.

TABLE 1. SEDIMENTATION MANHOLES INSPECTIONS

Inspection Actions	**Comments**
Test manhole for a hazardous atmosphere	Follow confined-space entry policy and procedures before entering the sedimentation manhole
Inspect the box and cover	Check that: • Cover is accessible • Cover is in place and in good condition • All bolts are in place • Cover locks properly • Cover is not difficult to remove
Check the amount of sediment in the sedimentation manhole	• Measure the sediment (inches) in the sedimentation manhole. • PRF sedimentation manhole, measure depth to top of sediment from invert of inlet pipe.

Check for plugging of the sedimentation manhole inlet or outlet.	

4. MAINTENANCE

Maintenance activities include periodic cleaning, maintenance and repair/replacement as appropriate. The goal of the maintenance program is to maintain the system in proper operating condition.

Sedimentation manholes are cleaned periodically to remove trash, debris, and sediment that may have accumulated since the last inspection. Maximum sediment removal efficiencies can be realized with proper control of the sediment depth in the sedimentation manhole. If the sediment level is allowed to get too high, turbulence from incoming stormwater will suspend material and allow it to discharge to the infiltration sump/swale.

It is imperative to remove the sediment when:

- The PRF sedimentation depth is 2 feet thick (manhole depth to debris from manhole rim is 10.75 feet).
- The sediment and/or oil accumulation in the SGS 816 vault is 9 inches, thereby reducing the required 150 gallon spill containment capacity.

Follow O-I's confined space entry policy and procedures before entering a sedimentation manhole.

TABLE 2. SEDIMENTATION MANHOLES MAINTENANCE

Facility Component	**Maintenance Activity**	**When Maintenance is Required**	**Expected Facility Performance**
Sedimentation Manhole Basin	Sediment removal	• Sediment fills more than 2 feet above bottom (or 10.75 feet from the rim to debris for PRF facility) • Sediment fills more than 9 inches for SGS 816 vault	Sediment removed: sedimentation manhole operates at maximum performance level.
Inverted Outlet PRF facility	Repair/replace Inverted Outlet	Inverted outlet allows passage of floating materials.	Inverted outlet repaired: floating material is trapped in sedimentation manhole.
Inlet chamber SGS 816 vault	Remove debris	• Debris has been trapped in the StormGate™ high flow bypass. • Captured materials are scoured or resuspended	Debris removed: the high flow bypass allows extreme flows to bypass the separator chamber preventing scouring and resuspension of captured

Facility Component	Maintenance Activity	When Maintenance is Required	Expected Facility Performance
		during extreme flows and pass into swale.	materials.
Separation chamber SGS 816 vault	Remove debris	Trash or debris blocks outlet pipe in separation chamber.	Debris removed: the outlet pipe flows unobstructed.

5. TIMING AND FREQUENCY

For the first 2 years after completion of the Remedial Action, the SGS 816 vault shall be inspected quarterly. After 2 years, the SGS vault shall be inspected twice per year (spring and fall). The sedimentation manholes of the PRF shall be inspected twice a year (spring and fall). However, additional inspections of the manholes and vault may be conducted throughout the year, as required.

Inspection frequency should be increased if the sedimentation manholes and the SGS 816 vault are consistently over-full of sediment or inlets and outlets tend to be clogged.

Maintenance activities shall be conducted as necessary and shall be performed when the manhole or vault is not in use, i.e., no incoming stormwater. However, additional maintenance activities may be conducted throughout the year, as required.

IV. PRF RESILIENT WEDGE GATE VALVE & OF2 SWALE BUTTERFLY VALVE

1. GENERAL

A valve is located after the sedimentation manhole and prior to the swale to shut down flow to the swale in an emergency situation, including oil/chemical spills, to protect the watershed and groundwater. Keeping the valve in good operating condition so that it functions properly is important to reduce contamination from upstream spills. The valve at the PRF is a gate valve; the valve at the OF2 Swale is a butterfly valve. The PRF valve is located inside of an underground manhole upstream of the swale. A steel lid must be removed to access the valve. The valve at the OF2 Swale is located at the headwall of the outfall pipe at the upstream end of the OF2 Swale.

2. OPERATION

A. PRIMARY FUNCTION

The primary purpose of the valve is to stop flow into the swale in the event of a spill of fuel or hazardous material by closing the valve.

B. GENERAL PERFORMANCE

Stormwater shall always flow freely through the valve. In emergency situations like a hazardous spill, the flow must be stopped at the valve. The valve must close freely and completely.

C. DESIGN CRITERIA

The size of the valve is based on the flow rate and the anticipated content of the flow.

3. INSPECTION

Inspections of the valves determine the structural and operation condition of the valve. Key conditions to look for during inspections include:

- The valves are easy to close and open.
- The handles of the valves are in place and are in good condition.

The resilient wedge gate valve associated with the PRF is located inside of the standard manhole. Confined space entry procedures shall be followed when entering the manholes to access these valves.

TABLE 3. VALVE INSPECTIONS

Inspection Actions	**Comments**
Test manhole for a hazardous atmosphere (PRF)	Follow confined-space entry policy and procedures before entering the manhole
Inspect the manhole cover and frame (PRF)	Check that: • Cover is accessible • Cover is in place and in good condition • All bolts are in place • Cover locks properly • Cover is not difficult to remove
Check the water level inside the manhole (PRF)	If the water is above the gate valve bonnet gasket, make another check in 2 weeks. When the water level rises above the hand wheel, dewatering is necessary.
Check for any chipped spots on the valve	Find any visible chipped spots and note for repair.
Check that valve is easily operated.	• The valve opens and closes easily. • The handle is in the proper location and is in good condition. • The threads are clean, free of debris and greased.

4. MAINTENANCE

Maintenance activities include periodic cleaning, maintenance and repair/replacement as appropriate. The goal of the maintenance program is to keep the valve in functioning condition.

Follow confined space entry policy and procedures before entering the manhole.

TABLE 4. VALVE MAINTENANCE

Facility Component	**Maintenance Activity**	**When Maintenance is Required**	**Expected Facility Performance**
Valve	Grease (use manufacturer recommended grease)	• Grease is dried out or not present • Valve does not function smoothly and easily	• Apply grease on PRF gate valve stem thread and thrust collar. • Apply grease on OF2 Swale butterfly valve stem thread and rubber seating
	Open/Close	Twice/year (spring and fall)	Close and open easily
Valve	Check fasteners	Fasteners are loose	Tighten fasteners
	Check for leaks	There is evidence of leaking around flange face or stem	Repair or replace valve
	Patch coating	Epoxy coating is chipped	Patch chipped areas using a liquid two-part epoxy
48 Inch Manhole (PRF)	Keep manhole cover, frame and inside clean	Debris is impairing manhole function.	Clean manhole cover, frame and inside

5. TIMING AND FREQUENCY

For the first 2 years after completion of the Remedial Action, the OF2 Swale butterfly valve shall be inspected and maintained (if necessary) quarterly. After 2 years, the valve shall be inspected and maintained (if necessary) twice per year (spring and fall). The resilient wedge gate valves of the PRF shall be inspected and maintained (as necessary) twice per year (spring and fall). However, additional maintenance activities may be conducted throughout the year, as required.

Maintenance activities on the valves shall be conducted when stormwater is not being discharged to the swales.

V. PRF SEDIMENTATION BOXES

Note that OF2 Swale does not have a sedimentation box.

1. GENERAL

Sedimentation boxes remove and collect sediment from stormwater runoff before water is discharged to downstream stormwater treatment facilities. They are open to the surface and most are standard precast reinforced concrete boxes. Sedimentation boxes are one of several types of facilities that slow down (detain) and store (retain) stormwater flows. They contain a semi-permanent pool of water between storm events. (Figure 3) Sedimentation boxes are used in the PRF and are located just upstream of the grassy swales.

2. OPERATION

A. PRIMARY FUNCTION

The primary purpose of a sedimentation box is to remove grit and sand from stormwater runoff before the stormwater is discharged to downstream stormwater facilities. If the sediment is not removed in the sediment box, sediment will eventually decrease the efficiency of the grassy swales and require the removal of the sediment from the swales.

B. GENERAL PURPOSE

The effectiveness of sedimentation boxes is based upon the storage volume or retention time of the boxes. Stormwater should be able to pass unrestricted into the sedimentation box and dense materials should be able settle out of the stormwater if turbulence inside the box can be minimized (through proper maintenance). Finer grained, less dense materials are not effectively removed from stormwater by sedimentation boxes.

C. DESIGN CRITERIA

Most sedimentation boxes are a rectangular box design. There are no standard sizes. The boxes are sized to meet the design requirements of a specific location. The box outlets may be designed with an inverted outlet.

3. INSPECTION

Inspection of the sedimentation boxes determines the presence and depth of sediment and debris. Key conditions to look for during inspections include:

- Flow into and out of the sedimentation box should not be restricted (inlets and outlets should be clear).
- The amount (inches) of sediment and debris.

TABLE 5. SEDIMENTATION BOX INSPECTIONS

Inspection Actions	**Comments**
Test sedimentation box for a hazardous atmosphere	Follow confined-space entry policy and procedures before entering the sedimentation box
Check the amount of sediment in the sedimentation box	Measure the depth of sediment in the box.
Check for plugging of the sedimentation box inlet and outlet.	Remove material as necessary

4. MAINTENANCE

Maintenance activities include periodic cleaning, maintenance and repair/replacement as appropriate.

Sedimentation boxes are cleaned periodically to remove trash, debris, and sediment that have accumulated since the inspection. Maximum sediment removal efficiencies can be realized with proper control of the sediment depth in the box. If the sediment level is allowed to get too high, turbulence from incoming stormwater will re-suspend material and allow it to discharge to the swale.

Follow O-I's confined space entry policy and procedures before entering the sedimentation box.

TABLE 6. SEDIMENTATION BOX MAINTENANCE

Facility Component	**Maintenance Activity**	**When Maintenance is Required**	**Expected Facility Performance**
Sedimentation box basin	Sediment removal	Sediment fills more than 60% of the volume of the box	Sediment removed: sedimentation box operates at maximum performance level
Inverted Outlet	Repair/replace Inverted Outlet	Inverted outlet allows passage of floating material	Inverted outlet repaired: floating material is trapped in box.

5. TIMING AND FREQUENCY

Inspection activities shall be conducted twice per year (spring and fall). However, additional inspections may be conducted throughout the year, as required.

Maintenance activities shall be conducted as necessary and shall be performed when the sedimentation box is not in use, i.e., no incoming stormwater. However, additional maintenance activities may be conducted throughout the year, as required.

VI. SWALE (PRF AND OF2 SWALE SYSTEMS)

1. GENERAL

Swales are long, narrow, gently sloping landscaped depressions that collect and convey stormwater runoff. There are two general types of swales: (1) grassy swales and (2) vegetated swales. The downstream component of the two facilities comprising the PRF is a grassy swale. The OF2 Swale is a grassy swale with check dams, flow speaders and vegetation.

The purpose of the swales is to reduce the pollutant load to the receiving waterway, by capturing solids, by promoting water infiltration and by the biochemical uptake of pollutants from the stormwater. Solids can include sediment, dirt, leaves, and litter. Timely removal of sediment, solids and debris from the swale will improve infiltration rates, water quality and reduce flooding.

Vegetation traps pollutants through filtration. Vegetation is vital to swale performance, acting as physical filters that retard flow velocity and initiates gravity settling of sediments and associated pollutants while concurrently providing biological uptake of pollutants. Vegetation prevents side slopes from eroding and the bottom of the swale from becoming clogged with sediments. To provide effective treatment, the depth of the stormwater should not exceed the height of the vegetation.

The structural components (inlets, outlets, check dams, flow spreaders, etc.) shall function as designed. The soil/gravels on the flat bottom and banks shall sustain healthy plant cover. Any required repairs or remedies to the swales should be implemented as soon as possible

2. OPERATION

A. PRIMARY FUNCTION

Swales are designed for gravity conveyance of stormwater, to promote infiltration and provide water treatment as the water flows through the swale. Swales must be maintained so that the swales meet these design objectives.

B. GENERAL PERFORMANCE

Swales provide conveyance, infiltration, and water treatment functions. Stormwater should flow through the swale without causing erosion. The vegetation should be maintained periodically to maximize pollutant removal. Sediment trapped in the swale must be periodically removed to maintain the hydraulic capacity of the swale and to prevent burying of the vegetation. Standing water is common in swales with check dams and flow spreaders that are designed to promote infiltration (e.g., the OF2 swale). However, swales without check dams and flow spreaders may have to be rehabilitated to improve swale performance when ponding occurs.

C. DESIGN CRITERIA

The geometry of the swale is dependent on the drainage area and physical characteristics of the site. The slope is generally between 2 and 4 percent. Swales are generally designed to provide water treatment for the 2-year, 24 hour storm. Swales do not provide water treatment when storm flows exceed the design storm, but will still provide a conveyance function. Swales provide economic and water quality benefits not provided by pipe systems.

3. INSPECTION

Inspection of the swale determines the physical condition of the swale and the presence and depth of sediment and debris. Key conditions to look for during inspections include:

- Condition of swale bank.
- Presence and amount of sediment and debris.
- Evidence of swale bottom erosion.
- Condition of vegetation.

TABLE 7. SWALE & VEGETATION INSPECTIONS

Inspection Actions	**Comments**
Check the amount of trash, debris, and sediment in the swale	Look for: • Trash dumped into the swale • Noxious weeds and noxious vegetation (such as blackberries, poison oak, and stinging nettles) • Undesirable tree growth, which interferes with facility maintenance • Damage to site fencing • Evidence of pollution (i.e., oil and grease, foam, or odors) • Lawn clippings or other harvested vegetation dumped at swale site • Problem insects (i.e., wasps, hornets, mosquitoes)
Inspect vegetation in the swale	Determine if weed control is needed. Weed control is used to control woody growth and to control nutrient release from dying/decaying plants in the swale.
Check erosion damage in the swale, particularly after a large storm	Look for ruts in the swale

Inspection Actions	**Comments**
Check sediment accumulation depth in swale bottom	Note sediment depth.
Check the swale banks for erosion, settlement, or collapse	Observe/find cause of erosion, settlement or collapse
Check for bare areas in swale	Hand seed as required
Check for ponding or standing water in swale	Note length of time water remains ponded in swale

4. SWALE MAINTENANCE

The goal of the maintenance program is to maintain the hydraulic and treatment capacity of the swale. The focus of the maintenance program is to sustain the integrity and functions of the design.

TABLE 8. SWALE MAINTENANCE

Facility Component	**Maintenance Activity**	**When Maintenance is Required**	**Expected Facility Performance**
Swale	Trash and debris removal	• Evidence of dumping is observed • Conveyance capacity is reduced by 50%	• Swale function is restored. • Trash and debris are prevented from washing into receiving waters at the swale outlet.
	Replace or install energy dissipating structures such as splash blocks or rock.	Erosion is present	Swale function is restored.
Swale Bottom	• Fill, lightly compact, and plant vegetation • Add mulch	• Gullies deeper than 2 inches have formed on swale bottom • Erosion is present	• Stormwater flow is dispersed across swale bottom • Vegetation growth restored.
	Remove accumulated sediment	Sediment accumulation exceeds 4 inches	Swale capacity restored. Vegetation growth not impeded by being buried.

Facility Component	Maintenance Activity	When Maintenance is Required	Expected Facility Performance
Swale Banks	Stabilize slopes/banks with plantings	Slope slippage/failure is present Bank settlement is greater than 4 inches	Swale dimensions and function restored.
Check Dams	Replace Rock	Original design dimensions are no longer present Erosion is present	Original design dimensions and function restored.
	Lower Height	Ponding time is greater than 48 hours	Ponding time is less than 48 hours Mosquito breeding is prevented

5. VEGETATION MAINTENANCE

Vegetation should cover 90% of the swale. Plants play an important role by absorbing water, improving infiltration rates of soil, preventing erosion by stabilizing soil, cooling water, and capturing pollutants. Plants create habitat for birds and other wildlife and provide aesthetic value. Proper maintenance of vegetation improves the appearance and performance of the swale.

Current studies on the benefits and detriments of leaving clippings in the swale are not conclusive. However, at this time decaying vegetation is allowed to remain at the site. Decaying vegetation helps to form humeric soils that benefit plants and helps provide chemical and biological uptake of pollutants. Decaying vegetation should not be allowed to accumulate to the point of impeding flow through the swale by more than 50%.

Planting and re-vegetation of the PRF swale shall conform to *Re-vegetation Program at NE 92nd PRF* included as Attachment 2.

Planting and re-vegetation of the OF2 Swale shall be per the original planting plan (Attachment 3) or a substitute from the City of Portland current edition of *Stormwater Management Manual* plant list included as Appendix F.4 in 2008 manual.

TABLE 9. VEGETATION MAINTENANCE

Facility Component	Maintenance Activity	When Maintenance is Required	Expected Facility Performance
Vegetation	Re-planting	• Dead or stressed vegetation, or bare soil is present • Plant in late fall and early spring	Vegetation restored in swale

Facility Component	Maintenance Activity	When Maintenance is Required	Expected Facility Performance
	Irrigate	• Dead or stressed vegetation is present • During first two years and during periods of extreme drought	Vegetation restored in swale
	Weed Control	Remove noxious vegetation such as poison oak, stinging nettles or other irritant plants	• Removes hazards to maintenance crews. • Prevents noxious vegetation from over-growing desired swale plants.
	Cut grass (PRF only, vegetative growth to be encouraged at OF2)	• Grass exceeds 4-9-inch height • Trim in the fall after grass has gone to seed	• Grass allowed to reseed. • Stormwater flow not impeded by over abundant grass growth.
	Fertilizers, herbicides, or pesticides	DO NOT apply	Fertilizers, herbicides, or pesticides prevented from entering Columbia Slough or Johnson Lake from swale maintenance activities.
	Mulch to inhibit weed growth, retain moisture and add nutrients to soils	Use enough mulch to inhibit weed growth, retain moisture and add nutrients but not so much that it inhibits flow in the swale	Vegetation growth enhanced in swale

6. TIMING AND FREQUENCY

For the first 2 years after completion of the Remedial Action, the OF2 Swale shall be inspected and maintained (if necessary) quarterly. After 2 years, the vegetated swale shall be inspected and maintained (if necessary) twice per year (spring and fall).

