# Catch Basin Solids Monitoring Work Plan
# Large Parts Campus
# 4600 Southeast Harney Drive
# Portland, Oregon

June 26, 2019

Prepared for

PCC Structurals, Inc.
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# Large Parts Campus
# 4600 Southeast Harney Drive
# Portland, Oregon

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Quality Reviewer

| | |
|---|---|
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| Project Coordinator: | MCS |

LANDAU ASSOCIATES

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# LIST OF ABBREVIATIONS AND ACRONYMS

CB ..... catch basin
CESF ..... chitosan-enhanced sand filter
EPA ..... U.S. Environmental Protection Agency
LAI ..... Landau Associates, Inc.
LPC ..... Large Parts Campus
NPDES ..... National Pollutant Discharge Elimination System
ODEQ ..... Oregon Department of Environmental Quality
PCB ..... polychlorinated biphenyl
PCC ..... PCC Structurals, Inc.
RI ..... remedial investigation
STS ..... stormwater treatment system
SWPCP ..... Stormwater Pollution Control Plan
TSCA ..... Toxic Substances Control Act

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# 1.0 PURPOSE AND OBJECTIVES

This Catch Basin Solids Monitoring Work Plan has been prepared on behalf of PCC Structurals, Inc. (PCC) to describe the planned sampling of the on-site stormwater conveyance system at PCC's Large Parts Campus (LPC), located at 4600 Southeast Harney Drive in Portland, Oregon (site; Figure 1).

PCC is performing polychlorinated biphenyl (PCB) cleanup actions at the LPC facility in accordance with the Toxic Substances Control Act (TSCA). Catch basin solids monitoring is proposed to comply with the Oregon Department of Environmental Quality (ODEQ) and United States Environmental Protection Agency's (EPA) requests to monitor the effectiveness of the PCB cleanup actions, and to determine if any unidentified source areas could be contributing PCBs to the storm drain system.

The activities outlined in this work plan are part of the ongoing remedial investigation (RI), and will be performed in accordance with applicable methods and procedures described in the Phase II RI Work Plan (LAI 2010a) and summarized herein.

# 2.0 BACKGROUND

Background information, including details about the site location, ownership, and stormwater compliance history as well as a conceptual site model (CSM), was presented in the Agency Review Draft RI Report (LAI 2013). The CSM may be revised, as appropriate, based on the results of the investigation outlined in this work plan and other ongoing RI activities. The following section briefly summarizes information relevant to the planned monitoring program.

## 2.1 Catch Basin Solids Sampling

In 2014, PCBs were detected in solids within the stormwater conveyance system. The stormwater conveyance system is shown on Figure 2. The detection prompted additional investigation of the system, including sampling of catch basin solids and stormwater to evaluate potential sources of PCBs. Following the investigation and sampling of the stormwater system, the sediments in the entire system were cleaned out. The scope for sampling of catch basin solids was based on an August 5, 2014 letter from ODEQ (ODEQ 2014a); an August 6 teleconference between ODEQ, PCC, and LAI; an August 18 meeting between the parties; a second teleconference on September 11; and email communications from ODEQ (ODEQ 2014b–e). A description of the detection of PCBs in the stormwater conveyance system and overview of the stormwater conveyance system sampling scope was provided to DEQ in a letter regarding PCB Source Evaluation Scoping (LAI 2014a).

Technical memoranda previously submitted to ODEQ (LAI 2014b-d; LAI 2015a,b) include descriptions and results of catch basin solids sampling conducted between 2014 and 2015. Results are provided in Table 1. In June 2019, PCC updated its Stormwater Pollution Control Plan (SWPCP) site map which included significant revisions such as new manhole and catch basin IDs. This report reflects those changes, but for clarity, Table 1 includes old IDs along with the new IDs.

## 2.2 Stormwater Treatment System

Stormwater discharged from the LPC facility is regulated by the NPDES 1200-Z Permit, which was most recently reissued on August 1, 2017 and was revised on October 22, 2018. The revised permit is effective from August 1, 2017 to July 31, 2022. A previous version of the permit was effective from July 1, 2012 to July 31, 2017; the permit is generally reviewed and revised every 5 years to ensure compliance with the EPA's Clean Water Act and any associated amendments.

During the 2013–2014 permit year, stormwater at multiple sampling locations had calculated geometric mean concentrations of monitoring parameters that exceeded the permit benchmarks for total zinc, total copper, and total suspended solids as part of the second-year Geometric Mean Benchmark Evaluation. Per the NPDES 1200-Z Permit, a Tier II Corrective Action Report was developed, and PCC elected to install an end-of-pipe stormwater treatment system (STS) with a chitosan-enhanced sand filter (CESF) system to achieve the permit- benchmarks. In addition to the statewide benchmarks, LPC has been required to monitor for impairment pollutants, including PCBs.

As part of the STS construction, PCC made stormwater infrastructure improvements to collect and reroute offsite surface water and groundwater to allow for the bypass of the treatment system and avoid treating water that is not stormwater draining from the LPC facility. These stormwater infrastructure improvements included installation of a new manhole (STMH-102) to divert surface water from the City of Portland's pond to a new lift station (STLS-201), to collect and pump the water to a new manhole (STMH-221) located downstream of the STS discharge (i.e., effectively bypassing the STS). Upon completion of the infrastructure improvements on November 4, 2016, only site industrial-related stormwater collects into the lift station vault (STLS-171) in the western part of the facility, just upstream of vault STV-181. Stormwater that collects in STLS-171 is pumped to the STS, treated, and discharged to vault STV-181, located just upstream of manhole STMH-221. The STS plan view diagram is shown on Figure 3; the STS process schematic is shown on Figure 4.

Since 2017, regular sampling of the system influent and effluent has been performed to monitor the effectiveness of the STS. Per the NPDES 1200-Z Permit, stormwater samples must be collected from discharge sampling point ML-001 (Figure 2), which is the only NPDES 1200-Z Permit-monitored discharge point for the LPC. Samples are to be collected four times during the permit year, unless a monitoring waiver has been granted by the City of Portland, an authorized agent of ODEQ. Additional locations were identified in the Sampling and Analysis Plan (LAI 2018) for performance sampling (beyond the Permit requirements), including influent STLS-171 and combined effluent from SP-501, SP-401, SP-402, or SP-403 (Figure 3). Routine performance monitoring of influent and effluent stormwater sampling follows the NPDES 1200-Z Permit requirements of four times per year during the calendar year July 1 through June 30. Two samples are required prior to December 31 and two after January 1. Additional details regarding stormwater sampling with respect to the STS can be found in the Sampling and Analysis Plan – Stormwater (LAI 2018).

STS performance monitoring data for influent and effluent samples analyzed since 2017 is provided in Table 3. PCBs have not been detected in any of the effluent samples since the STS began operating. Per the NPDES 1200-Z Permit (Schedule B.4.a.i.(1)), PCC applied for and was granted a monitoring waiver for most pollutants after the first year of the 1200-Z Permit (July 2017 to June 2018). Routine PCB monitoring is no longer required per the NPDES 1200-Z Permit due to the monitoring waiver granted; however, semiannual STS performance monitoring for PCBs is conducted for informational purposes as it relates to the ongoing Remedial Investigation and STS performance at the LPC.

## 2.3 Stormwater Site Repairs and Mapping

In 2018, PCC began repairing areas of the storm drain system where groundwater infiltration was identified during previous stormwater conveyance inspections. A portion of the stormwater conveyance was repaired as shown on Figure 2. Due to complications with the current repair process, PCC has coordinated with Allied Trenchless to assist Terra Hydr in repairing the main conveyance line. Allied Trenchless will provide additional video inspection of stormwater conveyance lines, along with the potential application of cured-in-placed pipe in certain sections. PCC will also be working with LAI

to provide an existing conditions survey which will include geographic locations and pipe/manhole invert elevations. Updated site drawings of the LPC stormwater conveyance system and identification of repaired stormwater conveyance lines will be provided to ODEQ periodically as the work is completed.

# 3.0 PROPOSED CATCH BASIN SOLIDS MONITORING

Based on evaluation of sampling results in 2014 and 2015, and the objective of collecting data to determine the effectiveness of the on-site removal actions, catch basin solid samples will be collected at up to 7 locations, assuming sufficient volume has accumulated at the designated sampling locations at the time of sampling.

Specific catch basin sampling locations are focused on storm drain structures along the north side of the LPC facility where PCB source investigations have been focused and PCB removal actions have been completed. Proposed sample locations are identified on Figure 5: CB-113, STV-121, CB-122, CB-123, CB-126, CB-171, and CB-174. Catch basin solids samples will be collected in accordance with the schedule outlined in Section 5.0 and the procedures described below.

## 3.1 Sampling Methodology

General sampling and analysis procedures will be consistent with those outlined in the ODEQ-approved Sampling and Analysis Plan (LAI 2009) and the Sampling and Analysis Plan Addendum (LAI 2010b). As noted, up to 7 samples will be collected. Where catch basin filters are installed, samples will be collected from the upper surface of the filter fabric. If a sampling location is not fitted with a catch basin filter or if there is insufficient sediment in a filter, sediment will be collected directly from the catch basin sump. Samples will be collected using a stainless steel spoon or scoop and a stainless steel bowl, where applicable.

