

2020 SW Fourth Ave, Suite 300  
Portland, Oregon 97201  
United States  
T +1.503.235.5000  
F +1.503.736.2000  
www.jacobs.com

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**Subject**      **Analysis of Outfall 18 Drainage Area Relative to Northwest Pipe**

**Attention**    Stephanie Heldt-Sheller, Northwest Pipe Company

**Date**          October 15, 2021

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Since Northwest Pipe Company (Northwest Pipe) submitted its first Remedial Investigation/Source Control Evaluation (RI/SCE) report over 15 years ago, the area of the Outfall 18/WR-123 drainage basin has changed several times due to source control measures and infrastructure modifications implemented by various users of the communal stormwater system. The current drainage basin is smaller with fewer connections to Outfall 18/WR-123 than its historical predecessors. This memorandum updates the proportion of the Outfall 18/WR-123 drainage basin associated with Northwest Pipe Company's Portland Facility as of January 2021.

CH2M HILL (now Jacobs) previously conducted this analysis based on site knowledge and review of historical information from the Burgard Industrial Park Storm Water System Assessment (Bridgewater Group, 2000), 1997 Stormwater Pollution Control Plan (SWPCP) for Northwest Container (Parsons, 1997), and, subsequently, the updated 2006 SWPCP for Northwest Container (LLKelly, Inc., 2006). The drainage area boundaries were digitized using ArcGIS software, version 9.2 and 10.7.1, published by ESRI, Inc. of Redlands California. Areas were calculated by the software using its polygon area calculation feature. The original analysis was conducted in December 2008 and updated in December 2010.

Jacobs updated the analysis in January 2021 with additional sources. The nature of the changes to the basin boundary made in 2021, compared to earlier analyses, are described as follows:

- Run-on from Time Oil Road near the PGE Rivergate North Substation was eliminated. CB-1 located on the east side of North Time Oil Road adjacent to the substation was historically connected to Outfall 18/WR-123. This catchbasin was permanently abandoned in 2019 as part of the source control measures associated with the north substation (PGE, 2020 and Advanced Remediation Technologies, Inc. and EvrenNorthwest Inc., 2018).
- Portions of Northwest Container, and larger portions of North Burgard Road and North Time Oil Road, historically drained to Outfall 18/WR-123. Run-on from Northwest Container and North Burgard Road were eliminated. North Burgard Road was reconstructed in 2014 by the City of Portland, eliminating run-on to the Outfall 18/WR-123 drainage basin (RCS, 2020). Improvements to the stormwater system on the Northwest Container property also eliminated run-on to the Outfall 18/WR-123 drainage basin (PBS, 2021).
- The basin boundary along the access road to Schnitzer Steel and North Terminal Road was modified based on the Outfall 18 basin boundary presented in *River Mile 3.5 East Remedial Design Sufficiency Assessment Report* (Floyd|Snider, 2020).

- The northwest extent of the basin boundary was modified based on the Outfall 18 basin boundary presented in both the *River Mile 3.5 East Remedial Design Sufficiency Assessment Report* (Floyd|Snider, 2020) and the draft *Source Control Evaluation Report* for Burgard Industrial Park (RCS, 2020).
- A portion of the runoff from Lots 7/8 was retained within the Outfall 18/WR-123 basin boundary. The southern portion of Lots 7/8 is unpaved. Stormwater either infiltrates into the ground surface or flows to a bio-infiltration planter (Floyd|Snider, 2020). While overflow from the bio-infiltration planter has not yet been observed, if it were to happen, the discharge would likely flow to the ditch along the west side of North Time Oil Road and potentially to the Outfall 18 basin.

A revised map including depictions of the prior interpretations of the Outfall 18 drainage basin is included as Figure 1.

The total acreage of the Outfall 18 drainage basin and the resulting percentage of the drainage basin area occupied by the Northwest Pipe Portland Plant is provided in Table 1.

Table 1. Comparison of Drainage Basin Analyses and Results of Current Analysis			
Analysis	Outfall 18/WR-123 Total Drainage Basin (Acres)	Percent of Drainage Basin Occupied by Northwest Pipe Portland Plant <sup>1</sup>	Percent of Drainage Basin Owned by Northwest Pipe <sup>2</sup>
December 2008	108.2	26.9%	24.0%
December 2010	109.7	26.6%	23.7%
January 2021	86.8	33.6%	29.9%
Notes:			
<sup>1</sup> The Northwest Pipe Portland Plant consists of 29.15 acres of owned and leased property.			
<sup>2</sup> Northwest Pipe owns 25.96 acres of the property within the Outfall 18/WR-123 drainage basin.			

The updated 2021 analysis represents the current Outfall 18/WR-123 drainage basin. The total drainage area has decreased and the percentage of the basin owned and occupied by Northwest Pipe has increased over time due to changes in drainage patterns and stormwater infrastructure in the Outfall 18/WR-123 drainage basin.

**References**

Advanced Remediation Technologies, Inc. and EvrenNorthwest Inc. 2018. Storm Water Operation and Maintenance Plan for NWC/Time Oil & N Burgard Way (2N1W35AC Tax Lot 700) Portland, OR 97203. October 8.

Bridgewater Group, 2000, Storm Water System Assessment, Burgard Industrial Park 12005 North Burgard Road Portland, OR, December 21.

LLKelly, Inc., 2006, Stormwater Pollution Control Plan, Northwest Container Services, Inc. Portland, OR November 16.

Parsons, 1997, Stormwater Pollution Control Plan, Northwest Container Services, Inc. Portland, OR July.

PBS Engineering and Environmental Inc. 2018. Stormwater Pollution Control Plan, Northwest Container Services, Inc. August 31.

Rieke Consulting Services, LLC. (RCS). 2020. Source Control Evaluation Report. Burgard Industrial Park, Portland, Oregon. Draft. Prepared for Schnitzer Steel Industries, Inc. April.

Floyd|Snider. 2020. River Mile 3.5 East Remedial Design Sufficiency Assessment Report. Draft. Prepared for Schnitzer Steel Industries, Inc. and MMGL LLC. September.

Portland General Electric (PGE). 2020. Stormwater Source Control Evaluation Report, Rivergate Substations. Rivergate North and South Substations. January.

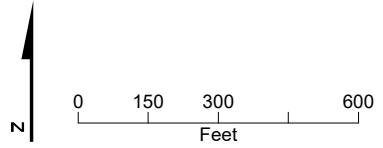
**Figure**



**LEGEND**

- Northwest Pipe Stormwater Treatment System
- Outfall:  
*Schnitzer ID*
- Revised Outfall 18 Drainage (86.8 acres) (2021)
- Drainage Area Estimate (109.7 acres) (December 2010)
- Drainage Area Estimate (108.24 acres) (December 2008)
- Northwest Pipe Site Boundary
- Approximate Northwest Pipe Stormwater Line
- Assumed Burgard Industrial Park Stormwater Lines

Drainage Basin Boundaries:  
 Bridgewater Group, 2000; Floyd|Snider, 2020;  
 LL Kelly, Inc., 2006; Parsons, 1997; PGE, 2020;  
 RCS, 2020; PBS Engineering and Environmental  
 Inc., 2021; Advanced Remediation Technologies,  
 Inc and EvrenNorthwest Inc., 2018  
 Northwest Pipe Company Stormlines:  
 CH2M HILL, 2010; Northwest Pipe Company, 2021



**Figure 1. Outfall 18/WR-123 Drainage Basin**  
 Northwest Pipe Company  
 Portland, Oregon

Aerial Imagery Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community