The grassy swales of the PRF shall be inspected and maintained (if necessary) twice per year (spring and fall). However, additional maintenance activities may be conducted throughout the year, as required.

The City of Portland Bureau of Environmental Services Watershed Revegetation Program will maintain all vegetation in the PRF swales and adjacent associated uplands through September 2012.

- *NE 92nd Drive Pollution Reduction Facility (Project No. E07161)*
- *Stormwater Bio-Swale (Outfall 2)*

The Remedial Action Contractor will warrantee all OF2 Swale vegetation for a 2 year period after completion of the Soil Remedial Action. O-I shall perform inspections and other maintenance of the OF2 Swale as described in the O&M Plan.

VII. FINANCIAL RESPONSIBILITY

The facilities are to be maintained by Owens-Brockway Glass Container, Inc. The contact for Owens is:

Owens Brockway Glass Container Inc
Attention: Dwayne Wendler
5850 NE 92nd Drive
Portland, Oregon
Direct: (503) 251-9422
Email: dwayne.wendler@us.o-i.com

VIII. INSPECTION AND MAINTENANCE LOGS

Records of all inspections, observations, and maintenance activities shall be maintained

Attachment 1 is the Inspection Checklist and Maintenance Log. These forms are to be completed during each inspection and maintenance activity, respectively.

The Inspection Checklist (Attachment 1) is to be completed in the field at the time of the inspection by the person performing the inspection. The Checklist shall include the name of the inspector, whether it was a scheduled or post storm inspection and any maintenance that was performed during the course of the inspection. If the inspection identifies that maintenance is required that cannot be immediately performed during the inspection, that maintenance shall be scheduled and subsequently performed. The Maintenance Log shall be completed for each maintenance activity performed whether it was performed during the inspection or separately. If the maintenance is performed separately from the inspection, a follow-up inspection shall be performed after the maintenance is complete. The intent of the Checklist and Log are to demonstrate compliance with the O & M Plan requirements.

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FIGURES

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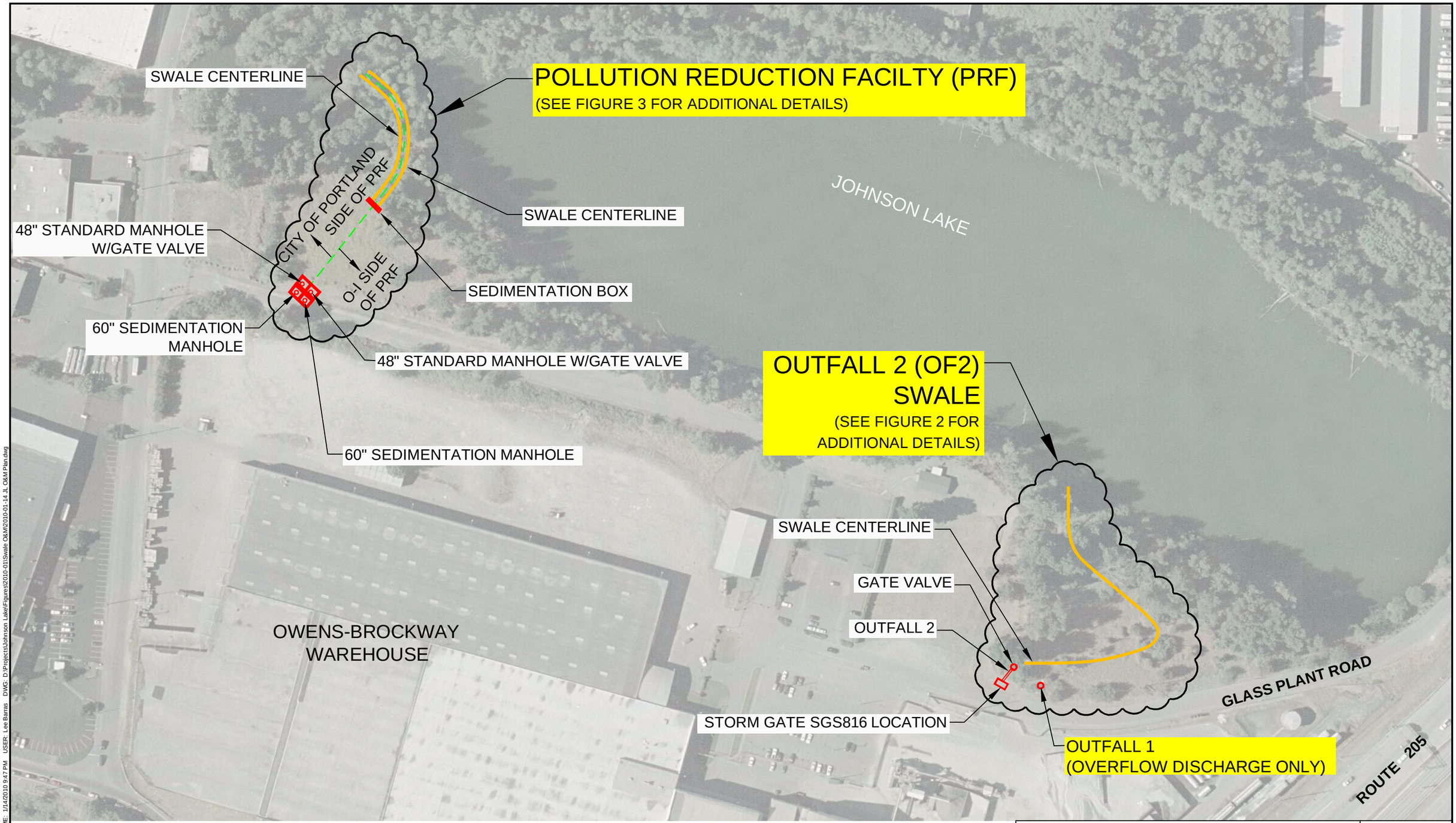

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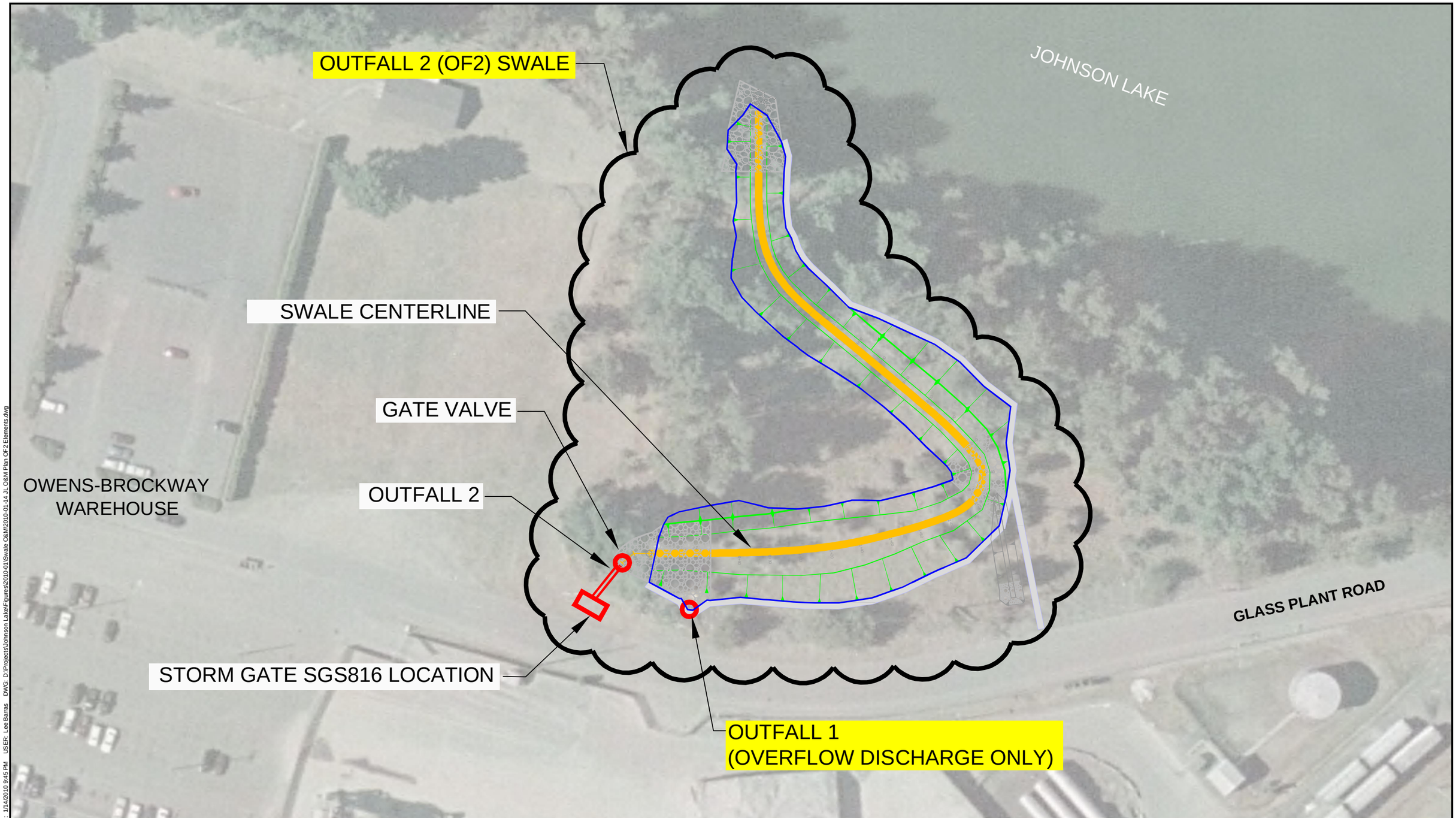
Owens-Brockway Glass Container, Inc. Portland, Oregon Facility	
SWALE O & M PLAN **SWALE LOCATIONS**	**FIGURE 1**
Dalton, Olmsted & Fuglevand, Inc.	January 14, 2010



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Owens-Brockway Glass Container, Inc.
Portland, Oregon Facility

SWALE O & M PLAN
OF2 SWALE O & M PLAN ELEMENTS

Dalton, Olmsted & Fuglevand, Inc.

FIGURE 2

January 14, 2010

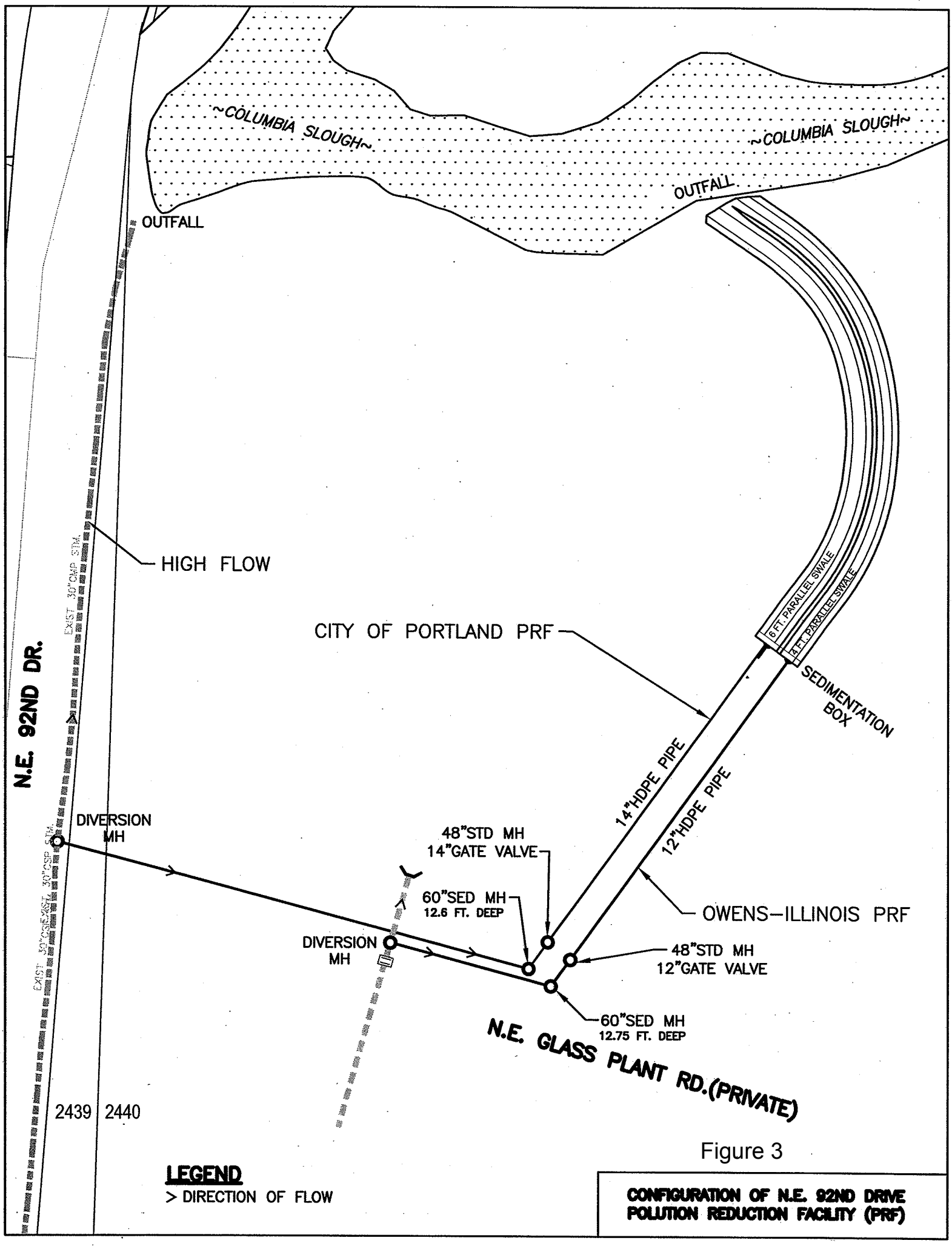

Figure 3

CONFIGURATION OF N.E. 92ND DRIVE POLLUTION REDUCTION FACILITY (PRF)

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ATTACHMENT 1: INSPECTION CHECKLIST AND MAINTENANCE LOG

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Owens-Brockway Glass Container Inc. - Portland, Oregon - Inspection Checklist for Outfall 2 (OF2) Swale, Pollution Reduction Facility (PRF) Swales, and Remedial Action (RA) Soil Area

Instructions:

1. See attached map for location of inspection areas: OF2 Swale; PRF Swales; and RA Soil Area
2. Check the box if an issue exists for an area and provide an explanation of the issue
3. After the issue has been corrected pursuant to the O&M Plans*, complete the attached Maintenance Log

Issue	RA Soil Area	OF2 Swale	PRF Swales		Explanation of Issue
			City	O-I	
Trash/debris is present					
Soil Erosion or ruts are present					
Dead or Stressed Plants or present					
Bare Soil is present					
Noxious Weedy Vegetation is present					
Ponding Water exists (greater than 48 hours)					
Flow is present in Outfall #1			---	---	
Flow is restricted in Swale	---				
Floating materials are not captured by Sedimentation Manhole/Box/Vault	---				
Damaged Sedimentation Manhole/Box/Vault or Covers	---				
Sediment is greater than 2 feet in PRF Sedimentation Manhole	---	---			
Sediment fills more than 60% of volume in PRF Sedimentation Box	---	---			
Sediment is greater than 9 inches in OF2 Vault (SGS)	---		---	---	
Leaking gate valve or butterfly valve	---				
Valve does not open/close properly	---				

* As necessary, refer to the O&M Plans for specific details on inspection and maintenance requirements

Inspection Performed by:

Print Name:_____ Signature:_____ Date:_____

Maintenance Log

Owens-Brockway Glass Container Inc. - Portland, Oregon

Outfall 2 (OF2) Swale, Pollution Reduction Facility (PRF) Swales, and Remedial Action (RA) Soil Area

Facility Element: *(circle all that apply)*

PRF Swales		OF2 Swale	RA Soil Area
City (Western Swale)	**O-B (Eastern Swale)**		
Sedimentation Manhole	Sedimentation Manhole	StormGate™ SGS 816	Vegetation
Resilient Wedge Gate Valve	Resilient Wedge Gate Valve	Butterfly Valve	Erosion
Sedimentation Box	Sedimentation Box	Swale	Slope
Swale	Swale	Vegetation	Ponding
Vegetation	Vegetation		

Work Performed by: _____

Description of Work Performed: _____

_____

_____

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_____

(Attach additional sheets as necessary)

Print Name:_____ Signature:_____ Date:_____

ATTACHMENT 2: PRF RE-VEGETATION PROGRAM

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ATTACHMENT 3: OF2 SWALE PLANTING SPECIFICATION & PLAN SHEETS

Specifications Section 02900 *Restoration and Planting*
Plan Sheet C-10 *Planting Plan & Typical Section*
Plan Sheet C-11 *Planting – Forest Layout*

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SECTION 02900
RESTORATION AND PLANTING

TABLE OF CONTENTS

Revised 10/8/09 per comments from City of Portland.
Revised Table 3-3, 10/28/09 per comments from City of Portland.

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SECTION 02900
RESTORATION AND PLANTING

PART 1 - GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

The provisions and intent of the contract, including the General Conditions, apply to this work as if specified in this section. Work related to this section is described in:

SECTION 02200 – SOIL EXCAVATION & BIO-SWALE CONSTRUCTION

SECTION 01025 – MEASUREMENT AND PAYMENT

SECTION 01200 – PROJECT MEETINGS

SECTION 01300 – SUBMITTALS

SECTION 01400 – QUALITY CONTROL

1.02 DESCRIPTION OF WORK

The work includes the requirements to provide landscaping services, including plant materials, temporary irrigation, and soil stabilization required by the Contractor for performance of the Johnson Lake Remediation. The Project Area shall be planted. Contractor is encouraged to salvage existing plants from the Project Area for reuse in final landscaping to the extent possible. Because of potential to recontaminate the site with contaminated soils that adhere to salvaged plant roots, it may only be practicable to take cuttings from species that can be propagated in this manner, such as willows (*Salix* spp.), red-osier dogwood (*Cornus sericea*), Pacific ninebark (*Physocarpus capitatus*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) and the like.