Samples will be placed in laboratory-provided containers and labeled. The samples will be preserved by cooling to a temperature of 4 degrees Celsius, as required by the analytical method. Field and laboratory personnel will observe maximum holding times for extraction and analysis.

## 3.2 Analysis

Catch basin solids samples will be submitted to Apex Laboratories of Tigard, Oregon under standard chain-of-custody procedures. Samples will be analyzed for PCB Aroclors by EPA Method 8082 and for Priority Pollutant Metals (suite of 13 metals) plus cobalt by EPA Methods 6010B and 7471A. In the event the volume of solids is insufficient for complete analysis, constituents will be prioritized in the order listed above, with PCB analysis being the first priority. Analytical methods and hold times are presented in Tables 3 and 4.

# 4.0 REPORTING

Results from the initial sampling event will be provided to ODEQ via email with a summary table of the validated data. The Catch Basin Solids Monitoring Report will include the results of both sampling events, per the schedule in Section 5.0. The following information will be included in the Catch Basin Solids Monitoring Report:

- Complete discussion of sampling results.
- Tables summarizing laboratory analytical results.
- Figures summarizing analytical results.
- Laboratory data reports.

Formal presentation of the work completed under this Work Plan will be included in the RI report.

# 5.0 PROJECT SCHEDULE

Catch basin monitoring, as described in Section 3.0, will commence in the second quarter of the stormwater permit year (October through December 2019), after the TSCA cleanup actions have been completed. A second sampling event will be performed in the fourth quarter of the stormwater permit year (April through June 2020).

Per PCC's SWPCP, all stormwater drainage features (i.e., catch basins and vaults) are inspected for accumulated sediment once a month. Based on accumulated sediment levels, each stormwater drainage feature is cleaned. To gather samples representative of current conditions, each catch basin sampling location will be cleaned in September 2019 and February 2020, prior to the sampling event.

The Catch Basin Solids Monitoring Report will be transmitted to ODEQ approximately 6 weeks after the laboratory submits the final analytical data package and electronic data deliverables for the second sampling event.

Any significant deviations from this schedule will be communicated to ODEQ. Catch basin solids sampling will be discontinued after the two post-cleanup sampling events, pending results that indicate significant recontamination is not occurring.

# 6.0 USE OF THIS REPORT

Landau Associates, Inc. (LAI) prepared this work plan for the exclusive use of PCC Structurals, Inc. and the Oregon Department of Environmental Quality for specific application to sampling of the onsite stormwater conveyance system at the Large Parts Campus, located at 4600 Southeast Harney Drive in Portland, Oregon. LAI has prepared this document in accordance with generally accepted engineering and consulting standards for environmental work in Oregon.

The reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, its services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality, under similar conditions as this project. LAI makes no other warranty, either express or implied.

# 7.0 REFERENCES

LAI. 2009. Sampling and Analysis Plan for Phase I Remedial Investigation, PCC Structurals, Inc., Large Parts Campus. Landau Associates, Inc. May 29.

LAI. 2010a. Phase II Remedial Investigation Work Plan, PCC Large Parts Campus, Portland, Oregon. Landau Associates, Inc. May 21.

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LAI. 2014b. Technical Memorandum: Phase II Remedial Investigation, June 2014 Supplemental Stormwater and Catch Basin Sampling. From Jay Bower, PE, Landau Associates, Inc., to Scott Manzano, Oregon Department of Environmental Quality, Northwest Cleanup Section. July 21.

LAI. 2014c. Technical Memorandum: Phase II Remedial Investigation Supplemental Stormwater and Catch Basin Sampling. From Jay Bower, PE, Landau Associates, Inc., to Scott Manzano, Oregon Department of Environmental Quality, Northwest Cleanup Section. April 30.

LAI. 2014d. Technical Memorandum: Phase II Remedial Investigation Supplemental Stormwater and Catch Basin Sampling. From Jay Bower, PE, Landau Associates, Inc., to Dan Hafley, Oregon Department of Environmental Quality, Northwest Cleanup Section. October 22.

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ODEQ. 2014c. "Re: PCB Source Evaluation Scoping." From Cindy Ryals, Oregon Department of Environmental Quality, to Jay Bower, Landau Associates, Inc. September 5.

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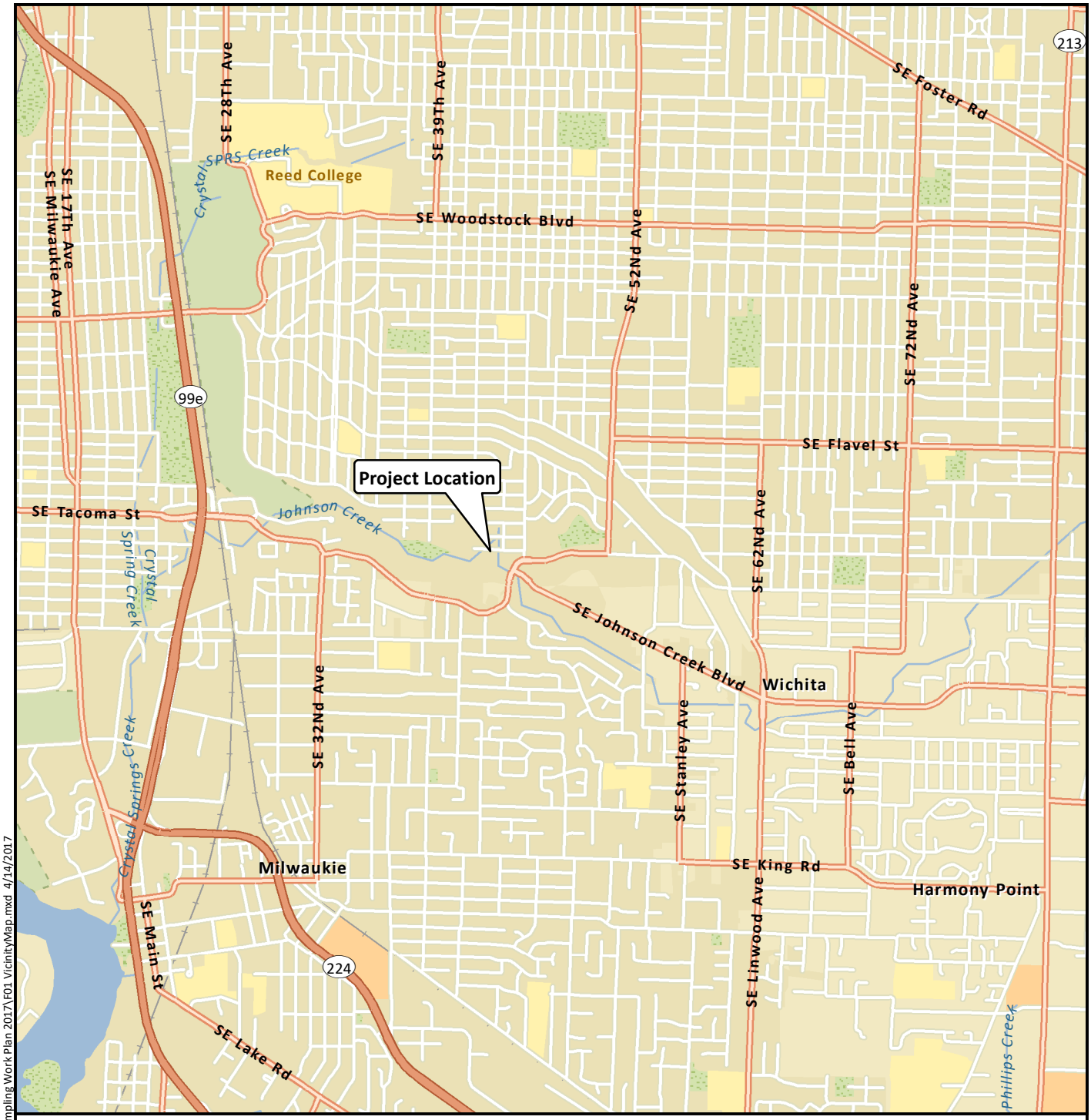