1.03 SUBMITTALS

A. Planting Work Plan as detailed in Part 3.01 of this specification section.

B. Contractor's Construction Schedule

C. Contractor Quality Control (CQC) Plan as detailed in specification Section 01400.

D. Environmental Protection Plan (EPP) including Spill Contingency Plan

1.04 UTILITIES

It shall be the responsibility of the Contractor to provide adequate temporary irrigation facilities to provide sufficient water and other favorable site conditions, as necessary, to promote successful plant establishment. Water will be supplied to the planting areas by providing extensions off the existing supply mains as necessary to provide adequate pressure to provide complete irrigation coverage of the entire planting areas. Any extensions or connections installed by the Contractor for irrigation purposes shall be

equipped with a shut off valve and approved backflow prevention device. Lines also shall be weatherized to prevent damage during freezing conditions or purged by blowing the lines out each fall to prevent damage. All such connections, fittings, etc., shall be furnished and installed by the Contractor, and removed upon completion of the work, to the satisfaction of the OWNER.

1.05 WATER CONTROL

Contractor shall protect landscaped and replanted area from erosion and surface water run-off and erosion until plantings are established.

PART 2 - PRODUCTS

2.01 GENERAL

Materials shall be of the quantity, size, condition, and gradation specified on the Plans.

2.02 PLANT SOURCE

All native plants shall be obtained from local native plant nurseries. ~~Local nurseries shall certify that supplied native plants consist of genetic stock originating from the Willamette Valley.~~ Plant substitutions may be made only with approval from the ENGINEER. If specified plants are unavailable, only ~~native~~ plants ~~known to occur and certified to have originated from genetic stock within the Willamette Valley~~ on the Portland Native Plants List shall be ~~substituted~~ acceptable substitutes. Quantities, spacing, conditions, and layout shall follow that specified in Part 3.02 and identified in planting plans.

2.03 PLANT WARRANTY

The landscape contractor will provide a minimum of a two-year warranty for all installed native plants purchased by the OWNER. All plants shall be free of defects, disease, and pests and guaranteed true to name. Any plants that die during the warranty period shall be replaced free of charge with new plants of the same size and condition as that being replaced or suitable substitutes recommended by the OWNER, OWNER's representative or the ENGINEER. Only plants ~~native to the Willamette Valley~~ on the Portland Native Plants List are considered suitable substitutes.

2.04 ACCEPTANCE OF PLANTS

The OWNER, OWNER's representative or the ENGINEER will have the opportunity to inspect all plants before they are installed. Plants shall be in good health, free from disease and plant pests. Any plants considered to be defective, diseased, damaged, unhealthy, root bound, of uncertain origin or cannot be verified as true to name may be rejected at no cost to the OWNER. The quantity, condition, and species specified in the planting plan shall be verifiable by the OWNER, OWNER's representative or the ENGINEER. Only after all materials have been verified to be in compliance with the plans and specifications presented herein, are of acceptable quality to the OWNER, OWNER's representative or the ENGINEER, and whose origin ~~within the Willamette Valley~~ has been certified will they be accepted.

PART 3 - EXECUTION

3.01 PLANTING WORK PLAN

More than 30 days prior to start of work, the Contractor shall submit to ENGINEER for approval, a detailed, written project Planting Work Plan. As a minimum, the plan shall contain the following:

A. Order in which the work is to be performed including: the work sequence; number, types and capacity of equipment to be used; hours of operation; and the time required to complete each activity.

B. List if key personnel and supervisory chain for approval by the ENGINEER.

C. Methods, procedures and equipment to be used for the following activities:

- Mobilization of equipment to site
- Site preparation including grubbing, soil amendments, temporary irrigation, hydroseeding, etc.
- Maintenance of site planting (e.g., weeding, watering, or otherwise providing favorable growing conditions)

3.02 CONDUCT OF PLANTING

Plants will be planted in the configuration, size and number indicated on the Plans and the plant materials schedules (Tables 3-1, 3-2, and 3-3). Substitutions may be made as provided for in Part 2.02 above. A soil moisture retention polymer, such as SoilMoist™ or equivalent, shall be added to the planting holes of all container, bareroot, or ball and burlap plants. Application rates shall conform to those specified by the manufacturer. The landscape contractor will be responsible for installing, maintaining, and operating a temporary irrigation system for at least the first two growing seasons as specified in Part 3.04.

Table 3-1. Plant materials schedule for swale.

Scientific Name	Common Name	Condition	Spacing in Feet on Center	Comments	Quantity
Trees					
Crataegus suksdorfii	Black hawthorn	2-gal container, min. height 3.5 ft.	**12 to 15**	Groups of 2 to 4 and scattered individuals	**45**
Fraxinus latifolia	Oregon ash	2-gal container, min. height 2.5 ft.	**12 to 15**	Groups of 3 or 4 and scattered individuals in more open areas	**45**
Populus balsamifera ssp. *trichocarpa*	Black cottonwood	2-gal container , min. height 3ft.	Irregular	Scattered individuals and groups of 2 or 3 in full sun	**29**
				Minimum Total	**119**
Shrubs					
Cornus sericea	Red-osier dogwood	2-gal container or bare root, min height 2.25 ft.*	6 to 9	Groups of 4 to 5 plants	35
Oemleria cerasiformis	Indian plum	2-gal container or bare root, min. height 2.5 ft.	9 to 12	Groups of 4 to 5 plants	34
Physocarpus capitatus	Pacific ninebark	2-gal container or bare root, min height 2.25 ft.*	9 to 12	Groups of 4 to 5 plants	35
Ribes bracteosum	Stink currant	2-gal container or bare root, min. height 2.5 ft.	3 to 6	Groups of 10 to 15 plants	34
Rosa nutkana	Nootka rose	2-gal container, min. height 2.5 ft.	3 to 6	Groups of 10 to 15 plants	35
Rubus parviflorus	Thimbleberry	1-gal container or bare root, min. height 2.5 ft.	3 to 6	Groups of 10 to 15 plants	35
Salix sitchensis	Sitka willow	2-gal container, min. height 3 ft.*	3 to 6	Small groups of 4 to 5 plants	35
Salix sessilifolia	Soft-leaved willow	1-gal container, min. height 3 ft.*	3 to 6	Small groups of 4 to 5 plants	35
				Minimum Total	**278**

* Live stakes taken from materials salvaged onsite may be used for these species. Minimum length 3 ft. and 0.5-in. diameter; if live stakes are used, RooTone® or equivalent rooting hormone and fungicide shall be used to promote successful establishment.

All container stock shall comply with American Standard for Nursery Stock standards (ANSI Z60.1-2004 or most current version) for Shade and Flowering Trees, Deciduous Shrubs, and Coniferous Evergreens based on minimum heights specified in this table as appropriate.

All materials must be from local seed sources ~~and certified to be of genetic origin within the Willamette valley~~.

Upon completion of planting, shrub density shall be 488 plants/acre and tree density shall be 209 plants/acre within the 0.57-acre bioswale.

Table 3-2. Plant materials schedule for the mixed deciduous and coniferous riparian forest

Scientific Name	Common Name	Condition	Spacing in Feet on Center	Comments	Quantity
Trees					
Acer macrophyllum	Big-leaf maple	2-gal container, min. height 3.5 ft.	Irregular	Scattered individuals in all areas	10
Alnus rubra	Red alder	2-gal container, min. height 3 ft	9 to 12	Groups of 3 or 4 and scattered individuals in more open areas	20
Pseudotsuga menziesii	Douglas fir	2-gal container, min. height 3.5 ft.	12 to 15	Groups of 3 to 5 in full or partial sun	14
Rhamnus purshiana	Cascara	2-gal container, min. height 2.5 ft.	Irregular	Groups of 3 or 4 and scattered individuals	10
Salix lucida ssp. *lasiandra*	Pacific willow	2-gal container, min. height 3 ft*	9 to 12	Groups of 3 to 5 in all areas	20
Thuja plicata	Western red cedar	2-gal container, min height 3 ft.	12 to 15	Groups of 2 to 3 in shade of existing trees	10
				Minimum Total	**84**
Shrubs					
Acer circinatum	Vine maple	2-gal container, min height 2.25 ft.	6 to 9	Groups of 4 to 5 and scattered individuals in shade of existing trees and around conifers	52
Mahonia nervosa	Dull Oregon grape	2-gal container, min height 1.5 ft.	2 to 3	Groups of 10 to 15 interspersed among conifers	52
Physocarpus capitatus	Pacific ninebark	2-gal container, min height 2.75 ft.	6 to 9	Groups of 3 or 4 interspersed among deciduous trees	45
Sambucus racemosa	Red elderberry	2-gal container, min height 2.75 ft.	6 to 9	Groups of 3 or 4 interspersed among deciduous trees	46
				Minimum Total	**195**

* Live stakes taken from materials salvaged onsite may be used for these species. Minimum length 3 ft. and 0.5-in. diameter; if live stakes are used, RooTone® or equivalent rooting hormone and fungicide shall be used to promote successful establishment.

All materials shall be derived of genetic stock ~~certified to have originated in the Willamette Valley~~ from local seed sources; any substitutions that are made based on availability also will be ~~certified as stated above~~ derived from local seed sources and must be on the Portland Native Plants List.

All plant materials will comply with all relevant Oregon Department of Agriculture quarantines as specified in the Oregon Administrative Rules including but not limited to those identified in Section 3.05

All materials shall comply with American Standard for Nursery Stock standards (ANSI Z60.1-2004 or most current version) for Shade and Flowering Trees, Deciduous Shrubs, and Coniferous Evergreens based on minimum heights specified in this table as appropriate.

Upon completion of planting, shrub density shall be 488 plants/acre and tree density shall be 209 plants/acre within the 0.40-acre riparian planting area.

3.03 MAINTENANCE

The landscape contractor shall maintain conditions favorable to native plant growth and establishment. At a minimum, this will include but shall not be limited to providing soils containing appropriate micro and macronutrients and organic matter comparable to native soils supporting the native species. Under no circumstances shall there be concentrations of any substances, including micronutrients, known to be deleterious or unfavorable to plant growth. Providing favorable conditions for plant growth and establishment shall also include reducing competition from noxious weeds and non-native, invasive plants, such as Himalayan blackberry (*Rubus armeniacus* formerly *R. discolor*), English ivy (*Hedera helix*) and all other noxious weed species identified by the Oregon Department of Agriculture in Oregon Administrative Rules (OAR) 603-052-1200 by periodically removing and controlling them; controlling herbivory, predation, damage, or disease caused by voles, deer, beaver, or other pests; replace dead or dying plants; installing, maintaining, and operating a temporary irrigation system for at least two growing seasons; renewing mulch; applying all or a combination of these measures as necessary to meet all relevant performance standards specified by regulatory agencies, such as those for plant survival, cover, or diversity.

3.04 TEMPORARY IRRIGATION SYSTEM

A temporary, aboveground irrigation system that provides complete coverage of the riparian forest and swale will be designed, installed, maintained, and operated for a minimum of the first two growing seasons following plant installation. Automated timers shall be installed as part of this system. At a minimum, plants will be watered during summer drought periods between approximately July 1 through September 30 the first two growing seasons following planting. Frequency of watering will depend on the weather following planting and the capacity of the soils to retain sufficient moisture to promote plant growth and establishment. Plants should receive a minimum of an inch of water per week during the summer drought or unusually dry periods in spring or fall. The landscape contractor will be responsible for designing, installing, maintaining and operating a functional system that provides complete coverage of the landscaped area. Automatic timers shall be programmed to operate for sufficient duration to deliver an inch of water throughout the landscape area during each period of operation (week or bi-weekly). The system shall be tested following programming to demonstrate the system is properly functioning. The landscape contractor will operate the temporary irrigation system at least once every other week during summer drought to provide an inch of water to all plantings unless soil moisture data collected onsite or precipitation data from Portland International Airport are provided showing that such watering is unnecessary. If the weather is wetter than normal (long-term average for Portland International Airport) for each month during the summer drought, less frequent watering may be required. Following the second complete growing season, it is expected that plantings will be successfully established and the temporary irrigation system shall be removed from the site by the landscape contractor. It will be the responsibility of the landscape contractor to conduct whatever maintenance is required, such as blowing out the lines in fall to prevent pipe rupture from water freezing within the lines, replacing clogged sprinkler heads, or broken parts, to maintain a properly functioning system. Costs of designing,

installing, maintaining, operating, and removing the system shall be born by the landscape contractor.

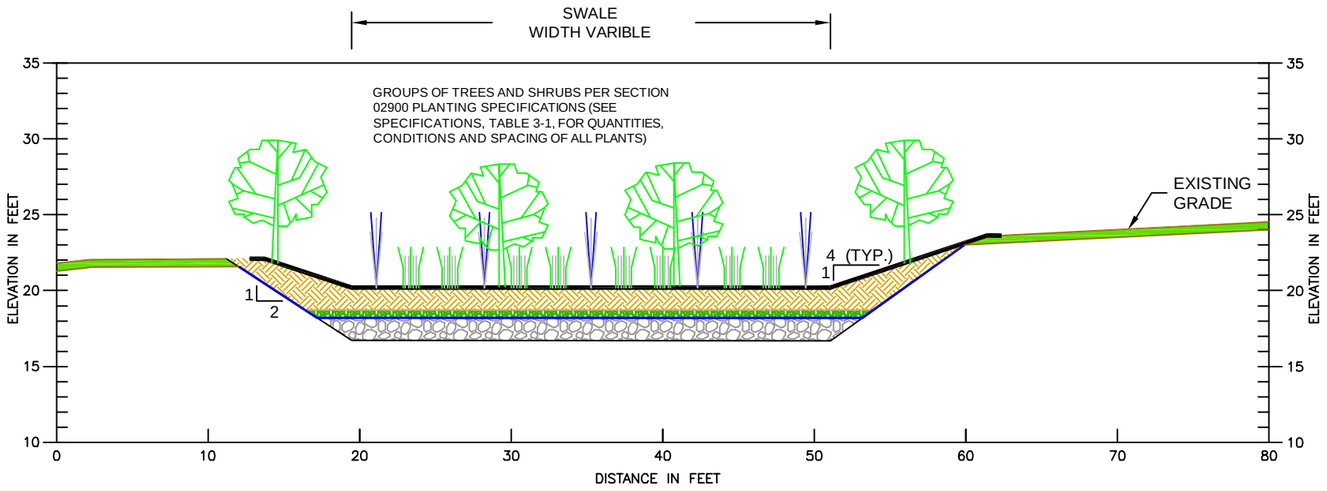
3.05 HYDROSEEDING

The entire landscaped area shall be hydroseeded to facilitate control of soil erosion and prevent increased sediment delivery to Johnson Lake. The seed specified in Table 3-3 shall be applied at a rate of a minimum of 40 lbs/acre as part of a hydroseed slurry. Seed of the type specified shall comply with the Oregon Seed Law and Federal Seed Act (as amended). Seed shall be "Oregon Certified Seed" and meet the quality, labeling, storage and conditioning, and testing provisions identified in the 2008 version of the Oregon Seed Certification Handbook. Seed shall be free of weed seed as required for all Oregon Certified Seed. Contact the Oregon State University Seed Certification Service http://www.oscs.oregonstate.edu or download the handbook from http://www.oscs.orst.edu/publications/handbooks/handbook.pdf. The landscape contractor shall furnish to the ENGINEER duplicate copies of certifications for all seed used in the hydroseed mixture. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted. Hydroseed slurry shall also include wood cellulose fiber at a rate of not more than 2,000 lbs/acre, an organic tackifier such as guar gum at a rate of 60 lbs/acre, and an indicator dye to help facilitate even distribution and verification of hydroseed application. All hydroseed mix materials shall be free of deleterious materials or substances known to be toxic to plants and aquatic life. Materials must be compatible and readily mix together in water to form a uniform slurry mixture. The slurry shall be mixed continuously during application to ensure that a uniform mixture of seed, cellulose wood fiber, tackifier, indicator dye is applied evenly across the entire landscaped area. Contractor will be responsible for ensuring a minimum of 80% cover of by germinating seed within two weeks of the initial application. Additional applications may be required at no cost to the OWNER if cover of germinating seed is less than 80% of the entire area and it is estimated that such conditions pose a potential risk of increased erosion and sedimentation.

Table 3-3. Suggested hydroseed mix (ProTime-404) for the entire landscaped and stormwater swale area

Kind and Variety of Seed in Mixture	Percent by Weight	Minimum % Pure Live Seed (#/lb)	Comments
Grasses			
California brome (*Bromus carnatus*)	55	45	Native grass tolerant of mesic to xeric habitats with medium to coarse-textured soils
Blue wildrye (*Elymus glaucus)*	20	15	Another native, bunch grass with a broad range of moisture tolerances
Flowering Forbs			
Big-leaf lupine (*Lupinus polyphylus*)	25	15	Native nitrogen fixer will help improve soil nutrients and condition soil for native riparian association
Common yarrow (*Achillea millefolium*)	5	85	Native forb already present on and well adapted to onsite conditions.

END OF SECTION



TYPICAL SWALE PLANTING CROSS SECTION

Scale in Feet

NOTE:
1. HYDROSEED ALL AREAS IMPACTED BY SOIL REMEDIATION AND SWALE CONSTRUCTION ACTIVITIES PER SPECIFICATIONS.