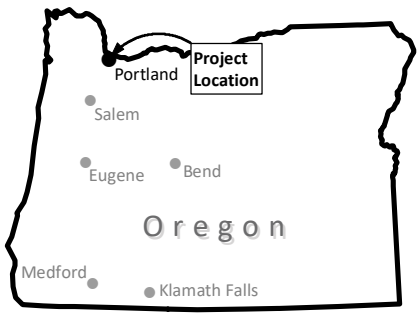


Data Source: Esri 2012

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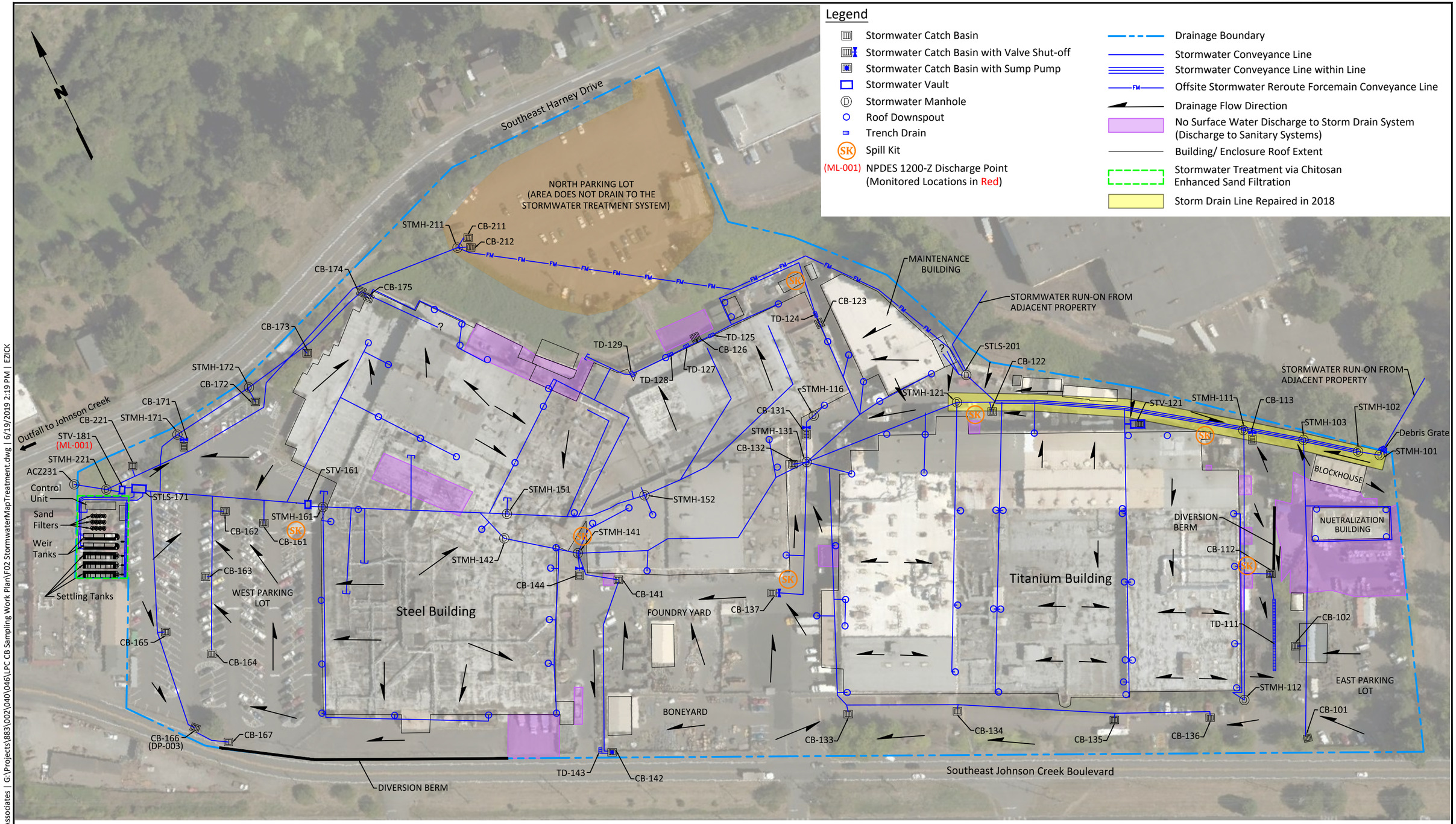
|---|---|---|
| PCC Structurals, Inc.<br>Large Parts Campus<br>Portland, Oregon | **Vicinity Map** | Figure<br>1 |

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## Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

## Acronyms

| | |
|---|---|
| CB | catch basin |
| STLS | stormwater lift station |
| STMH | stormwater manhole |
| STV | stormwater vault |
| TD | trench drain |

0 120 240
Scale in Feet

Source: © Bing Imagery, 2019, Maul Foster Alongi, 2019

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Large Parts Campus
Portland, Oregon

# Stormwater Site Map

Figure 2

N

10"Ø PRE-TREATMENT RECIRCULATION LINE

8"Ø PRE-TREATMENT LINE

10"Ø DISCHARGE LINE

CITY OF PORTLAND MANHOLE ACZ231

10"Ø OVERFLOW HEADER

10"Ø LINE FROM STLS-171

12"Ø UNDERGROUND DISCHARGE LINE

36"Ø OUTFALL LINE

6"Ø BACKWASH LINE

ELEVATED WALKWAY (TYP.)

STS EFFLUENT SAMPLE PORT (SP-501)

6"Ø TREATMENT LINE

CONTROL UNIT BOX

FRAC TANK (T-203)

FRAC TANK (T-202)

FRAC TANK (T-201)

WEIR TANK (T-102)

WEIR TANK (T-101)

SAND FILTER (SF-303)

SAND FILTER (SF-302)

SAND FILTER (SF-301)

STS TREATMENT LEG EFFLUENT SAMPLE PORTS (SP-401, SP-402, SP-403)

STMH-221

18"Ø UNDERGROUND REROUTE LINE

8"Ø PRE-TREATMENT LINE

6"Ø TREATMENT LINE

STV-181 (ML-001)

NON-LPC STORMWATER FROM STMH-211

6"Ø TREATMENT LINE

10" TREATMENT HEADER

6"Ø TREATMENT LINE

TRANSFER PUMP (P-201)

6"Ø TREATMENT LINE

6"Ø TREATMENT LINE

ELEVATED WALKWAY

DOSING BOX

12"Ø UNDERGROUND INFLUENT LINE

12"Ø UNDERGROUND OVERFLOW LINE

36"Ø UNDERGROUND BYPASS LINE

TRANSFER PUMP (P-101)

TRANSFER PUMP (P-202)

TRANSFER PUMP (P-201)

STLS-171

LPC INDUSTRIAL STORMWATER

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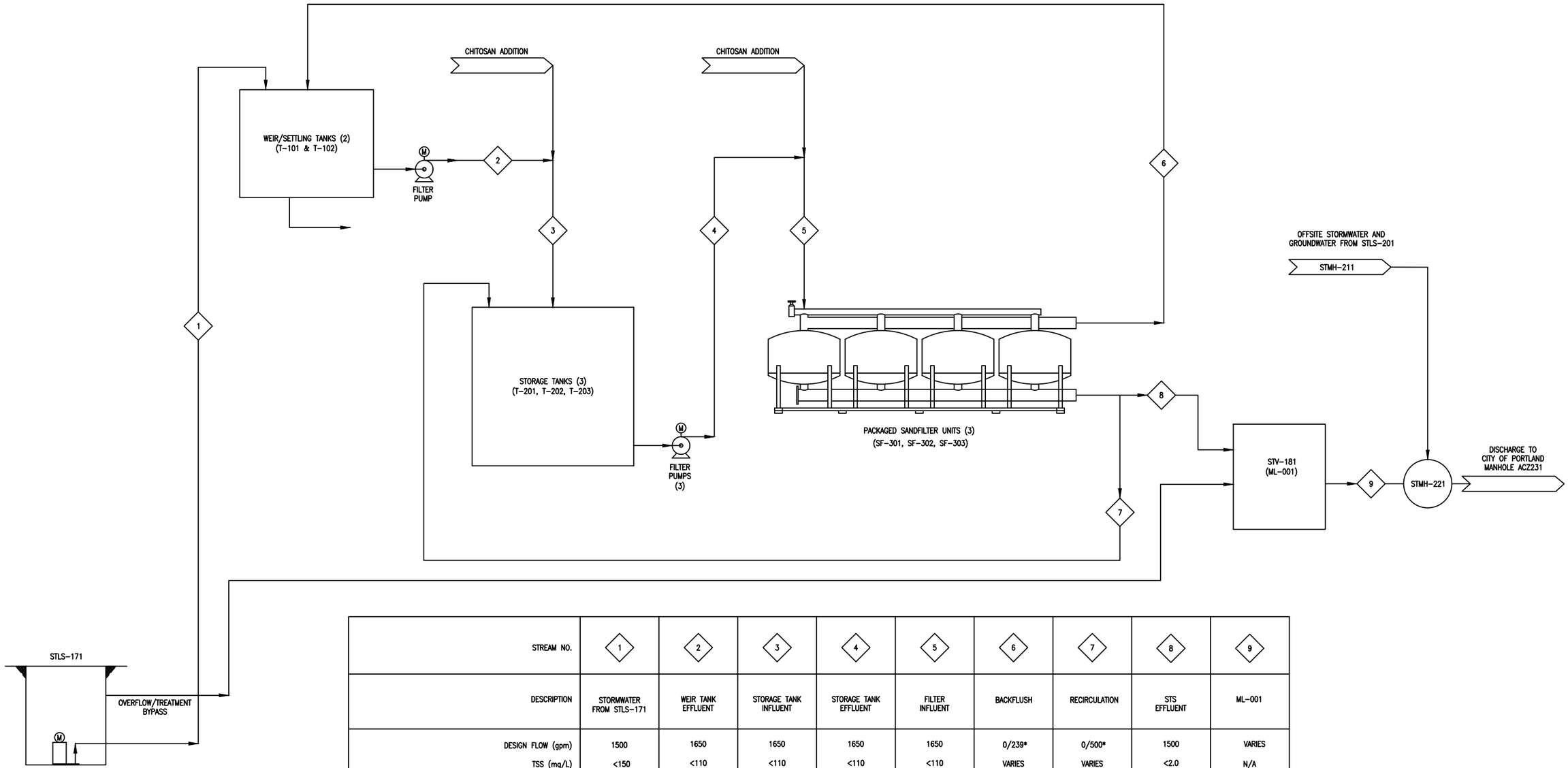
Large Parts Campus
Portland, Oregon

**STS Plan View Diagram**

Figure
3




| STREAM NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| DESCRIPTION | STORMWATER FROM STLS-171 | WEIR TANK EFFLUENT | STORAGE TANK INFLUENT | STORAGE TANK EFFLUENT | FILTER INFLUENT | BACKFLUSH | RECIRCULATION | STS EFFLUENT | ML-001 |
| DESIGN FLOW (gpm) | 1500 | 1650 | 1650 | 1650 | 1650 | 0/239* | 0/500* | 1500 | VARIES |
| TSS (mg/L) | <150 | <110 | <110 | <110 | <110 | VARIES | VARIES | <2.0 | N/A |
| PCBs (µg/L) | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | VARIES | VARIES | <0.030 | <0.030 |
| TURBIDITY (NTU) | <200 | <200 | <200 | <200 | <200 | VARIES | ≥5 | <5 | N/A |
| CHITOSAN (ppm) | 0 | 0 | 0.2 | ≤0.2 | ≤0.67 | VARIES | VARIES | <0.2 | <0.2 |
| Zn (mg/L) | <0.4 | <0.4 | <0.4 | <0.4 | <0.4 | VARIES | VARIES | <0.08 | <0.08 |
| Cu (mg/L) | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | VARIES | VARIES | <0.02 | <0.02 |



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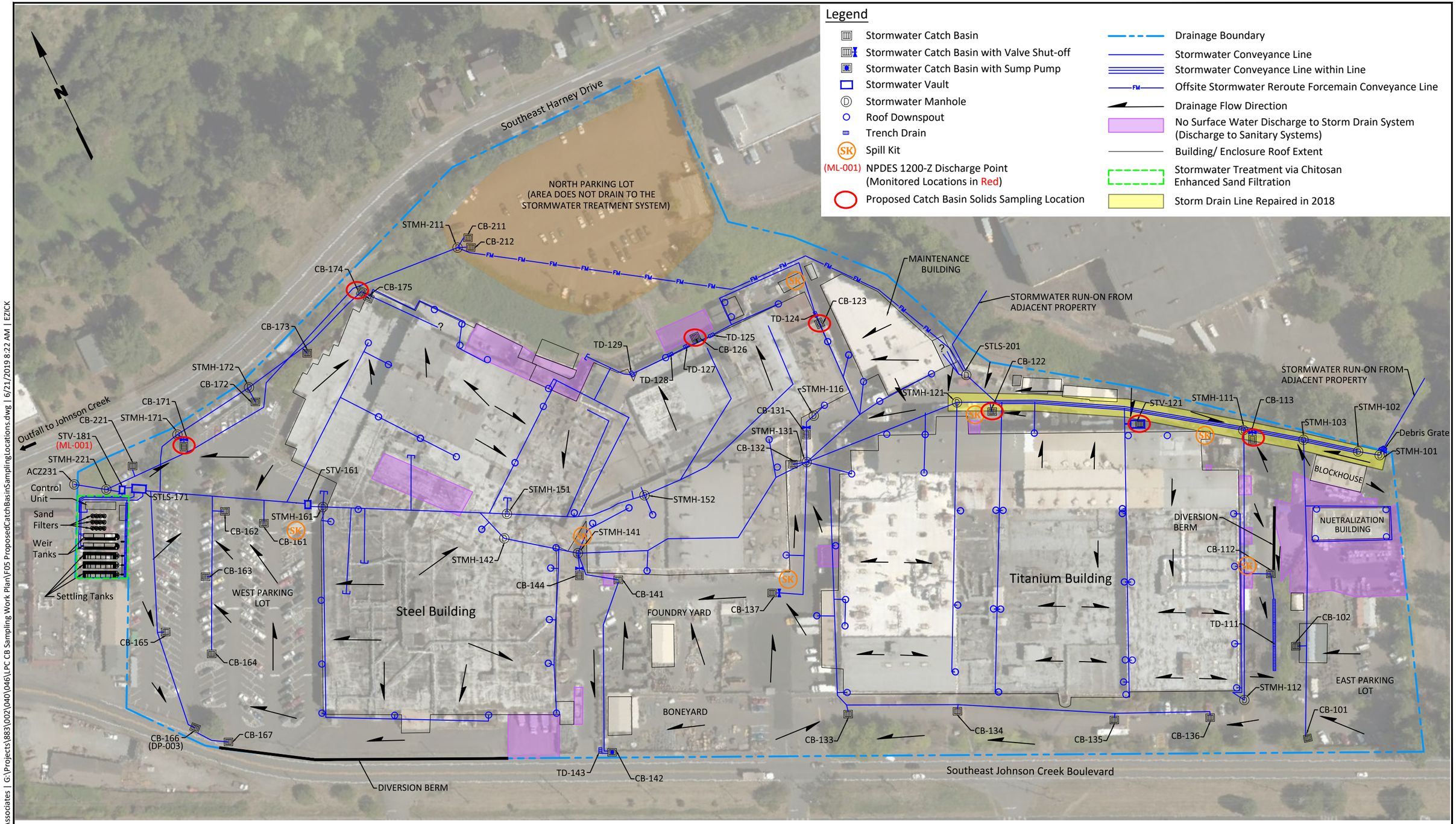
Portland, Oregon

**STS Process Schematic Diagram**

Figure
4

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## Note

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## Acronyms

| | |
|---|---|
| CB | catch basin |
| STLS | stormwater lift station |
| STMH | stormwater manhole |
| STV | stormwater vault |
| TD | trench drain |