GENERAL NOTES:
1. SEE SPECIFICATION FOR HYDROSEED MIXTURE. ALL PLANTED AREAS SHALL BE HYDROSEEDED.
2. SEE SPECIFICATION FOR PLANT SCHEDULES FOR SPECIES, COMPOSITION, QUANTITIES, & CONDITIONS.
3. VERTICAL DATUM: CITY OF PORTLAND BENCHMARK NUMBER 2605, IN WEST CURB, N.E. 92ND AVENUE AND N.E. COLUMBIA BOULEVARD, 17 FEET NORTH OF THE P.T. OF WEST CURB. ELEVATION = 44.806' (CITY OF PORTLAND DATUM)
4. HORIZONTAL DATUM: OREGON STATE PLANE (NORTH) NAD83, REPORTED IN UNITS OF FEET.
5. BASE DATA IS A COMPILATION OF MULTIPLE DATA SETS. SEE SHEET A-3 FOR EXPLANATION OF DIFFERENT DATA SETS.
6. ALL SLOPES STEEPER THAN 4H:1V TO BE STABILIZED WITH TURF EROSION MATTING. MATTING TO EXTEND 20' BEYOND TOP OF SLOPES WHERE PRACTICAL.

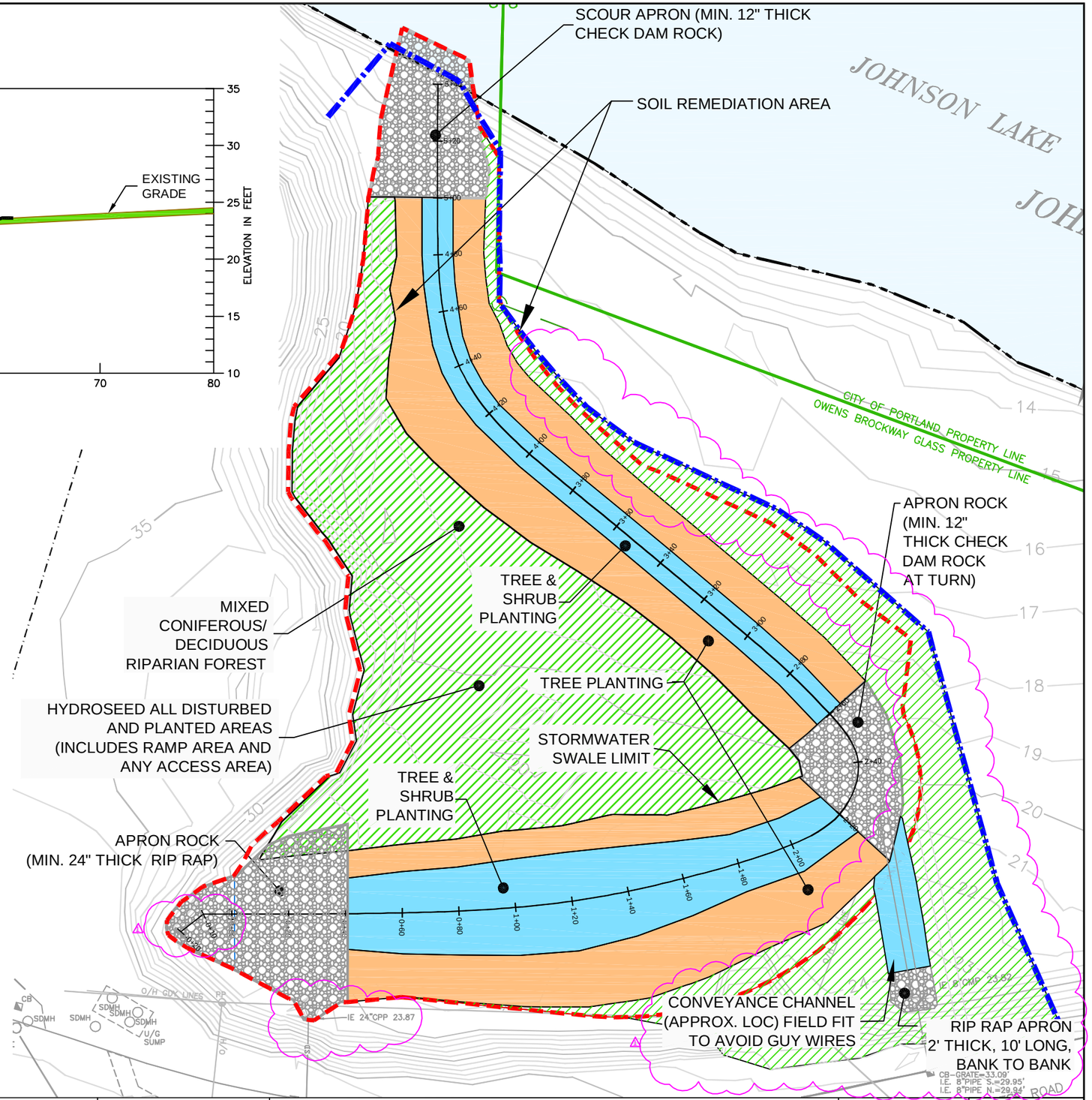
LEGEND

- Tree & Shrub Plantings (See Swale Plant Schedule Sheet C-11)
- Tree Plantings (See Swale Plant Schedule)
- Mixed Coniferous /Deciduous Riparian Forest
- Limits of Material Placement
- Property Boundary (Approximate) (Metro DRC)

N

20 0 20

Scale in Feet



DALTON, OLMSTED & FUGLEVAND, INC.
Environmental Consultants
10705 Silverdale Way NW Suite 201
Silverdale, WA 98383
(360) 692-7345

Professional Engineer's Name	ROBERT S. WEBB	
Professional Engineer's No.		
State		Date Signed
Project Mgr.	Designed by	Drawn by
RSW		LMB

REVISIONS

REV	DATE	INIT.	DESCRIPTION
1	11/12/09	RW	APRON ROCK, HYDROSEED LIMITS, CHECK DAM ROCK APRON

Owens-Brockway Glass Container, Inc. Portland, Oregon

Soil Remedial Action
FINAL (100%) DESIGN

PLANTING PLAN AND TYPICAL SECTION

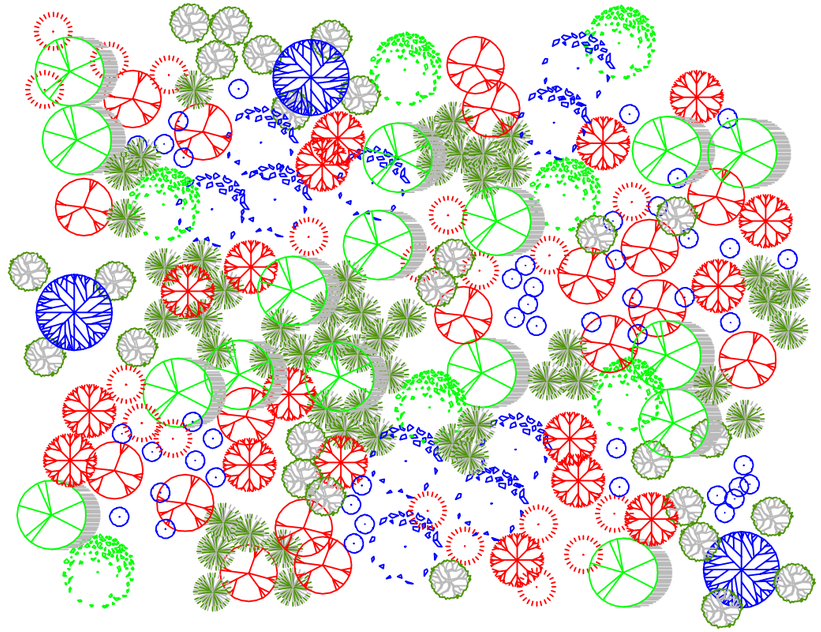
Project No.	OBI-001
Date	SEPTEMBER 04, 2009
	REVISION 1 NOV 12, 2009

C-10

PLOT TIME: 11/12/2009 2:09 PM MOD TIME: 11/12/2009 2:05 PM USER: Suzanne SK. Kaminski DWG: D:\Projects\Johnson Lake\Figures\2009-11\Soil Remediation\Rev1\OBGI-01 JL SR C10-11 Planting R1.dwg

LEGEND:

MIXED DECIDUOUS AND CONIFEROUS RIPARIAN FOREST		
	Scientific Name	Common Name
Am	Acer macrophyllum	Big-leaf Maple
Ar	Alnus rubra	Red Alder
Pm	Pseudotsuga menziesii	Douglas Fir
Rpu	Rhamnus purshiana	Cascara
Sl	Salix lucida ssp. lasiandra	Pacific Willow
Tp	Thuja plicata	Western Red Cedar
SHRUBS		
Ac	Acer circinatum	Vine Maple
Sr	Sambacus racemosa	Red Elderberry
Mn	Mahonia nervosa	Dull Oregon Grape
Pc	Physocarpus capitatus	Pacific Ninebark



TYPICAL DETAIL MIXED CONIFEROUS/DECIDUOUS RIPARIAN FOREST

NOTE:
SEE SECTION 02900 PLANTING SPECIFICATIONS, TABLE 3-2, FOR QUANTITIES, CONDITIONS AND SPACING OF ALL PLANTS. ENTIRE PLANTED AREA TO BE HYDROSEEDED.

NOTES:

1. All materials shall be derived of generic stock certified to have originated in the Willamette Valley; any substitutions that are made based on availability also will be certified as stated above.
2. All plant materials will comply with all relevant Oregon Department of Agriculture quarantined as specified in the Oregon Administrative Rules including but not limited to those identified in Section 3.06.
3. All materials shall comply with American Standards for Nursery Stock standards (ANSI Z60.1-2004 or most current version for Shade and Flowering Trees, Deciduous Shrubs, and Coniferous Evergreens based on minimum heights specified in this table as appropriate.
4. Tree and shrub plantings and densities shall be as specified in Section 02900 Planting Specifications.

DALTON, OLMSTED & FUGLEVAND, INC.
Environmental Consultants
10705 Silverdale Way NW Suite 201
Silverdale, WA 98383
(360) 692-7345

Professional Engineer's Name: ROBERT S. WEBB
Professional Engineer's No.:
State: | Date Signed:
Project Mgr.: RSW | Designed by: | Drawn by: LMB

REVISIONS			
REV.	DATE	INIT.	DESCRIPTION

Owens-Brockway Glass Container, Inc. Portland, Oregon
Soil Remedial Action
FINAL (100%) DESIGN

PLANTING - FOREST LAYOUT

Project No. OBI-001
Date SEPTEMBER 04, 2009
REVISION 1
NOV 12, 2009

C-11

ATTACHMENT 5: MANUFACTURER O&M DOCUMENTS

Storm Clean® Filtration Insert

Installation of Sediment and Hydrocarbon Filter Elements

Installation Procedure

1) Remove grate and thoroughly clean grate support frame.

2) Inspect grate frame to ensure the rubber gasket on the support pan forms an effective seal.

NOTE: We recommend the host fixture is pressure washed and vacuumed prior to filter installation.

3) Install support pan. Make sure the rubber gasket has good contact with the grate frame.

4) Install filter element until it fits snugly into the support pan opening.

5) Install rigid strainer into the filter element until the strainer is flush with the support pan.

6) Make sure the sample port cap is firmly in place then reinstall grate.

Maintenance

Visual monitoring of the filter element to check performance should be done during monthly inspection.

1) Remove grate to access the unit for cleaning.

2) Remove and empty the rigid strainer.*

3) Remove filter element.* Filter elements should be changed when the unit is heavily fouled at the surface and sedimentation has built up, impeding flow of water.
NOTE: The used filter element should be allowed to drain and disposed as dry waste.

4) Replace filter element with a new one, following the installation instructions.

*Check with your local waste disposal authority for proper disposal of exhausted filter elements and waste materials removed from the system.

SUBMITTAL DRAWINGS

Bio Clean

A Forterra Company

Proven Stormwater Treatment Technology

PROJECT #:

PROJECT NAME:

Approved
David Smith
5/18/2021

PREPARED FOR:

Ferguson Waterworks

DATE SUBMITTED:

5/10/2021

DISCLOSURE: It is the sole responsibility of purchaser to verify these submittals are accurate based upon the final set of construction plans. Bio Clean is not responsible for any variations to design after these submittals are approved. If information in these submittals do not match the final set of construction plans it is the responsibility of the purchaser to request revision(s) from Bio Clean prior to approving the submittals. If the purchaser approves this submittal without final construction plans and/or without approval from the project engineer they do so at own risk. Bio Clean highly recommends that the purchaser get official stamped approval from Project Engineer(s) and/or all other Project Design Professions in accordance with project submittal specifications and manufactures recommendations.

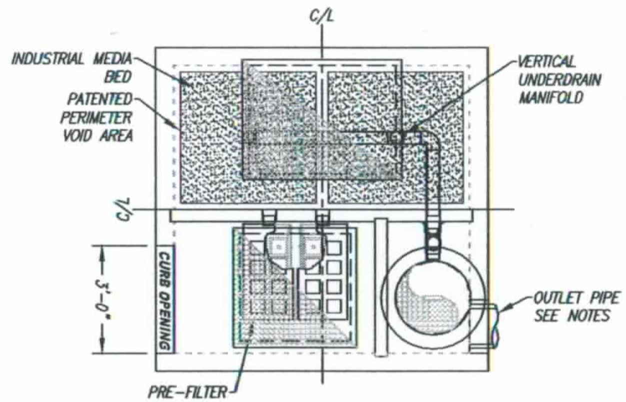
Bio Clean
398 Via El Centro
Oceanside, CA 92058

www.BioCleanEnvironmental.com
P 855-566-3938
F 760-433-3179

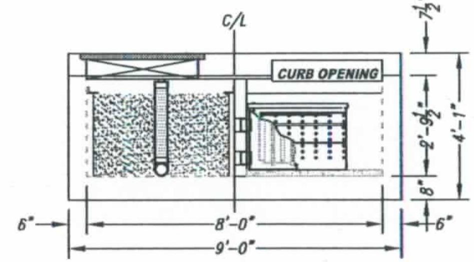
SITE SPECIFIC DATA

PROJECT NUMBER	11776		
PROJECT NAME	OWENS BROCKWAY		
PROJECT LOCATION	PORTLAND, OR		
STRUCTURE ID	UNIT 1		
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
		*0.3	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE	N/A	N/A	N/A
OUTLET PIPE	0.00	N/K	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	3.50	3.50	3.50
SURFACE LOAD	PEDESTRIAN	PEDESTRIAN	PEDESTRIAN
FRAME & COVER	36" X 36"	36" X 48"	ø24"
INDUSTRIAL MEDIA VOLUME (CY)			2.28
ORIFICE SIZE (DIA. INCHES)			4 EA ø1.18"

NOTES: INDUSTRIAL MEDIA MIX REQUIRED. *TWO MWS UNITS WILL PROVIDE THE REQUIRED WQ TREATMENT.



PLAN VIEW



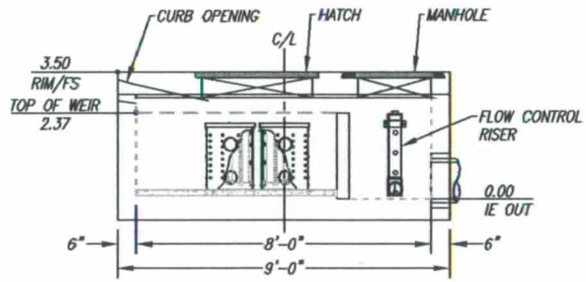
LEFT END VIEW

INSTALLATION NOTES

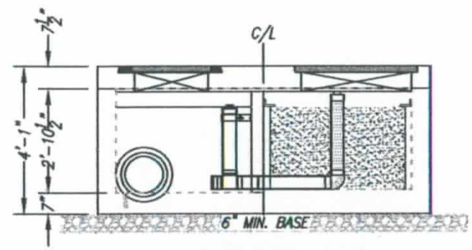
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

INTERNAL BYPASS DISCLOSURE:

THE DESIGN AND CAPACITY OF THE PEAK CONVEYANCE METHOD TO BE REVIEWED AND APPROVED BY THE ENGINEER OF RECORD. HGL(S) AT PEAK FLOW SHALL BE ASSESSED TO ENSURE NO UPSTREAM FLOODING. PEAK HGL AND BYPASS CAPACITY SHOWN ON DRAWING ARE USED FOR GUIDANCE ONLY.

TREATMENT FLOW (CFS)	0.15
OPERATING HEAD (FT)	2.2
PRETREATMENT LOADING RATE (GPM/SF)	1.3
INDUSTRIAL MEDIA LOADING RATE (GPM/SF)	1.0

MODULAR WETLANDS

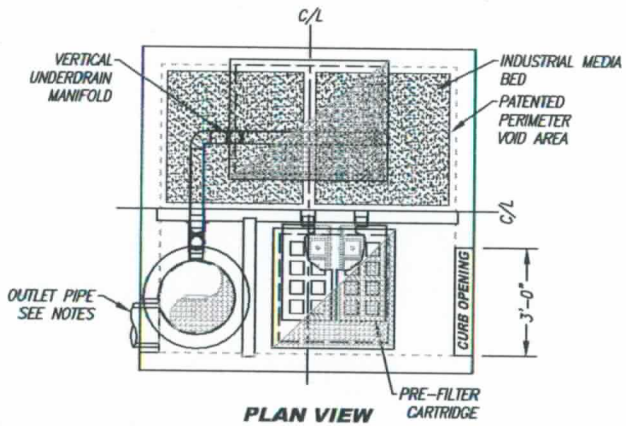
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

Bio Clean
A Forterra Company

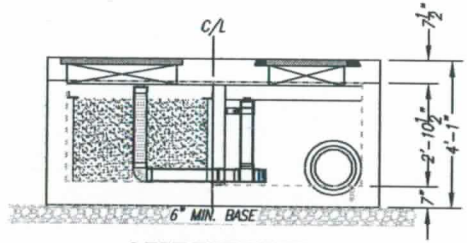
MWS-L-8-8-2'-10"-C-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

4/12/21ASPOLAR

SITE SPECIFIC DATA			
PROJECT NUMBER		11776	
PROJECT NAME		OWENS BROCKWAY	
PROJECT LOCATION		PORTLAND, OR	
STRUCTURE ID		UNIT 2	
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
		*0.3	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE	N/A	N/A	N/A
OUTLET PIPE	0.00	N/K	12"
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION	3.50	3.50	3.50
SURFACE LOAD	PEDESTRIAN	PEDESTRIAN	PEDESTRIAN
FRAME & COVER	36" X 36"	36" X 48"	ø24"
INDUSTRIAL MEDIA VOLUME (CY)			2.28
ORIFICE SIZE (DIA. INCHES)			4 EA ø1.18"
NOTES: INDUSTRIAL MEDIA MIX REQUIRED. *TWO MWS UNITS WILL PROVIDE THE REQUIRED WQ TREATMENT.			