0 120 240
Scale in Feet

Source: © Bing Imagery, 2019, Maul Foster Alongi, 2019

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Portland, Oregon

**Proposed Catch Basin Sampling Locations**

Figure 5

**Table 1**
**Catch Basin Sediment Analytical Results**
**PCC Large Parts Campus**
**Portland, Oregon**

| **Sample Location - New Stormwater Sample ID (a)** | **CB-113** | | | | **STV-121** | | | | **CB-122** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sample Location - Original Stormwater Sample ID* | *CB-2* | | | | *CB-3* | | | | *CB-4* | | | |
| Laboratory ID | CB-2 | CB-2 | CB-2 | CB-2 | CB-3 | CB-3 | CB-3 | CB-3 | CB-4 | CB-4 | CB-4 | CB-4 |
| Laboratory Job ID | XV80B | YO25B | 250-22974-4 | 250-24438-5 | XV80C | YO25C | 250-22974-5 | 250-24438-10 | XV80D | YO25D | 250-22974-6 | 250-24438-13 |
| Sample Date | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 |
| **Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | |
| **EPA Method 8082** | | | | | | | | | | | | |
| Aroclor 1016 | 20 U | 3.9 U | 26 U | 250 U | 13 U | 3.9 U | 71 U | 8.4 U | 79 U | 40 U | 180 U | 30 U |
| Aroclor 1221 | 20 U | 3.9 U | 53 U | 510 U | 13 U | 3.9 U | 140 U | 17 U | 79 U | 40 U | 370 U | 60 U |
| Aroclor 1232 | 20 U | 3.9 U | 26 U | 250 U | 13 U | 3.9 U | 71 U | 8.4 U | 79 U | 40 U | 180 U | 30 U |
| Aroclor 1242 | 20 U | 3.9 U | 26 U | 250 U | 13 U | 3.9 U | 71 U | 8.4 U | 79 U | 40 U | 180 U | 30 U |
| Aroclor 1248 | 41 U | 20 U | 26 U | 250 U | 45 U | 20 U | 71 U | 8.4 U | 120 U | 40 U | 180 U | 30 U |
| Aroclor 1254 | **190** | **67** | **71** | 250 U | **220** | **93** | 71 U | **14** | **610** | **240** | 180 U | 30 U |
| Aroclor 1260 | **200** | **80** | 26 U | 250 U | **300** | **120** | **250** J | 8.4 U | **470** | **390** | **840** J | **71** |
| Aroclor 1262 | 20 U | 3.9 U | -- | -- | 13 U | 3.9 U | -- | -- | 79 U | 40 U | -- | -- |
| Aroclor 1268 | 20 U | 3.9 U | -- | -- | 13 U | 3.9 U | -- | -- | 79 U | 40 U | -- | -- |
| Total PCBs (b) | **390** | **147** | **71** | 250 U | **520** | **213** | **250** J | **14** | **1080** | **630** | **840** J | **71** |
| **Metals (mg/kg)** | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | |
| Antimony | -- | -- | 1.3 U | **1.5** | -- | -- | 1.4 U | 1.1 U | -- | -- | 1.8 U | **2.1** |
| Arsenic | -- | -- | **1.4** | **4.2** | -- | -- | **4.0** | **1.2** | -- | -- | **3.1** | **8.2** |
| Beryllium | -- | -- | 2.7 U | 2.5 U | -- | -- | 2.7 U | 2.2 U | -- | -- | 3.7 U | 2.3 U |
| Cadmium | -- | -- | 1.3 U | 1.3 U | -- | -- | 1.4 U | 1.1 U | -- | -- | 1.8 U | 1.2 U |
| Chromium | -- | -- | **170** | **260** | -- | -- | **140** | **190** | -- | -- | **200** | **300** |
| Copper | -- | -- | **33** | **80** | -- | -- | **55** | **22** | -- | -- | **89** | **390** |
| Lead | -- | -- | **7.7** | **13** | -- | -- | **13** | **1.9** | -- | -- | **32** | **5.7** |
| Mercury | -- | -- | 0.22 U | 0.25 U | -- | -- | 0.21 U | 0.11 U | -- | -- | 0.34 U | 0.099 U |
| Nickel | -- | -- | **550** | **840** | -- | -- | **470** | **680** | -- | -- | **440** | **440** |
| Selenium | -- | -- | 1.3 U | 1.3 U | -- | -- | 1.4 U | 1.1 U | -- | -- | 1.8 U | 1.2 U |
| Silver | -- | -- | 1.3 U | 1.3 U | -- | -- | 1.4 U | 1.1 U | -- | -- | 1.8 U | 1.2 U |
| Thallium | -- | -- | 1.3 U | 1.3 U | -- | -- | 1.4 U | 1.1 U | -- | -- | 1.8 U | 1.2 U |
| Zinc | -- | -- | **360** | **580** | -- | -- | **520** | **95** | -- | -- | **680** | **130** |
| **Metals -TCLP (mg/L)** | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | |
| Antimony | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Arsenic | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Beryllium | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U |
| Cadmium | -- | -- | 0.010 U | 0.01 U | -- | -- | **0.010** | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Chromium | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | **0.091** | -- | -- | 0.020 U | 0.02 U |
| Copper | -- | -- | **0.021** | **0.053** | -- | -- | **0.12** | **0.13** | -- | -- | 0.020 U | 0.02 U |
| Lead | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Mercury | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.00020 U |
| Nickel | -- | -- | **0.22** | **0.43** | -- | -- | **0.32** | **0.76** | -- | -- | **0.17** | **0.72** |
| Selenium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Silver | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Thallium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Zinc | -- | -- | **1.9** | **5.3** | -- | -- | **6.4** | **1.6** | -- | -- | **0.53** | **1.7** |
| **Semivolatiles (µg/kg)** | | | | | | | | | | | | |
| **Method EPA 8270C** | | | | | | | | | | | | |
| Acenaphthene | -- | -- | 180 U | 69 U | -- | -- | 190 U | 71 U | -- | -- | 250 U | 32 U |
| Acenaphthylene | -- | -- | 180 U | 69 U | -- | -- | 190 U | 71 U | -- | -- | 250 U | 32 U |
| Anthracene | -- | -- | 180 U | 69 U | -- | -- | 190 U | 71 U | -- | -- | 250 U | 32 U |
| Benzo[a]anthracene | -- | 0 | 180 U | 170 U | -- | -- | 190 U | 71 U | -- | -- | 250 U | 81 U |
| Benzo[a]pyrene | -- | -- | 180 U | 350 U | -- | -- | 190 U | 180 U | -- | -- | 250 U | 81 U |
| Benzo[b]fluoranthene | -- | -- | 180 U | 350 U | -- | -- | 190 U | 180 U | -- | -- | 250 U | 81 U |
| Benzo[g,h,i]perylene | -- | -- | 180 U | 350 U | -- | -- | 190 U | 180 U | -- | -- | 250 U | 81 U |
| Benzo[k]fluoranthene | -- | -- | 180 U | 350 U | -- | -- | 190 U | 180 U | -- | -- | 250 U | 81 U |
| Chrysene | -- | -- | 180 U | **170** | -- | -- | **190** | **83** | -- | -- | **510** | **130** |
| Dibenz(a,h)anthracene | -- | -- | 180 U | 350 U | -- | -- | 190 U | 180 U | -- | -- | 250 U | 81 U |
| Fluoranthene | -- | -- | 180 U | **88** | -- | -- | 190 U | 71 U | -- | -- | **340** | **74** |
| Fluorene | -- | -- | 180 U | 69 U | -- | -- | 190 U | 71 U | -- | -- | 250 U | 32 U |
| Indeno[1,2,3-cd]pyrene | -- | -- | 180 U | 350 U | -- | -- | 190 U | 180 U | -- | -- | 250 U | 81 U |
| Naphthalene | -- | -- | 180 U | 69 U | -- | -- | 190 U | 71 U | -- | -- | 250 U | 32 U |
| Phenanthrene | -- | -- | 180 U | **89** | -- | -- | **240** | 71 U | -- | -- | **460** | **120** |
| Pyrene | -- | -- | **180** | **260** | -- | -- | **400** | **100** | -- | -- | **1200** | **290** |
| **Diesel-Range Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | |
| **Method NWTPH-Dx** | | | | | | | | | | | | |
| DRO | -- | -- | **2100** J | **1100** | -- | -- | **2700** | **150** | -- | -- | **2600** | **210** |
| RRO | -- | -- | **13000** J | **9900** | -- | -- | **19000** | **1200** | -- | -- | **13000** | **1400** |

**Table 1**
**Catch Basin Sediment Analytical Results**
**PCC Large Parts Campus**
**Portland, Oregon**

| **Sample Location - New Stormwater Sample ID (a)** | **CB-131** | | | | **CB-137** | | | | **CB-141** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sample Location - Original Stormwater Sample ID* | *CB-5* | | | | *CB-6* | | | | *CB-7* | | | |
| Laboratory ID | CB-5 | CB-5 | CB-5 | CB-5 | CB-6 | CB-6 | CB-6 | CB-6 | CB-7 | CB-7 | CB-7 | CB-7 |
| Laboratory Job ID | XV80G | YO25G | 250-22974-7 | 250-24438-8 | XV80H | YO25H | 250-22974-8 | 250-24438-9 | XV80I | YO25I | 250-22974-9 | |
| Sample Date | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 |
| **Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | |
| **EPA Method 8082** | | | | | | | | | | | | |
| Aroclor 1016 | 79 U | 39 U | 180 U | 72 U | 7.7 U | 3.9 U | 42 U | 17 U | 53 U | 3.9 U | 53 U | 33 U |
| Aroclor 1221 | 79 U | 39 U | 360 U | 140 U | 7.7 U | 3.9 U | 85 U | 34 U | 53 U | 3.9 U | 110 U | 66 U |
| Aroclor 1232 | 79 U | 39 U | 180 U | 72 U | 7.7 U | 3.9 U | 42 U | 17 U | 53 U | 3.9 U | 53 U | 33 U |
| Aroclor 1242 | 79 U | 39 U | 180 U | 72 U | 7.7 U | 3.9 U | 42 U | 17 U | 53 U | 3.9 U | 53 U | 33 U |
| Aroclor 1248 | 160 U | 98 U | 180 U | 72 U | 19 U | 20 U | 42 U | 17 U | 80 U | 29 U | 53 U | 33 U |
| Aroclor 1254 | **900** | **350** | **430** J | **180** | **180** | **110** | **120** J | **61** | **500** | **180** | **300** | **240** |
| Aroclor 1260 | **570** | **210** | 180 U | 72 U | **93** | **68** | 42 U | 17 U | **250** | **90** | 53 U | 33 U |
| Aroclor 1262 | 79 U | 39 U | -- | -- | 7.7 U | 3.9 U | -- | -- | 53 U | 3.9 U | -- | -- |
| Aroclor 1268 | 79 U | 39 U | -- | -- | 7.7 U | 3.9 U | -- | -- | 53 U | 3.9 U | -- | -- |
| Total PCBs (b) | **1470** | **560** | **430** J | **180** | **273** | **178** | **120** J | **61** | **750** | **270** | **300** | **240** |
| **Metals (mg/kg)** | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | |
| Antimony | -- | -- | 3.5 U | **2.2** | -- | -- | **1.0** | **2.6** | -- | -- | 2.1 U | 4.3 U |
| Arsenic | -- | -- | 3.5 U | 140 U | -- | -- | **3.2** | 13 U | -- | -- | 2.1 U | 4.3 U |
| Beryllium | -- | -- | 7 U | 6.9 U | -- | -- | 1.7 U | 6.6 U | -- | -- | 4.2 U | 8.5 U |
| Cadmium | -- | -- | 3.5 U | 1.4 U | -- | -- | 0.85 U | 1.3 U | -- | -- | 2.1 U | 4.3 U |
| Chromium | -- | -- | **430** | **4600** | -- | -- | **1100** | **1200** | -- | -- | **1400** | **720** |
| Copper | -- | -- | **41** | **310** | -- | -- | **120** | **280** | -- | -- | **77** | **99** |
| Lead | -- | -- | **9.2** | **41** | -- | -- | **20** | **7.4** | -- | -- | **11** | **15** |
| Mercury | -- | -- | 0.60 U | 0.13 U | -- | -- | 0.13 U | 0.11 U | -- | -- | 0.37 U | 0.44 U |
| Nickel | -- | -- | **970** | **12000** | -- | -- | **2800** | **4000** | -- | -- | **3200** | **2200** |
| Selenium | -- | -- | 3.5 U | 1.4 U | -- | -- | 0.85 U | 1.3 U | -- | -- | 2.1 U | 4.3 U |
| Silver | -- | -- | 3.5 U | **1.8** | -- | -- | **4.5** | **2.5** | -- | -- | 2.1 U | 4.3 U |
| Thallium | -- | -- | 3.5 U | 1.4 U | -- | -- | 0.85 U | 1.3 U | -- | -- | 2.1 U | 4.3 U |
| Zinc | -- | -- | **270** | 1400 U | -- | -- | **400** | 130 U | -- | -- | **260** | **720** |
| **Metals -TCLP (mg/L)** | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | |
| Antimony | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Arsenic | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Beryllium | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.04 U | -- | -- | 0.020 U | 0.02 U |
| Cadmium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Chromium | -- | -- | 0.020 U | 0.02 U | -- | -- | **0.022** | 0.02 U | -- | -- | 0.020 U | **0.22** |
| Copper | -- | -- | **0.036** | **0.044** | -- | -- | **0.077** | 0.02 U | -- | -- | 0.020 U | **0.39** |
| Lead | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.02 U | -- | -- | 0.010 U | **0.012** |
| Mercury | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.00040 U |
| Nickel | -- | -- | **0.67** | **1.4** | -- | -- | **0.58** | **0.97** | -- | -- | **0.63** | **0.85** |
| Selenium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Silver | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Thallium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Zinc | -- | -- | **5.9** | **3.4** | -- | -- | **4.1** | **1.4** | -- | -- | **0.70** | **5.3** |
| **Semivolatiles (µg/kg)** | | | | | | | | | | | | |
| **Method EPA 8270C** | | | | | | | | | | | | |
| Acenaphthene | -- | -- | 480 U | 38 U | -- | -- | 140 U | 37 U | -- | -- | 290 U | 120 U |
| Acenaphthylene | -- | -- | 480 U | 38 U | -- | -- | 140 U | 37 U | -- | -- | 290 U | 120 U |
| Anthracene | -- | -- | 480 U | 38 U | -- | -- | 140 U | 37 U | -- | -- | 290 U | 120 U |
| Benzo[a]anthracene | -- | -- | 480 U | 38 U | -- | -- | 140 U | 37 U | -- | -- | 290 U | 120 U |
| Benzo[a]pyrene | -- | -- | 480 U | 96 U | -- | -- | 140 U | 37 U | -- | -- | 720 U | 290 U |
| Benzo[b]fluoranthene | -- | -- | 480 U | 96 U | -- | -- | 140 U | 37 U | -- | -- | 720 U | 290 U |
| Benzo[g,h,i]perylene | -- | -- | 480 U | 96 U | -- | -- | 140 U | **45** | -- | -- | 720 U | 290 U |
| Benzo[k]fluoranthene | -- | -- | 480 U | 96 U | -- | -- | 140 U | 37 U | -- | -- | 720 U | 290 U |
| Chrysene | -- | -- | **700** | **120** | -- | -- | **170** | **71** | -- | -- | **340** | **190** |
| Dibenz(a,h)anthracene | -- | -- | 480 U | 96 U | -- | -- | 140 U | 37 U | -- | -- | 720 U | 290 U |
| Fluoranthene | -- | -- | 480 U | **43** | -- | -- | **140** | **47** | -- | -- | 290 U | **160** |
| Fluorene | -- | -- | 480 U | 38 U | -- | -- | 140 U | 37 U | -- | -- | 290 U | 120 U |
| Indeno[1,2,3-cd]pyrene | -- | -- | 480 U | 96 U | -- | -- | 140 U | 37 U | -- | -- | 720 U | 290 U |
| Naphthalene | -- | -- | 480 U | 38 U | -- | -- | 140 U | 37 U | -- | -- | 290 U | 120 U |
| Phenanthrene | -- | -- | **480** | 38 U | -- | -- | 140 U | **47** | -- | -- | 290 U | **220** |
| Pyrene | -- | -- | **1800** | **190** | -- | -- | **410** | **160** | -- | -- | **780** | **680** |
| **Diesel-Range Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | |
| **Method NWTPH-Dx** | | | | | | | | | | | | |
| DRO | -- | -- | **2400** | **400** | -- | -- | **1100** | **360** | -- | -- | **2500** | **1100** |
| RRO | -- | -- | **15000** | **3400** | -- | -- | **7100** | **2900** | -- | -- | **19000** | **7600** |

**Table 1**
**Catch Basin Sediment Analytical Results**
**PCC Large Parts Campus**
**Portland, Oregon**

| **Sample Location - New Stormwater Sample ID (a)** | **CB-144** | | | | **CB-123** | | | | **CB-126** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sample Location - Original Stormwater Sample ID* | *CB-8* | | | | *CB-10* | | | | *CB-11* | | | |
| Laboratory ID | CB-8 | CB-8 | CB-8 | CB-8 | CB-10 | CB-10 | CB-10 | CB-10 | CB-11 | CB-11 | CB-11 | CB-11 |
| Laboratory Job ID | XV80J | YO25J | 250-22794-10 | | XV80E | YO25E | 250-22974-11 | 250-24439-6 | XV80F | YO25F | 250-22974-12 | 250-244838-7 |
| Sample Date | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 |
| **Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | |
| **EPA Method 8082** | | | | | | | | | | | | |
| Aroclor 1016 | 15 U | 3.8 U | 53 U | 35 U | 100 U | 39 U | 15 U | 180 U | 440 U | 40 U | 180 U | 590 U |
| Aroclor 1221 | 15 U | 3.8 U | 110 U | 70 U | 100 U | 39 U | 31 U | 350 U | 440 U | 40 U | 360 U | 1200 U |
| Aroclor 1232 | 15 U | 3.8 U | 53 U | 35 U | 100 U | 39 U | 15 U | 180 U | 440 U | 40 U | 180 U | 590 U |
| Aroclor 1242 | 15 U | 3.8 U | 53 U | 35 U | 100 U | 39 U | 15 U | 180 U | 440 U | 40 U | 180 U | 590 U |
| Aroclor 1248 | 38 U | 29 U | 53 U | 35 U | 100 U | 120 U | 15 U | 180 U | 660 U | 200 U | 180 U | 590 U |
| Aroclor 1254 | **200** | **180** | **210** J | **170** | **1300** | **570** | **89** | **480** | **4600** | **1400** | 180 U | **4000** |
| Aroclor 1260 | **68** | **81** | 53 U | 35 U | **720** | **320** | 15 U | 180 U | **2300** | **740** | **1500** J | 590 U |
| Aroclor 1262 | 15 U | 3.8 U | -- | -- | 100 U | 39 U | -- | -- | 440 U | 40 U | -- | -- |
| Aroclor 1268 | 15 U | 3.8 U | -- | -- | 100 U | 39 U | -- | -- | 440 U | 40 U | -- | -- |
| Total PCBs (b) | **268** | **261** | **210** J | **170** | **2020** | **890** | **89** | **480** | **6900** | **2140** | **1500** J | **4000** |
| **Metals (mg/kg)** | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | |
| Antimony | -- | -- | 1.1 U | 1.4 U | -- | -- | **3.6** | **3.6** | -- | -- | **2.5** | **3.5** |
| Arsenic | -- | -- | 1.1 U | **5** | -- | -- | **5.6** | **6.9** | -- | -- | **6.4** | **9.5** |
| Beryllium | -- | -- | 2.1 U | 6.9 U | -- | -- | 3.0 U | 8.7 U | -- | -- | 2.9 U | 4.7 U |
| Cadmium | -- | -- | 1.1 U | **2** | -- | -- | **1.5** | 1.7 U | -- | -- | **2.8** | **3.6** |
| Chromium | -- | -- | **3000** | **12000** | -- | -- | **4000** | **3500** | -- | -- | **4200** | **9500** |
| Copper | -- | -- | **71** | **680** | -- | -- | **370** | **530** | -- | -- | **550** J | **620** |
| Lead | -- | -- | **6.8** | **25** | -- | -- | **42** | **63** | -- | -- | **53** J | **68** |
| Mercury | -- | -- | 0.19 U | 0.13 U | -- | -- | 0.24 U | 0.17 U | -- | -- | **0.34** | **1.8** |
| Nickel | -- | -- | **7900** | **32000** | -- | -- | **8300** | **11000** | -- | -- | **10000** | **26000** |
| Selenium | -- | -- | 1.1 U | 1.4 U | -- | -- | 1.5 U | 1.7 U | -- | -- | 1.4 U | 2.4 U |
| Silver | -- | -- | **1.6** | **5.7** | -- | -- | **4.1** | **4.1** | -- | -- | **3.3** | **3.6** |
| Thallium | -- | -- | 1.1 U | 1.4 U | -- | -- | 1.5 U | 1.7 U | -- | -- | 1.4 U | 2.4 U |
| Zinc | -- | -- | **82** | **420** | -- | -- | **920** | **1500** | -- | -- | **2000** | **3000** |
| **Metals -TCLP (mg/L)** | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | |
| Antimony | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Arsenic | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Beryllium | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U |
| Cadmium | -- | -- | 0.010 U | 0.01 U | -- | -- | **0.013** | **0.019** | -- | -- | **0.023** | **0.036** |
| Chromium | -- | -- | **0.031** | **0.081** | -- | -- | **0.029** | **0.026** | -- | -- | **0.021** | **0.049** |
| Copper | -- | -- | 0.020 U | **0.1** | -- | -- | **0.61** | **0.04** | -- | -- | **0.19** | **0.19** |
| Lead | -- | -- | 0.010 U | **0.017** | -- | -- | **0.014** | 0.01 U | -- | -- | **0.010** | 0.1 U |
| Mercury | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.0002 U |
| Nickel | -- | -- | **1.9** | **1.5** | -- | -- | **1.9** | **1.7** | -- | -- | **10** | **21** |
| Selenium | -- | -- | 0.010 U | **0.011** | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Silver | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Thallium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U |
| Zinc | -- | -- | **3.9** J | **2.6** | -- | -- | **12** | **16** | -- | -- | **25** | **32** |
| **Semivolatiles (µg/kg)** | | | | | | | | | | | | |
| **Method EPA 8270C** | | | | | | | | | | | | |
| Acenaphthene | -- | -- | 140 U | 37 U | -- | -- | 210 U | 47 U | -- | -- | 200 U | 64 U |
| Acenaphthylene | -- | -- | 140 U | 37 U | -- | -- | 210 U | 47 U | -- | -- | 200 U | 64 U |
| Anthracene | -- | -- | 140 U | 37 U | -- | -- | 210 U | 47 U | -- | -- | 200 U | **65** |
| Benzo[a]anthracene | -- | -- | 140 U | **43** | -- | -- | 210 U | 120 U | -- | -- | **250** | **310** |
| Benzo[a]pyrene | -- | -- | 360 U | 93 U | -- | -- | 510 U | 120 U | -- | -- | 490 U | 320 U |
| Benzo[b]fluoranthene | -- | -- | 360 U | 93 U | -- | -- | 510 U | 120 U | -- | -- | 490 U | 320 U |
| Benzo[g,h,i]perylene | -- | -- | 360 U | 93 U | -- | -- | 510 U | 120 U | -- | -- | 490 U | 320 U |
| Benzo[k]fluoranthene | -- | -- | 360 U | 93 U | -- | -- | 510 U | 120 U | -- | -- | 490 U | 320 U |
| Chrysene | -- | -- | **230** | **120** | -- | -- | **370** | **270** | -- | -- | **560** | **710** |
| Dibenz(a,h)anthracene | -- | -- | 360 U | 93 U | -- | -- | 510 U | 120 U | -- | -- | 490 U | 320 U |
| Fluoranthene | -- | -- | **190** | **110** | -- | -- | 210 U | **120** | -- | -- | **510** | **300** |
| Fluorene | -- | -- | 140 U | 37 U | -- | -- | 210 U | 47 U | -- | -- | 200 U | 64 U |
| Indeno[1,2,3-cd]pyrene | -- | -- | 360 U | 93 U | -- | -- | 510 U | 120 U | -- | -- | 490 U | 320 U |
| Naphthalene | -- | -- | 140 U | 37 U | -- | -- | 210 U | 47 U | -- | -- | 200 U | 64 U |
| Phenanthrene | -- | -- | 140 U | **60** | -- | -- | 210 U | **71** | -- | -- | **360** | **470** |
| Pyrene | -- | -- | **290** | **190** | -- | -- | **420** | **270** | -- | -- | **980** | **1700** |
| **Diesel-Range Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | |
| **Method NWTPH-Dx** | | | | | | | | | | | | |
| DRO | -- | -- | **2100** J | **610** | -- | -- | **1800** J | **870** | -- | -- | **6000** J | **3600** |
| RRO | -- | -- | **21000** J | **5800** | -- | -- | **14000** J | **6400** | -- | -- | **49000** J | **30000** |