PLAN VIEW



LEFT END VIEW

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GENERAL NOTES

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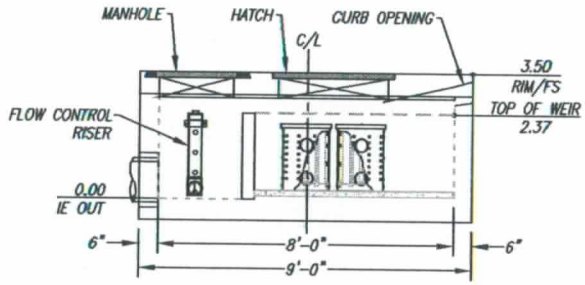
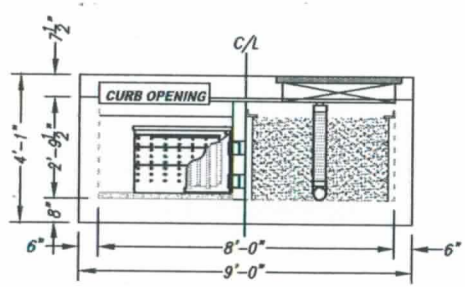


ELEVATION VIEW



RIGHT END VIEW

INTERNAL BYPASS DISCLOSURE:

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TREATMENT FLOW (CFS)	0.15
OPERATING HEAD (FT)	2.2
PRETREATMENT LOADING RATE (GPM/SF)	1.3
INDUSTRIAL MEDIA LOADING RATE (GPM/SF)	1.0

Bio Clean
A Forterra Company

MWS-L-8-8-2'-10"-C-UG
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

INSTALLATION

MWS – Linear

Hybrid Stormwater Filtration System

Bio Clean

A Forterra Company

Bio Clean
398 Via El Centro
Oceanside, CA 92058

www.BioCleanEnvironmental.com
P 855-566-3938
F 760-433-3179

Installation Guidelines for UNDERGROUND Modular Wetland System (no vegetation)

Delivery & Unloading/Lifting

1. Modular Wetland Systems, Inc. shall deliver the unit(s) to the site in coordination with the Contractor.

2. The Contractor will require spreader bars and chains/cables to safely and securely lift the main structure (bottom and top half if applicable), tops, risers, and internal components with a set of suitable lifting hooks, knuckles, shackles and eye bolts.

3. The main structure will either consist of a bottom structure and top slab or a bottom and top structure (clamshell design).

   Please see Modular Wetland Weights and Lifting Details. Contact Modular Wetlands for additional lifting details.

Inspection

1. Inspection of the Modular Wetland unit and all parts contained in or shipped outside of the unit shall be inspected at time of delivery by the site Engineer/Inspector and the Contractor. Any non-conformance to approved drawings or damage to any part of the system shall be documented on the Modular Wetland shipping ticket. Damage to the unit during and after unloading shall be corrected at the expense of the Contractor. Any necessary repairs to the Modular Wetland unit shall be made to the acceptance of the Engineer/Inspector.

Site Preparation

1. The Contractor is responsible for providing adequate and complete site/inlet protection when the Modular Wetland unit is installed prior to final site stabilization (full landscaping, grass cover, final paving, and street sweeping completed).

2. The Contractor shall adhere to all jurisdictional and/or OSHA safety rules in providing temporary shoring of the excavation.

3. The Contractor or Owner is responsible for appropriately barricading the Modular Wetland unit from traffic (in accordance with local codes).

Installation Guidelines for Modular Wetland System

Installation

1. Each unit shall be constructed at the locations and elevations according to the sizes shown on the approved drawings. Any modifications to the elevation or location shall be at the direction of and approved by the Engineer.

2. The unit shall be placed on the compacted sub-grade with a minimum 6-inch gravel base matching the final grade of the curb line, top of curb, top of grate or finish surface in the area of the unit. The unit is to be placed such that the unit and top slab match the grade of the finish surface in the area of the unit. Compact undisturbed sub-grade materials to 95% of maximum density at +1% to 2% of the optimum moisture. Unsuitable material below sub-grade shall be replaced to site engineer's approval. Please see Modular Wetlands Weights and Lifting Details. Contact Modular Wetlands for guidance where slope exceeds 5%.

3. Once the unit is set, the internal wooden forms and protective silt fabric cover must be left intact (if WetlandMedia pre-installed). The top lid(s) should be sealed onto the box section before backfilling, using a non-shrink grout, butyl rubber or similar waterproof seal. The boards on the top of the lid and boards sealed in the unit's throat must NOT be removed. The Supplier will remove these sections at the time of activation.

4. Outlet connections shall be aligned and sealed to meet the approved drawings with modifications necessary to meet site conditions and local regulations. The correct outlet will be marked on the Modular Wetland unit.

5. Backfilling should be performed in a careful manner, bringing the appropriate fill material up in 6-inch lifts on all sides. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of the Modular Wetland unit shall conform to ASTM specification C891 "Standard Practice for Installation of Underground Precast Utility Structures" unless specified otherwise in contract documents.

6. It is the responsibility of the Contractor to provide curb and gutter and transition to the Modular Wetland unit for proper stormwater flow into the system through the throat, pipe or grate opening. A standard drawing of the throat and gutter detail is available in the following section; however the plans and contract documents supersede all standard drawings. Several variations of the standard design are available. Effective bypass for the Modular Wetland System is essential for correct operation (i.e. bypass to an overflow at lower elevation).

Installation Procedure

The contractor **MUST** provide rigging and lifting apparatus, such as cables, chains or straps and a set of lifting hooks, shackles, knuckles or eye bolts.

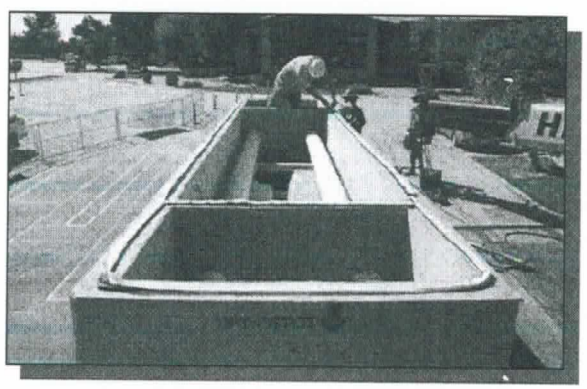
It is the contractor's responsibility to provide suitable lifting equipment to off-load the Modular Wetland unit.

Modular Wetland units are designed to be off-loaded using the a spreader bar provided by the contractor.

1. Apply Butyl Tape Seal

Apply butyl tape seal along the top of the box section (bottom half). Butyl tape seal is provided with every unit.

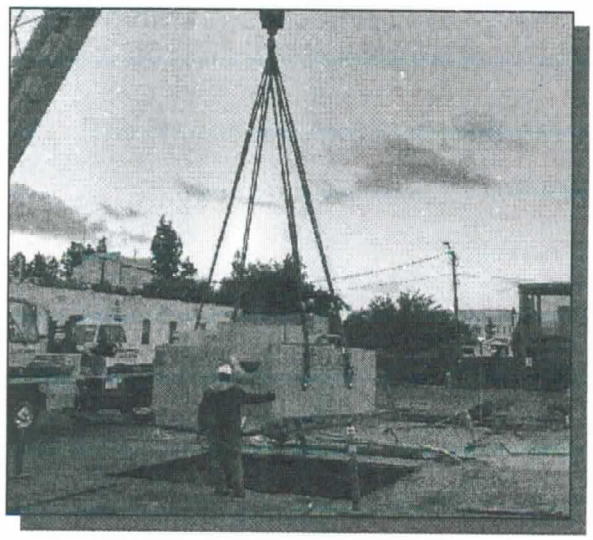
Modular Wetland may install protective throat board and installed silt fabric must be left in place to protect the unit from construction sediment.



2. Unload and Set Base Structure

Unload the Modular Wetland unit and set into the prepared hole with appropriate sub-grade.*

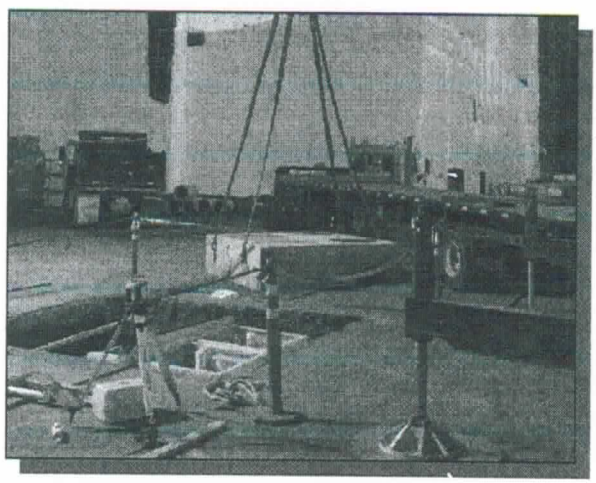
Compacted sub-grade with a minimum of six inches of gravel base which must match the final grade (finish surface) in the area of the unit.



3. Set Top Structure

Set the top slab or top half on the base.

The Contractor is responsible for providing adequate and complete site/inlet protection when the Modular Wetland is installed prior to final site stabilization (full landscaping, grass cover, final paving, and street sweeping completed).



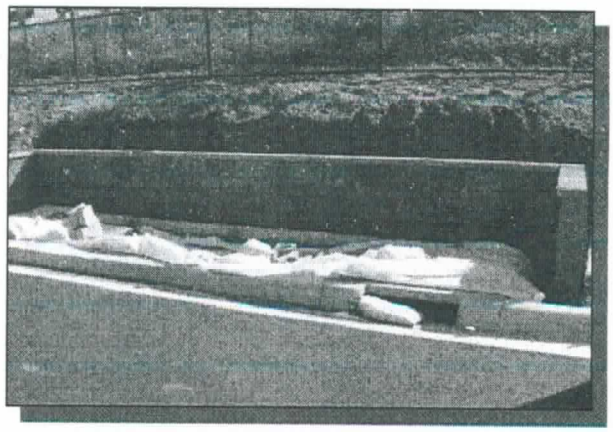
4. Connect Inlet/Outlet Pipe

The correct inlet & outlet location will be marked on the Modular Wetland.

Invert of outlet pipe **MUST** be even with the floor of the system.

5. Install Curb & Gutter (if applicable)

It is the responsibility of the Contractor to provide curb and gutter and transition to the Modular Wetland for proper flow into the system through a 5"- 7" throat opening. A standard drawing of the throat and gutter detail in the following section. CONTRACTOR RESPONSIBLE FOR GROUTING IN ANY VISIBLE LIFTING POINTS.



6. Activation

Activation is performed **ONLY** by Modular Wetland personnel.

Activation can occur once the project site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed) and there is a 5" - 7" throat opening.

Call 760-433-7640 to schedule your activation.

NOTE: WetlandMedia Installation

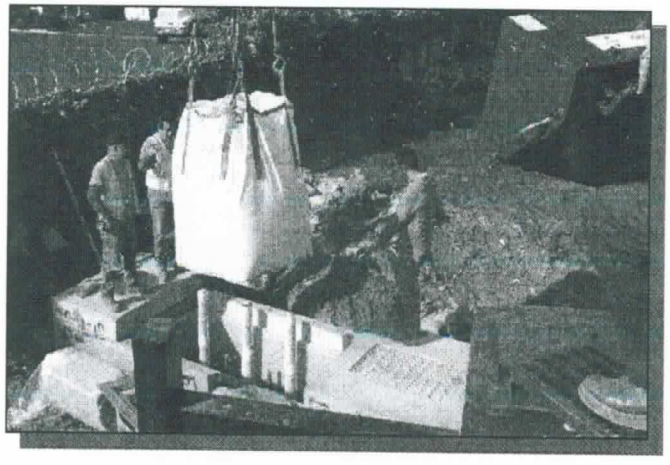
For Larger models (MWS-L-4-13 and above) the system will only be delivered without WetlandMedia pre-installed to minimize pick weight and prevent contamination of the media during construction. For these models the WetlandMedia will be delivered in bulk or in super sacks. It will be responsibility of the contractor to fill the system with the WetlandMedia during the installation process. Installation of the WetlandMedia can be done after the unit is fully installed to avoid contamination. See following pages for details.

WetlandMedia Install (if applicable)

MODULAR WETLANDS

1. Fill WetlandMedia

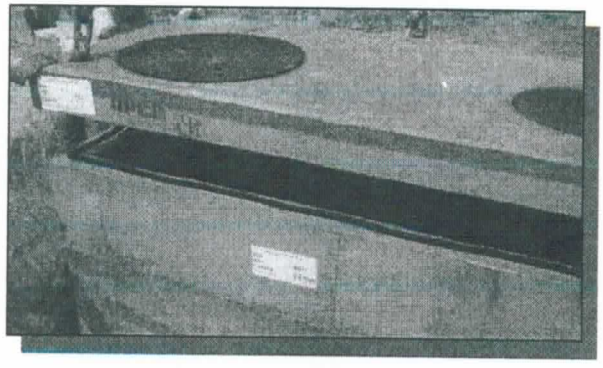
Position super sack of WetlandMedia over wetland chamber. Bottom of sack should not be more than 2' above top of system. Open sack and fill evenly*.

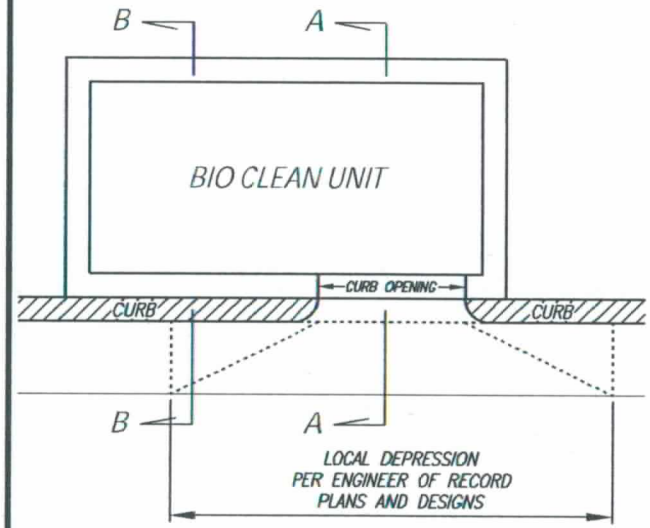


* One to several dozen cubic yards of WetlandMedia will be required based upon the model number and size of the system. For large scale jobs WetlandMedia will be delivered in bulk and will require a bobcat of similar to fill the system. All equipment is the responsibility of the contractor.

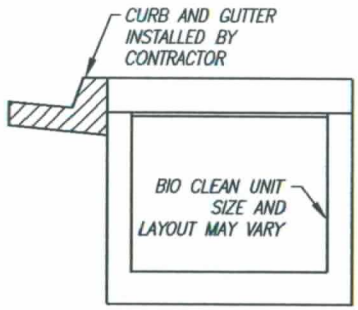
NOTE: WetlandMedia Installatione to the fact most underground units are installed deeper below finish surface the installation of the WetlandMedia after the unit is full installed (base structure, top structure, risers lids) is more difficult. It is recommended to request delivery of the WetlandMedia a few days before the unit is delivered. This way the WetlandMedia can be installed right after the base structure in installed prior to the setting of the top structure. This will allow to quick and easy access to the lower portion of the structure where the media needs to be placed.

Install WetlandMedia immediately after the base structure is set before setting the top structure for easy access

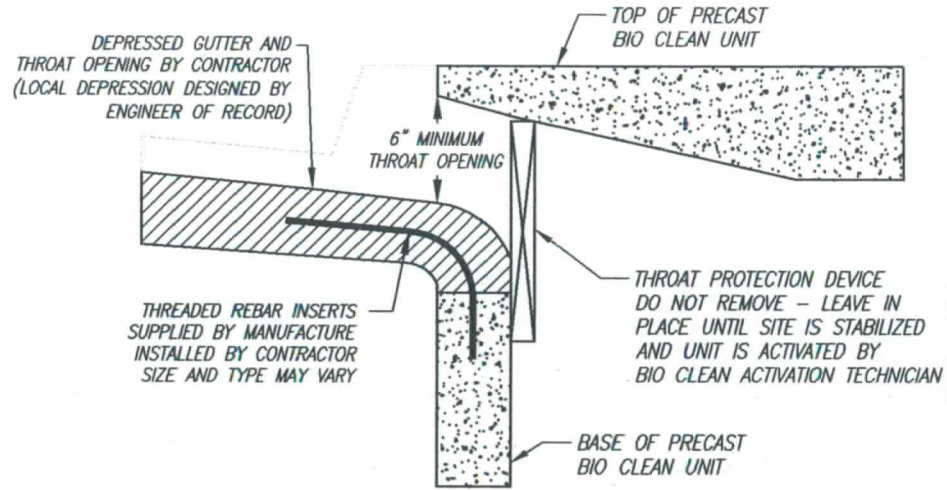




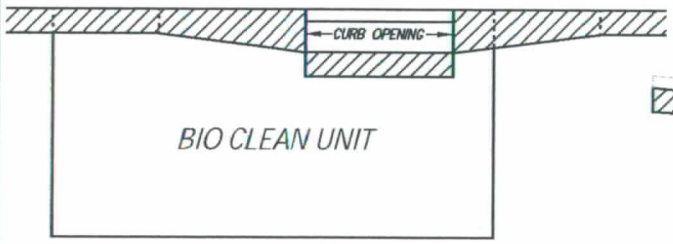
PLAN VIEW



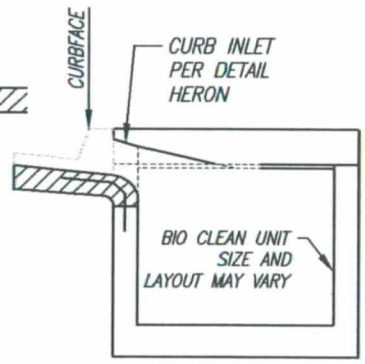
SECTION B-B



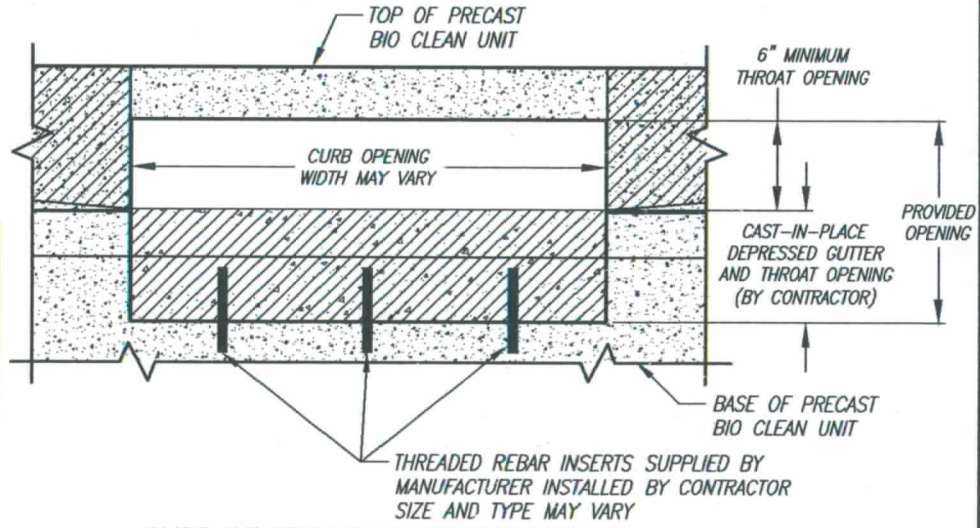
CURB INLET DETAIL - SIDE VIEW



ELEVATION VIEW



SECTION A-A



CURB INLET DETAIL - FRONT VIEW

CURB AND GUTTER BY CONTRACTOR

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BIO CLEAN CURB INLET DETAIL

STANDARD DETAIL

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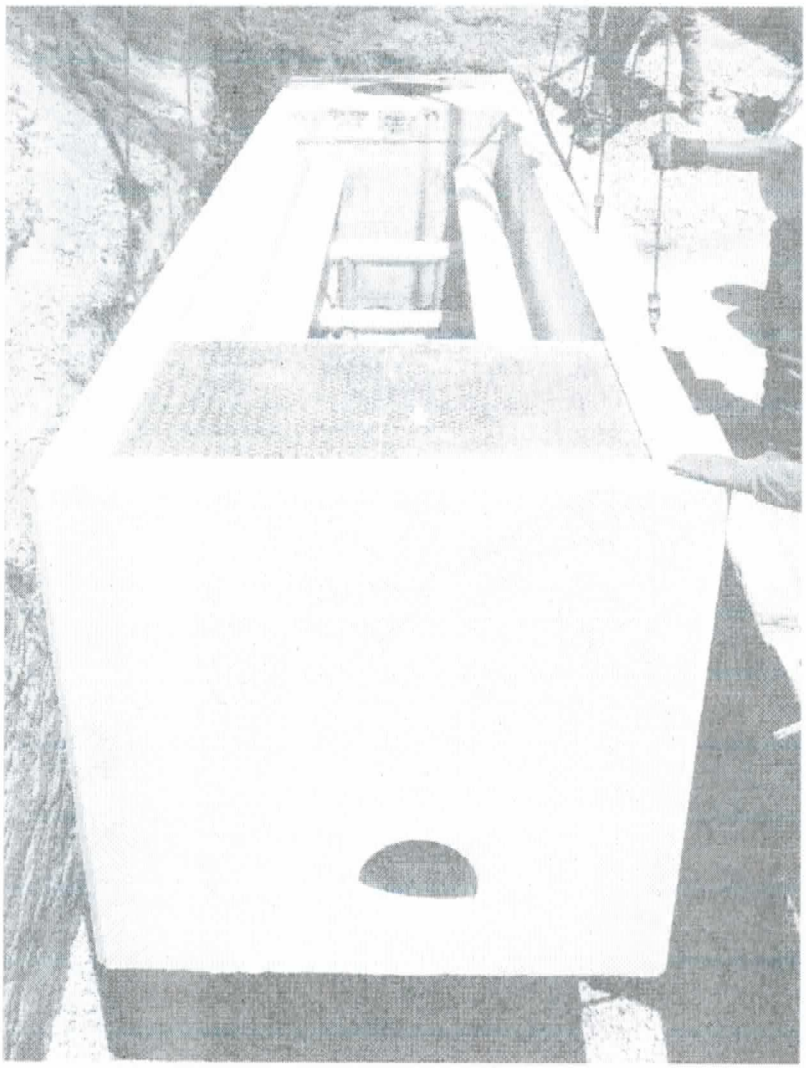
Connection Details



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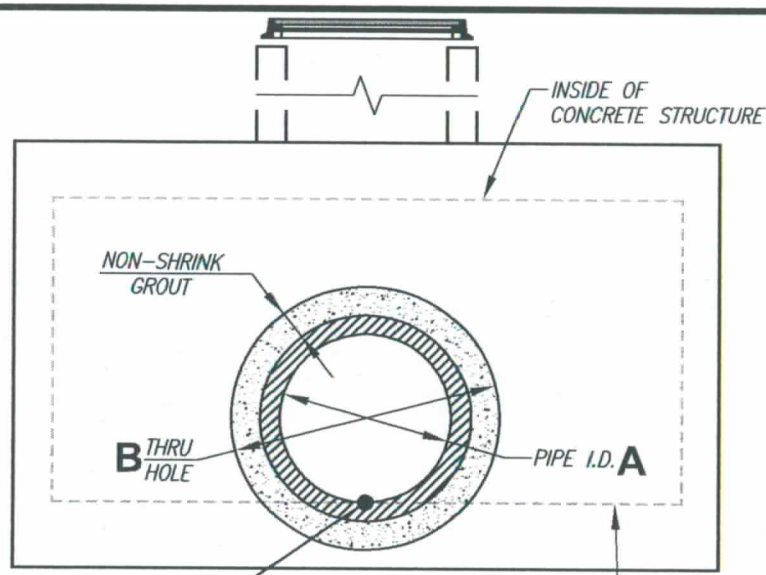
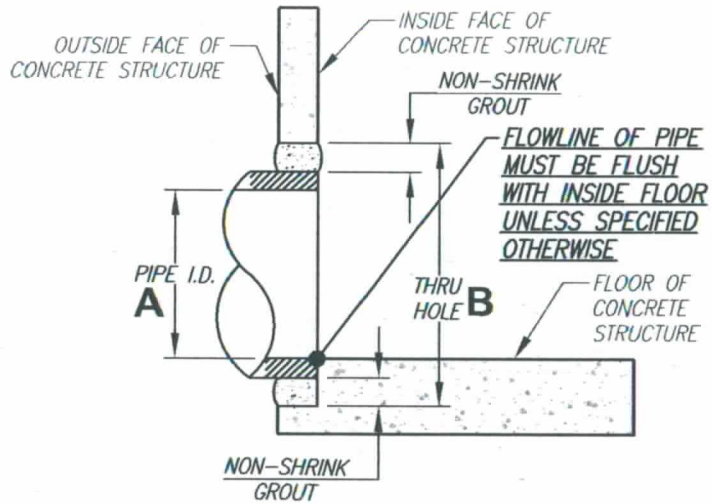


END VIEW



ELEVATION VIEW

INSTALLATION NOTES

1. ALL CONNECTION PIPES SUPPLIED AND INSTALLED BY CONTRACTOR. MODULAR WETLAND UNIT WILL BE DELIVERED WITH A THRU HOLE AND ITS THE CONTRACTORS RESPONSIBILITY TO SUPPLY PIPE, AND ALL LABOR AND MATERIAL TO CONNECT PIPE AND SEAL UNIT WATER TIGHT INCLUDING BUT NOT LIMITED TO GROUT, CONCRETE LUG, REBAR, PLUG, ANCHORS, COUPLER, FITTINGS AND/OR ALL SUPPORT AND CONNECTING HARDWARE.
2. ALL CONNECTIONS ARE TO BE FLUSH WITH THE INSIDE SURFACE OF THE CONCRETE STRUCTURE. (CAN NOT INTRUDE BEYOND FLUSH) ALL PIPE FLOWLINES SHALL BE FLUSH WITH INSIDE FLOOR UNLESS SPECIFIED OTHERWISE.
3. ALL GROUT AND/OR CONCRETE SHALL BE NON-SHRINK AND MEET OR EXCEED LOCAL PIPE CONNECTION STANDARDS.
4. REFER TO AGENCY SPECIFICATIONS WHERE APPLICABLE.
5. IF CONNECTING TO AN EXISTING PIPE CONTRACTOR MUST POT HOLE PIPE AND VERIFY EXISTING PIPE CONNECTION ELEVATION PRIOR TO APPROVING MODULAR WETLAND SUBMITTALS.

PIPE THRU HOLE NOTE:

ALL UNITS WITH PRECAST THRU HOLES WILL HAVE THE GIVEN THRU HOLE DIAMETER PER THE PRECAST THRU HOLE CHART HERON. IF A DIFFERENT THRU HOLE SIZE IS REQUIRED IT MUST BE CLEARLY MARKED ON THE APPROVED SUBMITTALS.

PRECAST THRU HOLE CHART

A PIPE INSIDE DIAMETER (INCHES)	B THRU HOLE DIAMETER (INCHES)
4	8
6	10
8	14
10	16
12	18
15	21
18	26
24	33
30	41
36	48
42	56
48	64

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PIPE CONNECTION STANDARD DETAIL

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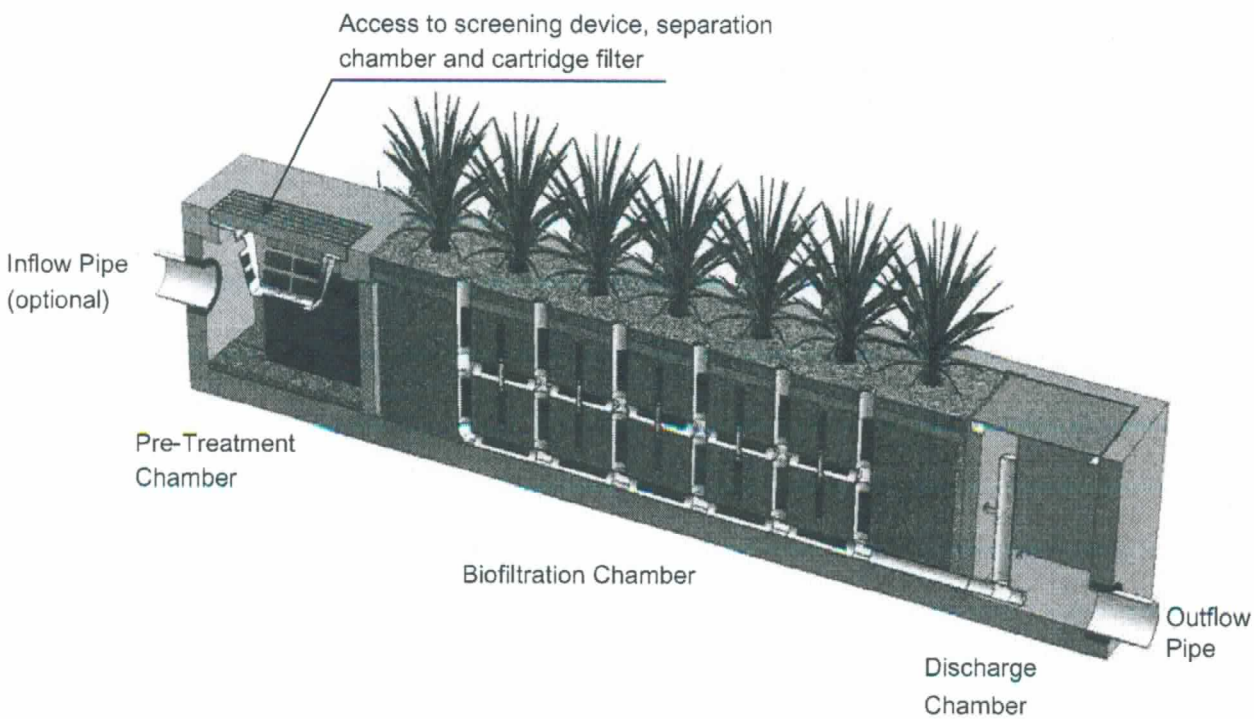
Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Sediment from Separation Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Cartridge Filter Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



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Maintenance Procedures

Separation Chamber

1. Perform maintenance procedures of screening device listed above before maintaining the separation chamber.
2. With a pressure washer spray down pollutants accumulated on walls and cartridge filters.
3. Vacuum out Separation Chamber and remove all accumulated pollutants. Replace screening device, grate or manhole cover when completed.

Cartridge Filters

1. Perform maintenance procedures on screening device and separation chamber before maintaining cartridge filters.
2. Enter separation chamber.
3. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.
4. Remove each of 4 to 8 media cages holding the media in place.
5. Spray down the cartridge filter to remove any accumulated pollutants.
6. Vacuum out old media and accumulated pollutants.
7. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase.
8. Replace the lid and tighten down bolts. Replace screening device, grate or manhole cover when completed.

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Maintenance Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may require irrigation.

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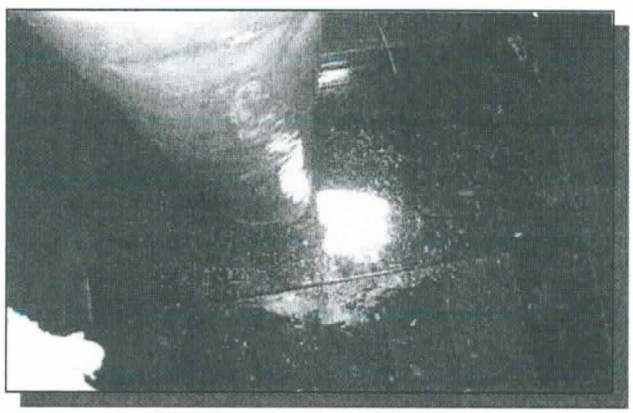
Maintenance Procedure Illustration

Separation Chamber

The separation chamber is located directly beneath the screening device. It can be quickly cleaned using a vacuum truck or by hand. A pressure washer is useful to assist in the cleaning process.



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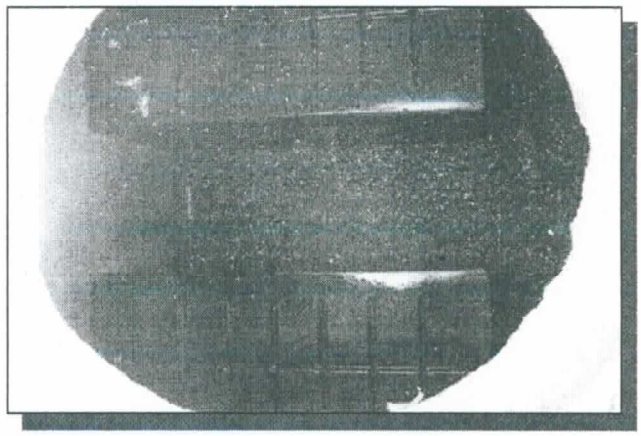
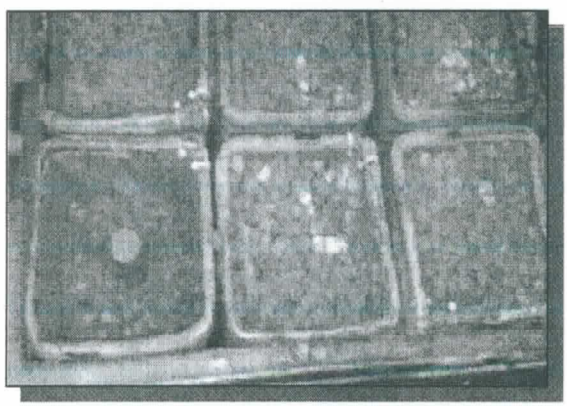
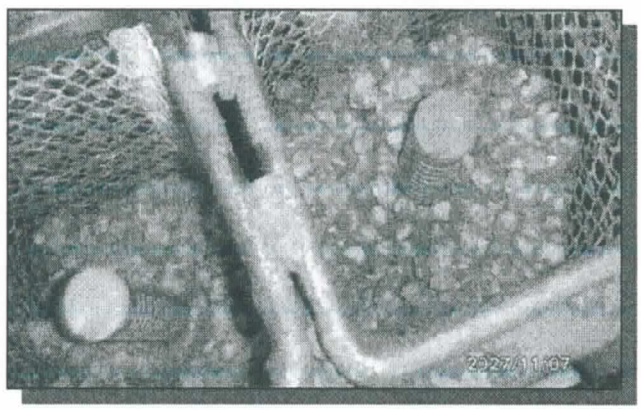
Cartridge Filters

The cartridge filters are located in the Pre-Treatment chamber connected to the wall adjacent to the biofiltration chamber. The cartridges have removable tops to access the individual media filters. Once the cartridge is open media can be easily removed and replaced by hand or a vacuum truck.