**Table 1**
**Catch Basin Sediment Analytical Results**
**PCC Large Parts Campus**
**Portland, Oregon**

| **Sample Location - New Stormwater Sample ID (a)** | **CB-112** | | | | **CB-221, CB-162, CB-171** | | | | **N/A (structures drain to sanitary sewer)** | | | | **CB-133, CB-134, CB-135, CB-136** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Sample Location - Original Stormwater Sample ID* | *CB-E* | | | | *CB-A, CB-B, CB-13 (Composite 1)* | | | | *CB-X,CB-Y,CB-Z (Composite 2)* | | | | *CB-T (Composite 3)* | |
| Laboratory ID | CB-E | CB-E | CB-E | CB-E | CB-A,CB-B | CB-A-B,13 | CB-A, B, B | CB-A, CB-B, CB-2 | CB-Z, CB-Y, CB- | CB-X-Z | CB-X, Y, Z | CB-X, CB-Y, | CB-T | CB-T |
| Laboratory Job ID | XV80A | YO25A | 250-22974-13 | 250-24438-4 | XV80K | YO25L | 250-22974-2 | 250-24438-1 | XV80L | YO25K | 250-22974-1 | 250-24438-2 | 250-22974-3 | 250-24438-3 |
| Sample Date | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 01/21/2014 | 6/12/2014 | 11/25/2014 | 2/6/2015 | 11/25/2014 | 2/6/2015 |
| **Polychlorinated Biphenyls (µg/kg)** | | | | | | | | | | | | | | |
| **EPA Method 8082** | | | | | | | | | | | | | | |
| Aroclor 1016 | 7.9 U | 4.0 U | 10 U | 22 U | 7.9 U | 4.0 | 32 U | 49 U | 380 U | 3.9 U | 480 U | 230 U | 23 U | 20 U |
| Aroclor 1221 | 7.9 U | 4.0 U | 21 U | 45 U | 7.9 U | 4.0 | 64 U | 99 U | 380 U | 3.9 U | 960 U | 460 U | 47 U | 41 U |
| Aroclor 1232 | 7.9 U | 4.0 U | 10 U | 22 U | 7.9 U | 4.0 | 32 U | 49 U | 380 U | 3.9 U | 480 U | 230 U | 23 U | 20 U |
| Aroclor 1242 | 7.9 U | 4.0 U | 10 U | 22 U | 7.9 U | 4.0 | 32 U | 49 U | 380 U | 3.9 U | 480 U | 230 U | 23 U | 20 U |
| Aroclor 1248 | 24 U | 16 U | 10 U | 22 U | 20 U | 30 | 32 U | 49 U | 380 U | 97 U | 480 U | 230 U | 23 U | 20 U |
| Aroclor 1254 | **110** | **54** | **30** | **65** | **200** | **96** | **170** | **310** | **3500** | **820** | **12000** | **1400** | **44** | 20 U |
| Aroclor 1260 | **88** | **39** | 10 U | 22 U | **75** | **38** | 32 U | 49 U | **1000** | **91** | 480 U | 230 U | 23 U | **71** |
| Aroclor 1262 | 7.9 U | 4.0 U | -- | -- | 7.9 U | 4.0 | -- | -- | 380 U | 3.9 U | -- | -- | -- | -- |
| Aroclor 1268 | 7.9 U | 4.0 U | -- | -- | 7.9 U | 4.0 | -- | -- | 380 U | 3.9 U | -- | -- | -- | -- |
| Total PCBs (b) | **198** | **93** | **30** | **65** | **275** | **134** | **170** | **310** | **4500** | **911** | **12000** | **1400** | **44** | **71** |
| **Metals (mg/kg)** | | | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | | | |
| Antimony | -- | -- | **2.4** | **2.2** | -- | -- | **3.1** | **2.1** | -- | -- | 1.9 U | **1.5** | **2.1** | **1.4** |
| Arsenic | -- | -- | **5.8** | **6.9** | -- | -- | 3.1 U | **2.5** | -- | -- | 1.9 U | **3.6** | **5.0** | **4** |
| Beryllium | -- | -- | 2.0 U | 1.8 U | -- | -- | 6.2 U | 3.9 U | -- | -- | 3.7 U | 1.8 U | 2.3 U | 2.6 U |
| Cadmium | -- | -- | 1.0 U | 0.9 U | -- | -- | 3.1 U | 1.9 U | -- | -- | 1.9 U | 0.92 U | 1.1 U | 1.3 U |
| Chromium | -- | -- | **240** | **190** | -- | -- | **330** | **630** | -- | -- | **1500** | **1000** | **500** | **430** |
| Copper | -- | -- | **61** | **55** | -- | -- | **62** | **81** | -- | -- | **200** J | **860** | **200** | **100** |
| Lead | -- | -- | **23** | **17** | -- | -- | **120** | **75** | -- | -- | **11** | **55** | **330** | **98** |
| Mercury | -- | -- | 0.19 U | 0.17 U | -- | -- | 0.55 U | 0.38 U | -- | -- | 0.35 U | 0.16 U | 0.20 U | 0.25 U |
| Nickel | -- | -- | **610** | **470** | -- | -- | **930** | **1800** | -- | -- | **1400** | **3100** | **1100** | **1200** |
| Selenium | -- | -- | 1.0 U | 0.9 U | -- | -- | 3.1 U | 1.9 U | -- | -- | 1.9 U | 0.92 U | 1.1 U | 1.3 U |
| Silver | -- | -- | **1.3** | 0.9 U | -- | -- | 3.1 U | 1.9 U | -- | -- | 1.9 U | 0.92 U | 1.1 U | 1.3 U |
| Thallium | -- | -- | 1.0 U | 0.9 U | -- | -- | 3.1 U | 1.9 U | -- | -- | 1.9 U | 0.92 U | 1.1 U | 1.3 U |
| Zinc | -- | -- | **710** | **430** | -- | -- | **250** | **260** | -- | -- | **490** J | **4600** | **410** | **230** |
| **Metals -TCLP (mg/L)** | | | | | | | | | | | | | | |
| **Method EPA 6020** | | | | | | | | | | | | | | |
| Antimony | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | 0.010 U | 0.01 U |
| Arsenic | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | 0.010 U | 0.01 U |
| Beryllium | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U | 0.020 U | 0.02 U |
| Cadmium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | **0.017** | 0.01 U | 0.010 U | 0.01 U |
| Chromium | -- | -- | 0.020 U | 0.02 U | -- | -- | 0.020 U | 0.02 U | -- | -- | **0.046** | 0.02 U | 0.020 U | 0.02 U |
| Copper | -- | -- | **0.022** | **0.052** | -- | -- | **0.024** | **0.027** | -- | -- | **2.3** | **2.9** | **0.077** | **0.025** |
| Lead | -- | -- | 0.010 U | 0.01 U | -- | -- | **0.023** | **0.012** | -- | -- | 0.010 U | 0.01 U | **0.012** | 0.01 U |
| Mercury | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.00020 U | -- | -- | 0.00020 U | 0.0002 U | 0.00020 U | 0.00020 U |
| Nickel | -- | -- | **0.28** | **0.21** | -- | -- | **0.11** | **0.1** | -- | -- | **3.4** | **0.98** | **1.7** | **0.12** |
| Selenium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | **0.011** | 0.010 U | 0.01 U |
| Silver | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | 0.010 U | 0.01 U |
| Thallium | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | -- | -- | 0.010 U | 0.01 U | 0.010 U | 0.01 U |
| Zinc | -- | -- | **8.0** | **6.6** | -- | -- | **1.1** | **1.4** | -- | -- | **34** | **25** | **1.5** | **1.1** |
| **Semivolatiles (µg/kg)** | | | | | | | | | | | | | | |
| **Method EPA 8270C** | | | | | | | | | | | | | | |
| Acenaphthene | -- | -- | 140 U | 49 U | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | 400 U | 72 U |
| Acenaphthylene | -- | -- | 140 U | 49 U | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | 400 U | 72 U |
| Anthracene | -- | -- | 140 U | 49 U | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | **430** J | 72 U |
| Benzo[a]anthracene | -- | -- | 140 U | 120 U | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | **3500** | **290** |
| Benzo[a]pyrene | -- | -- | 350 U | 240 U | -- | -- | 440 U | 1300 U | -- | -- | 1000 U | 310 U | **3000** | **290** |
| Benzo[b]fluoranthene | -- | -- | 350 U | 240 U | -- | -- | 440 U | 1300 U | -- | -- | 1000 U | 310 U | **3200** | **340** |
| Benzo[g,h,i]perylene | -- | -- | 350 U | 240 U | -- | -- | 440 U | 1300 U | -- | -- | 1000 U | 310 U | **1500** J | **230** |
| Benzo[k]fluoranthene | -- | -- | 350 U | 240 U | -- | -- | 440 U | 1300 U | -- | -- | 1000 U | 310 U | **2400** | **250** |
| Chrysene | -- | -- | **190** | **160** | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | **4000** | **430** |
| Dibenz(a,h)anthracene | -- | -- | 350 U | 240 U | -- | -- | 440 U | 1300 U | -- | -- | 1000 U | 310 U | 400 U | 180 U |
| Fluoranthene | -- | -- | 140 U | **95** | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | **7500** | **620** |
| Fluorene | -- | -- | 140 U | 49 U | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | 400 U | 72 U |
| Indeno[1,2,3-cd]pyrene | -- | -- | 350 U | 240 U | -- | -- | 440 U | 1300 U | -- | -- | 1000 U | 310 U | **2000** | **230** |
| Naphthalene | -- | -- | 140 U | 49 U | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | 400 U | 72 U |
| Phenanthrene | -- | -- | 140 U | **96** | -- | -- | 440 U | 530 U | -- | -- | 1000 U | 310 U | **2600** | **210** |
| Pyrene | -- | -- | **240** | **210** | -- | -- | 440 U | **600** | -- | -- | 1000 U | 310 U | **6700** | **660** |
| **Diesel-Range Petroleum Hydrocarbons (mg/kg)** | | | | | | | | | | | | | | |
| **Method NWTPH-Dx** | | | | | | | | | | | | | | |
| DRO | -- | -- | **1500** | **1100** | -- | -- | **9700** | **2500** | -- | -- | **14000** J | **5100** | **610** | **760** |
| RRO | -- | -- | **10000** | **8400** | -- | -- | **44000** | **17000** | -- | -- | **120000** J | **28000** | **5700** | **6300** |