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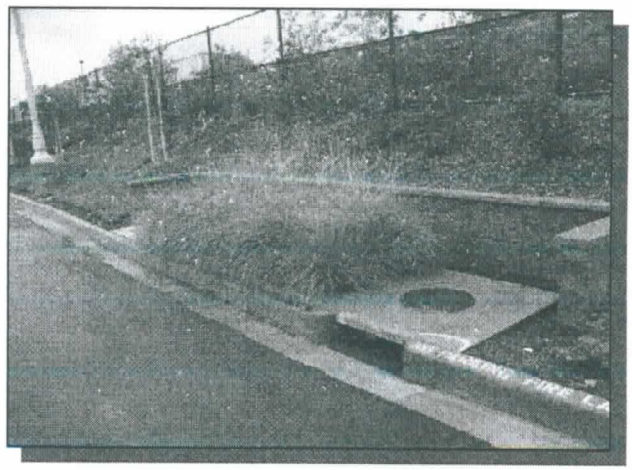
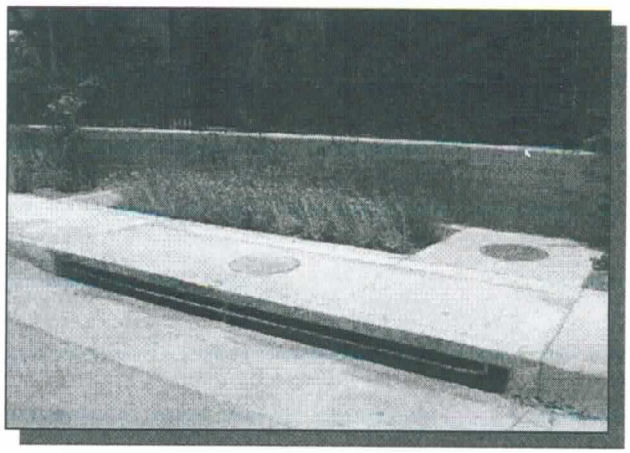
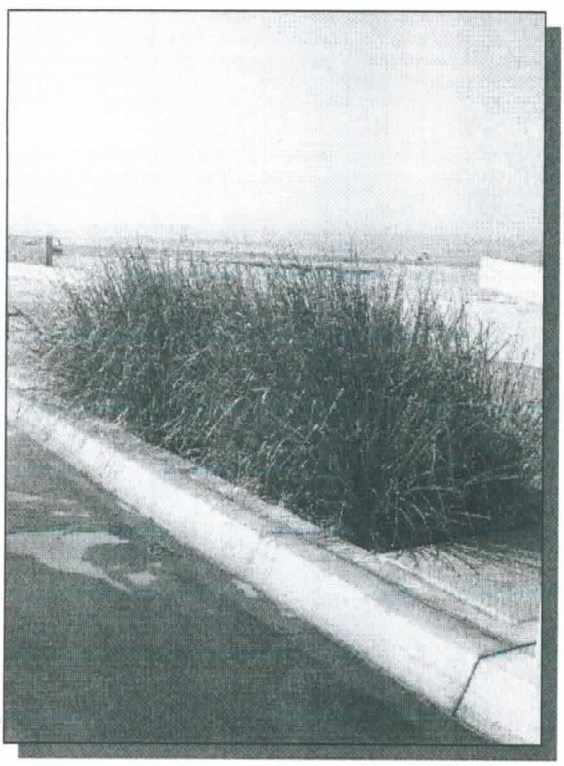
Trim Vegetation

Vegetation should be maintained in the same manner as surrounding vegetation and trimmed as needed. No fertilizer shall be used on the plants. Irrigation per the recommendation of the manufacturer and or landscape architect. Different types of vegetation requires different amounts of irrigation.







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Maintenance Report

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Cleaning and Maintenance Report
Modular Wetlands System

Project Name _____

Project Address _____ (city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/_____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:

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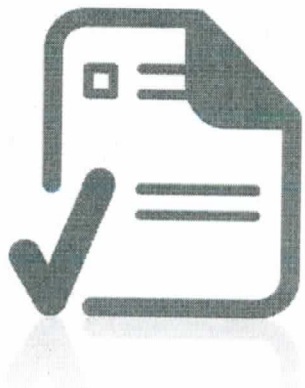
Inspection Form



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Inspection Report
Modular Wetlands System

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	Yes	No	Comments
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	Yes	No
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

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Section [_____]
Modular Subsurface Flow Wetland System

PART 1 – GENERAL

01.01.00 Purpose
The purpose of this specification is to establish generally acceptable criteria for Modular Subsurface Flow Wetland Systems used for biofiltration of stormwater runoff including dry weather flows and other contaminated water sources. It is intended to serve as a guide to producers, distributors, architects, engineers, contractors, plumbers, installers, inspectors, agencies and users; to promote understanding regarding materials, manufacture and installation; and to provide for identification of devices complying with this specification.

01.02.00 Description
Modular Subsurface Flow Wetland Systems (MSFWS) are used for filtration of stormwater runoff including dry weather flows. The MSFWS is a pre-engineered biofiltration system composed of a pretreatment chamber containing filtration cartridges, a horizontal flow biofiltration chamber with a peripheral void area and a centralized and vertically extending underdrain, the biofiltration chamber containing a sorptive media mix which does not contain any organic material, and a discharge chamber containing an orifice control structure. Treated water flows horizontally in series through the pretreatment chamber cartridges, biofiltration chamber and orifice control structure.

01.03.00 Manufacturer
The manufacturer of the MSFWS shall be one that is regularly engaged in the engineering design and production of systems developed for the treatment of stormwater runoff for at least (10) years, and which has a history of successful production, acceptable to the engineer of work. In accordance with the drawings, the MSFWS shall be a filter device Manufactured by Bio Clean A Forterra Company, or assigned distributors or licensees. Bio Clean A Forterra Company, can be reached at:

Headquarters:
Bio Clean A Forterra Company
398 Via El Centro
Oceanside, CA 92058
Phone: (760) 433-7640
Fax: (760) 433-3176
www.biocleanenvironmental.com

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01.04.00 Submittals

01.04.01 Shop drawings are to be submitted with each order to the contractor and consulting engineer.

01.04.02 Shop drawings are to detail the MSFWS and all components required and the sequence for installation, including:

- System configuration with primary dimensions
- Interior components
- Any accessory equipment called out on shop drawings

01.04.03 Inspection and maintenance documentation submitted upon request.

01.05.00 Work Included

01.05.01 Specification requirements for installation of MSFWS.

01.05.02 Manufacturer to supply components of the MSFWS(s):

- Pretreatment chamber components (pre-assembled)
- Concrete Structure(s)
- Biofiltration chamber components (pre-assembled)
- Flow control discharge structure (pre-assembled)

01.06.00 Reference Standards

ASTM C 29	Standard Test Method for Unit Weight and Voids in Aggregate
ASTM C 88	C 88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C131	C 131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregates by Abrasion and Impact in the Los Angeles Machine
ASTM C 136	C 136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C 330	C 330 Standard Specification for Lightweight Aggregate for Structural Concrete
ASTM D 698	Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft.-lbf/ft3 (600 kN-m/m3)
ASTM D 1621	10 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
ASTM D 1777	ASTM D1777 - 96(2007) Standard Test Method for Thickness of Textile Materials
ASTM D 4716	Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head
ASTM A 615	Standard Specifications for Deformed and Plan Carbon-Steel Bars for Concrete Reinforcement
ASTM A 706	Standard Specifications for Deformed and Plan Low-Alloy Steel Bars for Concrete Reinforcement
AASHTO T 99-01	Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in) Drop
AASHTO T 104	Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
AASHTO T 260	Standard Method of Test for Sampling and Testing for Chloride Ion in Concrete and Concrete Raw Materials.
AASHTO T 288	Standard Method of Test for Determining Minimum Laboratory Soil Resistivity
AASHTO T 289	Standard Method of Test for Determining ph of Soil for Use in Corrosion Testing
AASHTO T 291	Standard Method of Test for Determining Water Soluble Chloride Ion Content in Soil
AASHTO T 290	T 290 Standard Method of Test for Determining Water Soluble Sulfate Ion Content in Soil

PART 2 – COMPONENTS

The Modular Subsurface Flow Wetland Systems (MSFWS) and all of its components shall be self-contained within a structure constructed of precast concrete with a minimum 28-day compressive strength of 5,000 psi, with reinforcing per ASTM A 615 or ASTM A 706, Grade 60, and supports H20 loading as indicated by AASHTO. Each chamber shall have appropriate access hatches or manholes for easy maintenance that are sized to allow removal of all internal components without disassembly. All water transfer system components shall conform with the following:

- Filter netting shall be 100% Polyester with a number 16 sieve size, and strength tested per ASTM D 3787.
- Drainage cells shall be manufactured of lightweight injection-molded plastic and have a minimum compressive strength test of 6,000 psi and a void area along the surface, contacting 75% of the filter media or greater. The cells shall be at least 2" in thickness and allow water to freely flow in all four directions.

02.01.00 Pretreatment Chamber Components

02.01.01 Filter Cartridges shall operate at a loading rate not to exceed 3 gallons per minute per square foot surface area.

02.01.02 Drain Down System shall include a pervious floor that allows water to drain into the underdrain pipe that is connected to the discharge chamber if specified on the drawing.

02.02.00 Biofiltration Chamber Components

02.02.01 Media shall consist of ceramic material produced by expanding and vitrifying select material in a rotary kiln. Media must be produced to meet the requirements of ASTM C330, ASTM C331, and AASHTO M195. Aggregates must have a minimum 24-hour water absorption of 10.5% mass. Media shall not contain any organic material. Flow through media shall be horizontal from the outer perimeter of the chamber toward the centralized and vertically extending underdrain. The retention time in the media shall be at least 3 minutes. Downward flow filters are not acceptable alternatives. The thickness of the media shall be at least 19" from influent end to effluent end. The loading rate on the media shall not exceed 1.1 gallons per minute per square foot surface area. Media must be contained within structure that spaces the surface of the media at least 2" from all vertically extending walls of the concrete structure.

02.03.00 Discharge Chamber

The discharge chamber shall house a flow control orifice that restricts flows greater than designed treatment flow rate. All piping components shall be made of a high-density polyethylene. The discharge chamber shall also contain a drain down filter if specified on the drawing.

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PART 3 – PERFORMANCE

03.01.00 General

03.01.01 Function - The MSFWS has no moving internal components and functions based on gravity flow, unless otherwise specified. The MSFWS is composed of a pretreatment chamber, a biofiltration chamber and a discharge chamber. The pretreatment device houses cartridge media filters, which consist of filter media housed in a perforated enclosure. The untreated runoff flows into the system via subsurface piping and or surface inlet. Water entering the system is forced through the filter cartridge enclosures by gravity flow. Then the flow contacts the filter media. The flow through the media is horizontal toward the center of each individual media filter. In the center of the media shall be a round slotted PVC pipe of no greater than 1.5" in diameter. The slotted PVC pipe shall extend downward into the water transfer cavity of the cartridge. The slotted PVC pipe shall be threaded on the bottom to connect to the water transfer cavity. After pollutants have been removed by the filter media, the water discharges the pretreatment chamber and flows into the water transfer system and is conveyed to the biofiltration chamber. Once runoff has been filtered by the biofiltration chamber it is collected by the vertical underdrain and conveyed to a discharge chamber equipped with a flow control orifice. Finally, the treated flow exits the system.

03.01.02 Pollutants - The MSFWS will remove and retain debris, sediments, TSS, dissolved and particulate metals and nutrients including nitrogen and phosphorus species, bacteria, BOD, oxygen demanding substances, organic compounds and hydrocarbons entering the filter during frequent storm events and continuous dry weather flows.

03.01.03 Treatment Flow Rate and Bypass - The MSFWS operates in-line. The MSFWS will treat 100% of the required water quality treatment flow based on a minimum filtration capacities listed in section 03.02.00. The size of the system must match those provided on the drawing to ensure proper performance and hydraulic residence time.

03.02.00 Minimum Treatment Capabilities

System must be capable of treating flows to the specified treatment flow rate on the drawings. The flow rate shall be controlled by an orifice.

PART 4 - EXECUTION

04.01.00 General

The installation of the MSFWS shall conform to all applicable national, state, state highway, municipal and local specifications.

04.02.00 Installation

The Contractor shall furnish all labor, equipment, materials and incidentals required to install the (MSFWS) device(s) and appurtenances in accordance with the drawings and these specifications.

04.02.01 Grading and Excavation site shall be properly surveyed by a registered professional surveyor, and clearly marked with excavation limits and elevations. After site is marked it is the responsibility of the contractor to contact local utility companies and/or DigAlert to check for underground utilities. All grading permits shall be approved by governing agencies before commencement of grading and

excavation. Soil conditions shall be tested in accordance with the governing agencies requirements. All earth removed shall be transported, disposed, stored, and handled per governing agencies standards. It is the responsibility of the contractor to install and maintain proper erosion control measures during grading and excavation operations.

04.02.02 Compaction – All soil shall be compacted per registered professional soils engineer's recommendations prior to installation of MSFWS components. Compaction shall be to 95% of Standard Proctor or 90% of Modified Proctor.

04.02.03 Backfill shall be placed according to a registered professional soils engineer's recommendations, and with a minimum of 6" of gravel under all concrete structures.

04.02.04 Concrete Structures – After backfill has been inspected by the governing agency and approved, the concrete structures shall be lifted and placed in proper position per plans.

04.02.05 Subsurface Flow Wetland Media shall be carefully loaded into area so as not to damage the wetland liner or water transfer systems. The entire wetland area shall be filled to the level indicated on the drawings.

04.03.00 Shipping, Storage and Handling

04.03.01 Shipping – MSFWS shall be shipped to the contractor's address or job site, and is the responsibility of the contractor to offload the unit(s) and place in the exact site of installation.

04.03.02 Storage and Handling – The contractor shall exercise care in the storage and handling of the MSFWS and all components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the contractor. The MSFWS(s) and all components shall always be stored indoors and transported inside the original shipping container until the unit(s) are ready to be installed. The MSFWS shall always be handled with care and lifted according to OSHA and NIOSA lifting recommendations and/or contractor's workplace safety professional recommendations.

04.04.00 Maintenance and Inspection

04.04.01 Inspection – After installation, the contractor shall demonstrate that the MSFWS has been properly installed at the correct location(s), elevations, and with appropriate components. All components associated with the MSFWS and its installation shall be subject to inspection by the engineer at the place of installation. In addition, the contractor shall demonstrate that the MSFWS has been installed per the manufacturer's specifications and recommendations. All components shall be inspected by a qualified person once a year and results of inspection shall be kept in an inspection log.

04.04.02 Maintenance – The manufacturer recommends cleaning and debris removal maintenance once a year and replacement of the cartridge filters as needed. The maintenance shall be performed by qualified personnel. A Maintenance Manual is available upon request from the manufacturer. The Manual has detailed information regarding the maintenance of the MSFWS. A Maintenance/Inspection record shall be kept by the maintenance operator. The record shall include any maintenance activities preformed, amount and description of debris collected, and the condition of the filter.

04.04.03 Material Disposal - All debris, trash, organics, and sediments captured by the MSFWS shall be transported and disposed of at an approved facility for disposal

in accordance with local and state requirements. Please refer to state and local regulations for the proper disposal of toxic and non-toxic material.

PART 5 – QUALITY ASSURANCE

05.01.00 Warranty

The Manufacturer shall guarantee the MSFWS against all manufacturing defects in materials and workmanship for a period of (1) year from the date of delivery to the customer. The manufacturer shall be notified of repair or replacement issues in writing within the warranty period. The MSFWS is limited to recommended application for which it was designed.

05.02.00 Performance Certification

The MSFWS manufacturer shall submit to the Engineer of Record a "Manufacturer's Performance Certificate" certifying the MSFWS is capable of achieving the specified removal efficiency for suspended solids, phosphorous and dissolved metals.

[End of This Section]

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Modular Wetlands® Linear

A Stormwater Biofiltration Solution

Northwest

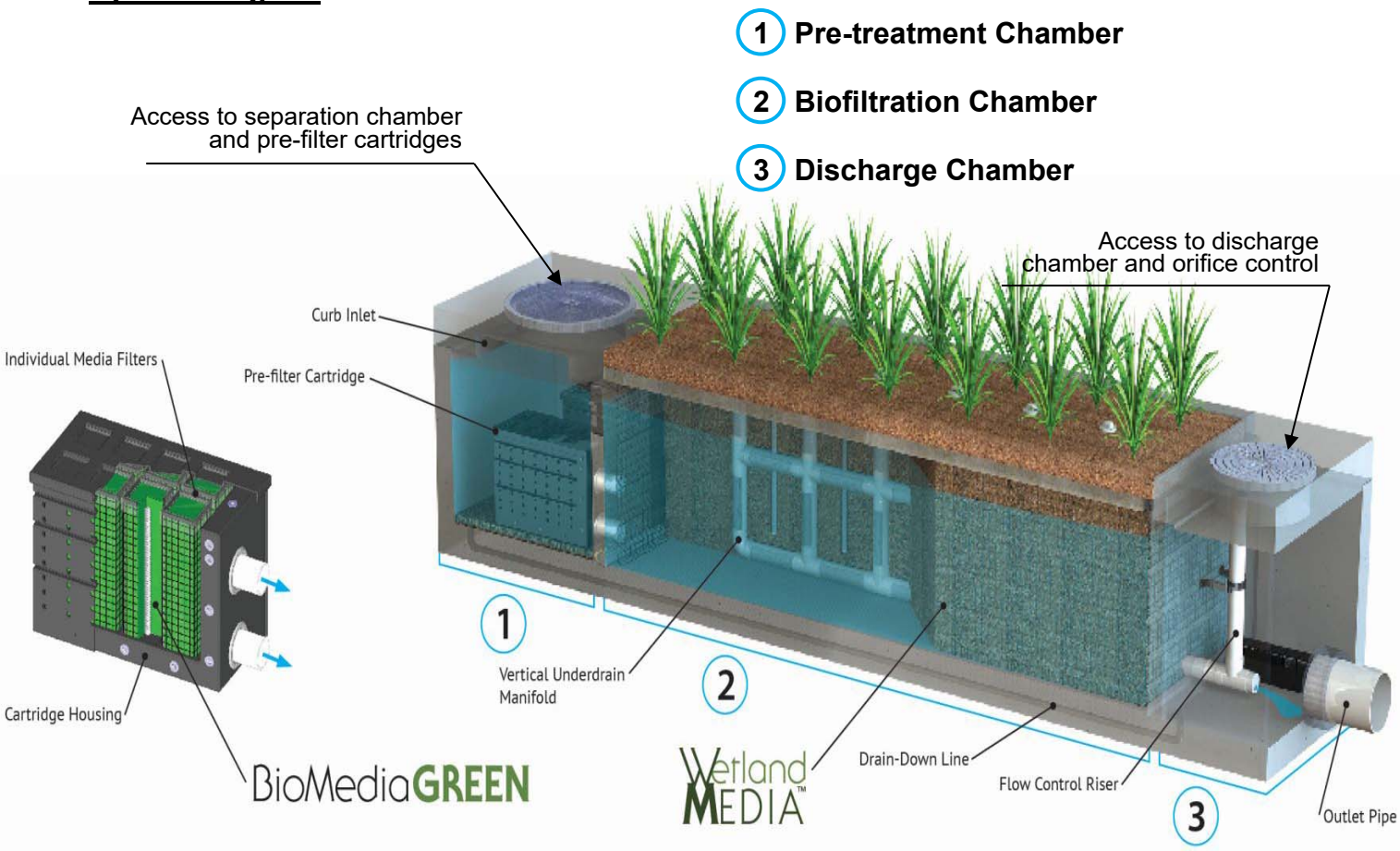
OPERATION & MAINTENANCE MANUAL

Inspection Guidelines for Modular Wetland System - Linear

Inspection Summary

- Inspect Pre-Treatment, Biofiltration and Discharge Chambers – average inspection interval is 6 to 12 months.
  - (1*5 minute average inspection time*).
- NOTE: Pollutant loading varies greatly from site to site and no two sites are the same. Therefore, the first year requires inspection monthly during the wet season and every other month during the dry season in order to observe and record the amount of pollutant loading the system is receiving.

System Diagram



Inspection Overview

As with all stormwater BMPs inspection and maintenance on the MWS Linear is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance a BMP will exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.

Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the MWS Linear:

- Modular Wetland Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- 7/16” open or closed ended wrench.
- Large permanent black marker (initial inspections only – first year)
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system.

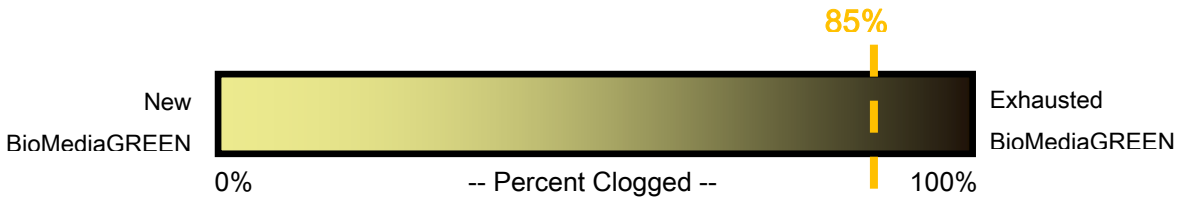
Inspection Steps

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the MWS Linear are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long term inspection and maintenance interval requirements.

The MWS Linear can be inspected though visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened the inspection process can proceed:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system and all of its chambers.
- Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of trash, debris and sediment accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick estimate the amount of trash, debris and sediment in this chamber. Record this depth on the inspection form.

- Through visual observation inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediments on the cartridges, any build-up on the top of the cartridges, or clogging of the holes. Record this information on the inspection form. The pre-filter cartridges can further be inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber – see notes above regarding confined space entry). Record the color of the material. New material is a light green in color. As the media becomes clogged it will turn darker in color, eventually becoming dark brown or black. Using the below color indicator record the percentage of media exhausted.



- The biofiltration chamber is generally maintenance free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection and indicate through visual observation or digital photographs if trimming of the vegetation is needed.
- The discharge chamber houses the orifice control structure and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating conditions and free of any obstructions. Generally, the discharge chamber will be clean and free of debris. Inspect the water marks on the side walls. If possible, inspect the discharge chamber during a rain event to assess the amount of flow leaving the system while it is at 100% capacity (pre-treatment chamber water level at peak HGL). The water level of the flowing water should be compared to the watermark level on the side walls which is an indicator of the highest discharge rate the system achieved when initially installed. Record on the form is there is any difference in level from watermark in inches.

- NOTE: During the first few storms the water level in the outflow chamber should be observed and a 6” long horizontal watermark line drawn (using a large permanent marker) at the water level in the discharge chamber while the system is operating at 100% capacity. The diagram below illustrates where a line should be drawn. This line is a reference point for future inspections of the system:

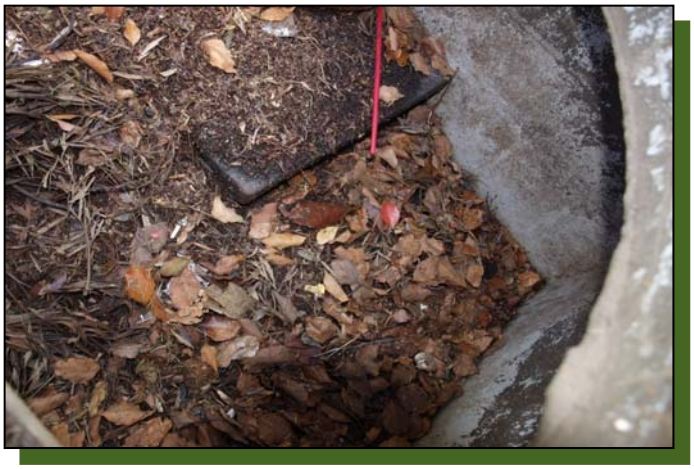
Using a permanent marker draw a 6 inch long horizontal line, as shown, at the higher water level in the MWS Linear discharge chamber.

- Water level in the discharge chamber is a function of flow rate and pipe size. Observation of water level during the first few months of operation can be used as a benchmark level for future inspections. The initial mark and all future observations shall be made when system is at 100% capacity (water level at maximum level in pre-treatment chamber). If future water levels are below this mark when system is at 100% capacity this is an indicator that maintenance to the pre-filter cartridges may be needed.
- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

Maintenance Indicators

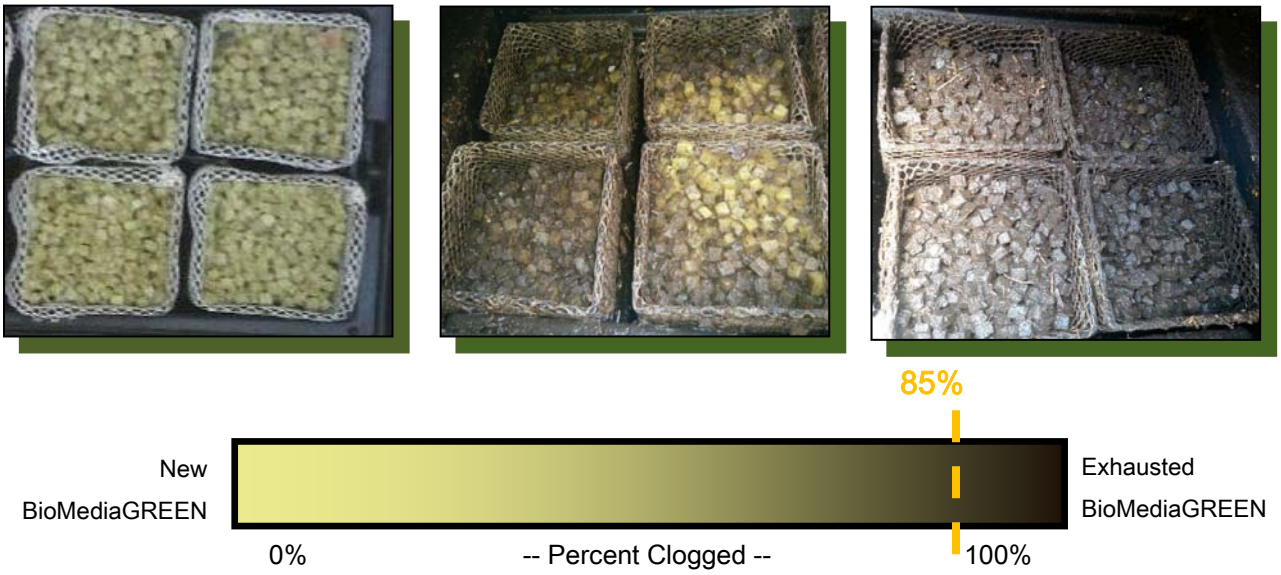
Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges.
- Obstructions in the system or its inlet or outlet.
- Excessive accumulation of floatables in the pre-treatment chamber in which the length and width of the chamber is fully impacted more than 18”.



- Excessive accumulation of sediment in the pre-treatment chamber of more than 6” in depth.

- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pre-filter cartridges. The following chart shows photos of the condition of the BioMediaGREEN contained within the pre-filter cartridges. When media is more than 85% clogged replacement is required.



- Overgrown vegetation.

- Water level in discharge chamber during 100% operating capacity (pre-treatment chamber water level at max height) is lower than the watermark by 20%.

Inspection Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

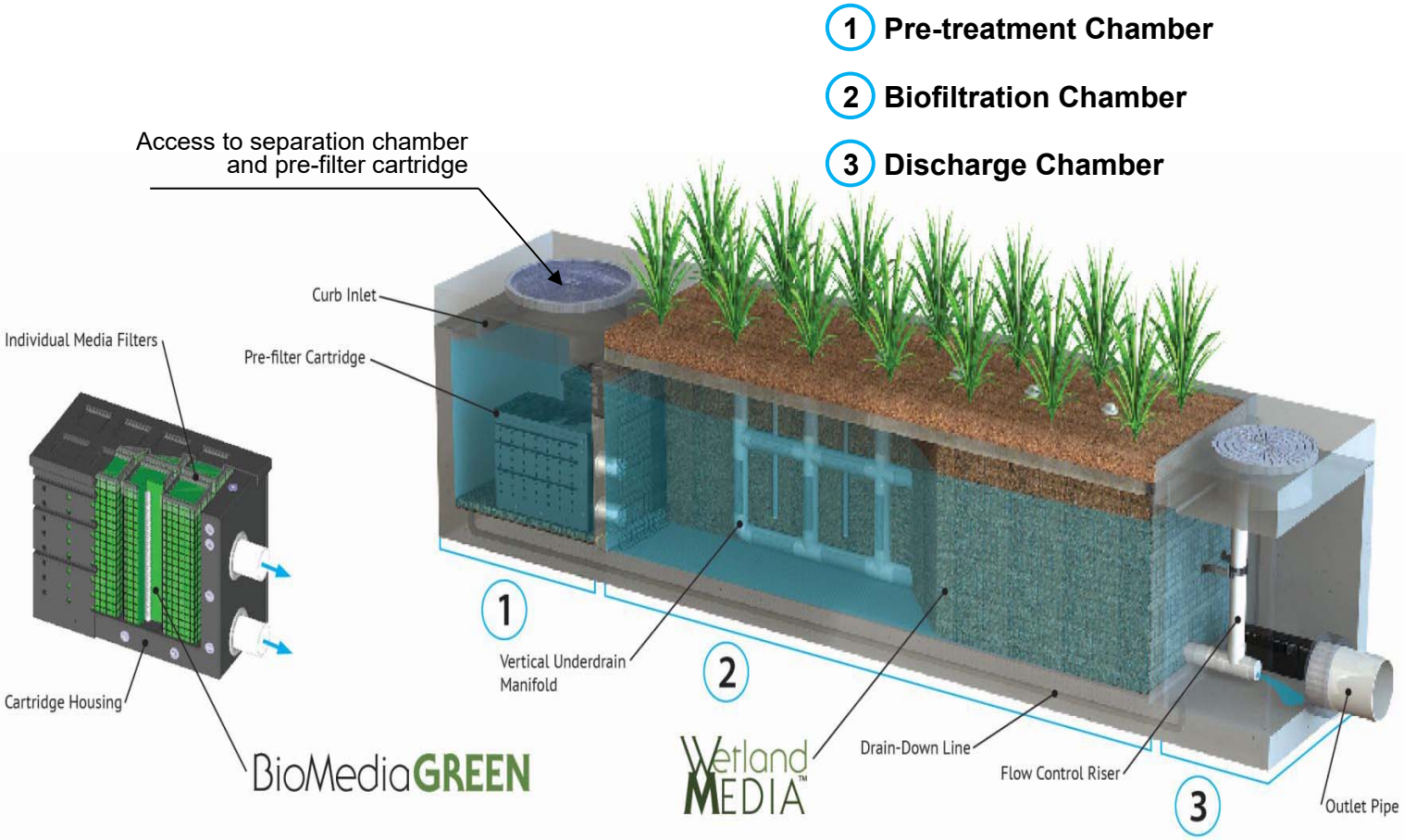
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

Maintenance Guidelines for Modular Wetland System - Linear

Maintenance Summary

- Remove Sediment from Pre-Treatment Chamber – average maintenance interval is 12 to 24 months.
  - (*10 minute average service time*).
- Replace Pre-Filter Cartridge Media – average maintenance interval 12 to 24 months.
  - (*10-15 minute per cartridge average service time*).
- Trim Vegetation – average maintenance interval is 6 to 12 months.
  - (*Service time varies*).

System Diagram



Maintenance Overview

The time has come to maintain your Modular Wetland System Linear (MWS Linear). To ensure successful and efficient maintenance on the system we recommend the following. The MWS Linear can be maintained by removing the access hatches over the systems various chambers. All necessary pre-maintenance steps must be carried out before maintenance occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once traffic control has been set up per local and state regulations and access covers have been safely opened the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepare a pre-checks (OSHA, safety, confined space entry) are performed.

Maintenance Equipment

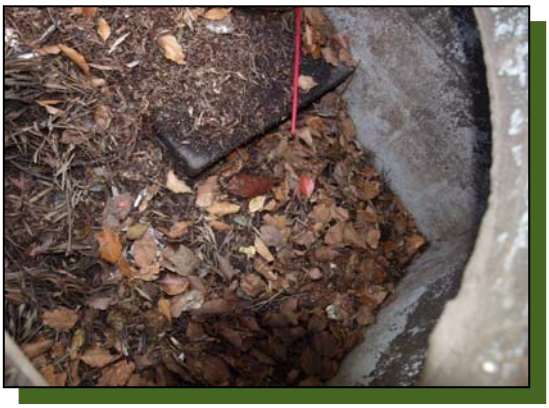
Following is a list of equipment required for maintenance of the MWS Linear:

- Modular Wetland Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers
- Protective clothing, flashlight and eye protection.
- 7/16” open or closed ended wrench.
- Vacuum assisted truck with pressure washer.
- Replacement BioMediaGREEN for Pre-Filter Cartridges if required (order from manufacturer).

Maintenance Steps

1. Pre-treatment Chamber (bottom of chamber)

   A. Remove access hatch or manhole cover over pre-treatment chamber and position vacuum truck accordingly.
   B. With a pressure washer spray down pollutants accumulated on walls and pre-filter cartridges.
   C. Vacuum out Pre-Treatment Chamber and remove all accumulated pollutants including trash, debris and sediments. Be sure to vacuum the floor until pervious pavers are visible and clean.
   D. If Pre-Filter Cartridges require media replacement move onto step 2. If not, replace access hatch or manhole cover.



Removal of access hatch to gain access below.

Insertion of vacuum hose into separation chamber.

Removal of trash, sediment and debris.

Fully cleaned separation chamber.

2. Pre-Filter Cartridges (attached to wall of pre-treatment chamber)

A. After finishing step 1 enter pre-treatment chamber.

B. Unscrew the two bolts holding the lid on each cartridge filter and remove lid.

Pre-filter cartridges with tops on.

Inside cartridges showing media filters ready for replacement.

C. Place the vacuum hose over each individual media filter to suck out filter media.

Vacuuming out of media filters.

D. Once filter media has been sucked use a pressure washer to spray down inside of the cartridge and it's containing media cages. Remove cleaned media cages and place to the side. Once removed the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.

E. Reinstall media cages and fill with new media from manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. Utilize the manufacture provided refilling trey and place on top of cartridge. Fill trey with new bulk media and shake down into place. Using your hands slightly compact media into each filter cage. Once cages are full removed refilling trey and replace cartridge top ensuring bolts are properly tightened.

Refilling trey for media replacement.

Refilling trey on cartridge with bulk media.

F. Exit pre-treatment chamber. Replace access hatch or manhole cover.

3. Biofiltration Chamber (middle vegetated chamber)

A. In general, the biofiltration chamber is maintenance free with the exception of maintaining the vegetation. Using standard gardening tools properly trim back the vegetation to healthy levels. The MWS Linear utilizes vegetation similar to surrounding landscape areas therefore trim vegetation to match surrounding vegetation. If any plants have died replace plants with new ones:

Inspection Notes

1. Following maintenance and/or inspection, it is recommended the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.

2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.

3. Transport all debris, trash, organics and sediments to approved facility for disposal in accordance with local and state requirements.

4. Entry into chambers may require confined space training based on state and local regulations.

5. No fertilizer shall be used in the Biofiltration Chamber.

6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

Inspection Form

Modular Wetland System, Inc.
P. 760.433-7640
F. 760-433-3176
E. Info@modularwetlands.com

www.modularwetlands.com

Maintenance Report

Modular Wetland System, Inc.
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