**Notes:**

U = Indicates the compound was not detected at the reported concentration.
J = Indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
Bold = Detected compound
(a) New storm drain structure IDs assigned by PCC in June 2019
(b) Total PCBs is the sum of detected PCB Aroclors.
[1] = Due to equipment blockage, CB-Z was not included in composite.

**Abbreviations and Acroynms:**

DRO = diesel-range organics
EPA = U.S. Environmental Protection Agency
ID = identification
µg/L = micrograms per liter
mg/L = milligrams per liter
NA = not applicable
NWTPH = Northwest Total Petroleum Hydrocarbon
RRO = residual range organics
TCLP = Toxicity Characteristic Leaching Procedure

**Table 2**
**Stormwater Treatment**
**PCB Performance Summary**
**PCC Large Parts Campus**
**Portland, Oregon**

| Date<br>*Units Benchmarks* | Sample ID | Total PCBs (µg/L) 0.5 |
|---|---|---|
| **Effluent** | | |
| 10/12/17 7:45 | POC-1 | ND (0.098) |
| 12/19/17 15:40 | DP-001 | ND (0.098) |
| 2/28/18 14:10 | DP-001 | ND (0.0952) |
| 3/21/18 14:45 | ML-001 | ND (0.0943) |
| 11/21/18 12:27 | ML-001 | ND (0.0943) |
| 2/1/19 16:45 | ML-001 | ND (0.0971) |
| **Influent** | | |
| 12/19/17 16:15 | STS In | 0.139 |
| 2/28/18 14:40 | STS In | ND (0.125) |
| 3/21/18 13:55 | STS In | ND (0.111) |
| 11/21/18 12:45 | STS In | 0.884 |
| 2/1/19 16:30 | STS In | 0.136 |

**Notes:**
Effluent concentrations greater than the Permit benchmark value are shown in **bold red.**
Non-detect results are recorded as less than the reporting limit.

**Abbreviations and Acronyms:**
µg/L = micrograms per liter
mg/L = milligrams per liter
NPDES = National Pollutant Discharge Elimation System

**Table 3**
**Summary of Analyte Detection and Reporting Limits**
**PCC Large Parts Campus**
**Portland, Oregon**

| Analyte | Method | MDL | RL | Units |
|---|---|---|---|---|
| Polychlorinated Biphenyls | EPA 8082A | 5.00 | 10.0 | µg/kg |
| Antimony | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Arsenic | EPA 6020A (ICP-MS) | 0.500 | 1.00 | mg/kg |
| Beryllium | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Cadmium | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Chromium | EPA 6020A (ICP-MS) | 0.500 | 1.00 | mg/kg |
| Cobalt | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Copper | EPA 6020A (ICP-MS) | 0.500 | 1.00 | mg/kg |
| Lead | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Mercury | EPA 6020A (ICP-MS) | 0.0400 | 0.0800 | mg/kg |
| Nickel | EPA 6020A (ICP-MS) | 0.500 | 1.00 | mg/kg |
| Selenium | EPA 6020A (ICP-MS) | 0.500 | 1.00 | mg/kg |
| Silver | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Thallium | EPA 6020A (ICP-MS) | 0.100 | 0.200 | mg/kg |
| Zinc | EPA 6020A (ICP-MS) | 2.00 | 4.00 | mg/kg |

**Abbreviations and Acronyms:**

EPA = U.S. Environmental Protection Agency
ICP-MS = inductively coupled plasma-mass spectrometry
MDL = method detection limit
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
RL = reporting limit

**Table 4**
**Sample Containers, Storage Temperature,**
**Preservation, and Holding Times**
**PCC Large Parts Campus**
**Portland, Oregon**

| Laboratory Analyses | Analytical Method | Sample Container | Storage Temperature | Sample Preservation | Maximum Sample Holding Time |
|---|---|---|---|---|---|
| PCBs | EPA Method 8082A | 1 – 8-oz jar | Cool at 4°C | None | 365 days |
| Total Metals | EPA Method 6020A (ICP-MS) | 2 – 8-oz jar | Cool at 4°C | None | 28 days |

**Abbreviations and Acronyms:**

C = Celsius
EPA = U.S. Environmental Protection Agency
ICP-MS = inductively coupled plasma-mass spectrometry
PCBs = polychlorinated biphenyls