COLUMBIA SLOUGH BASIN STORMWATER TREATMENT PROJECTS WORK PLAN

May 2024

Interim DEQ Approval: October 30, 2023

Workplan Amendment Date: May 30, 2024

Prepared for

Oregon Department of Environmental Quality

Prepared by

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
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Abbreviations and Acronyms

ADA	Americans with Disabilities Act
AOPC	area of potential concern
BES	City of Portland Bureau of Environmental Services
BMP	best management practice
CAD	computer aided design
CIP	Capital Improvement Program
City	City of Portland
COPC	contaminant of potential concern
DC	district collector street
DEQ	Oregon Department of Environmental Quality
MCT	major city traffic street
MSTT	manufactured stormwater treatment technology
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
PCBs	polychlorinated biphenyls
P.E.	professional engineer
PBOT	Portland Bureau of Transportation
PMO	Project Management Office
R.G.	registered geologist
ROD	Record of Decision
ROW	right-of-way
RT	regional trafficway
RTMCT	regional trafficway major City traffic street
SWMM	Stormwater Management Manual
TMDL	total maximum daily loads
TSS	total suspended solids
UIC	underground injection control
Work Plan	Stormwater Treatment Projects Work Plan

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SECTION 1

Schedule and Objective

This *Columbia Slough Basin Stormwater Treatment Projects Work Plan* (Work Plan) was prepared by the City of Portland (City) in conformance with the Consent Judgment Statement of Work. This work plan describes the design and construction of stormwater treatment for selected City owned rights-of-way (ROWs) in 15 identified outfall basins.

The objective of implementing stormwater treatment in selected City outfall basins is to reduce the discharge of pollutants to Columbia Slough from City-owned ROW, including to meet the intent of the Oregon Department of Environmental Quality (DEQ) 2005 Columbia Slough Sediment Record of Decision (ROD) (DEQ, 2005).

All work completed under this Consent Judgment shall proceed in accordance with the following schedule:

Submittals	**Schedule**
Semi-Annual Progress Reports	To DEQ on or before the tenth working day of each quarter (April 10, October 10)
Stormwater Treatment Projects Work Plan	
Stormwater Treatment Projects Work Plan	The Interim Work Plan was approved by DEQ on October 30, 2023 and becomes final upon execution of the Consent Judgment. The Interim Plan noted that if the Scope of Work for this task was modified pursuant to the Consent Judgment's public comment or judicial process, then the City would submit an amendment to the Workplan to DEQ for approval within 45 days of the entry of the Consent Judgment to incorporate the relevant changes. The Consent Judgment was entered on May 8th, 2024, and the changes to the Interim Work Plan are provided in this final document.
Project Design, Construction and Completion	
Design and construction of stormwater treatment systems will be phased to accommodate the scale, complexities, and significant costs of these actions but will be substantially completed within 15 years of the Consent Judgment.	

SECTION 2

City Outfall Basins Identified for Stormwater Treatment

The City will treat stormwater from City-owned ROWs in 15 identified outfall basins, including 56C, 57, 58, 59, 60, 61, 61A (a.k.a., CS-253), 62, 62A, 63, 64, 65, 65A, 73A, and CS-614. The locations of the identified basins are shown in Figures 1 and 2.

2.1 City Right-of-Way Areas to Be Treated

The City will identify and select City-owned roads within the identified outfall basins for treatment to reduce potential pollutants from entering the Slough that have high-traffic volumes, serve commercial/industrial land use, or for other reasons, may have elevated pollutant loads (BES and DEQ, 2021). The City will consider the following factors in selecting City-owned ROW for treatment during the stormwater treatment planning and design process:

- Traffic volume and major road classifications (e.g., regional trafficway [RT], regional trafficway major City traffic street [RTMCT], major city traffic street [MCT], district collector street [DC])
- Street surface (e.g., paved with curb, paved without curb, unpaved)
- Streets used as freight corridors
- Streets serving properties zoned for industrial land uses
- Presence of City BES- or DEQ-identified upland sources (e.g., DEQ cleanup sites or National Pollutant Discharge Elimination System [NPDES] permitted facilities) or other reasons the basin may have elevated pollutant loads
- Stormwater contaminant transport pathways (overland flow, vehicular track out, piped stormwater laterals) within the basin
- Status of upland site source control
- Potential contributions to City stormwater treatment system via overland flow from upland properties
- Protection of existing capital investments and system reliability
- Protection from recontamination to in-water DEQ defined sediment areas of potential concern (AOPCs)[1]
- Potential pollutant reduction
- Cost and cost reasonableness
- Implementability

[1] DEQ defined sediment areas of concern are listed in Section 2.2.2 of the *Columbia Slough Outfall Investigation and Basin Closure Scope of Work Plan* (BES, 2024).

2.2 Stormwater Treatment Requirements

The City will treat stormwater runoff from selected City-owned ROWs using green streets, planters, underground filter vaults or manufactured stormwater treatment technologies (MSTTs), underground injection control (UIC) facilities or other appropriate stormwater treatment facilities in accordance with the City's *Stormwater Management Manual* (SWMM) (BES, 2020a). Additionally, the City may use emerging, proven stormwater treatment technologies (e.g., pervious pavement) following DEQ approval. The City's stormwater management requirements prioritize onsite infiltration and the use of vegetated facilities.

The SWMM provides facility-specific design guidelines and requirements for the following public stormwater facilities: vegetated surface facilities (i.e., green streets), sumps, MSTTS, permeable pavement, tree credits, filter strips, and structured detention. BES maintains a list of approved MSTTs) on the BES SWMM website.[2] The MSTTs on the list have been reviewed and approved by BES to meet the water quality treatment standards of the SWMM when properly maintained. Projects proposing the use of MSTTs to meet SWMM water quality requirements will select devices on the list and also meet BES' conditions of use, including the sizing requirements. In limited situations, BES may allow the use of MSTTs that are not on the approved list.

The City will design and construct stormwater treatment systems that meet City requirements. Stormwater facilities will be designed to meet the City's *Sewer and Drainage Facilities Design Manual* (BES, 2020b) and the SWMM (BES, 2020a). A summary of design requirements (from Table 1-2 of BES, 2020a) is provided on the next page.

[2] https://www.portland.gov/bes/stormwater/swmm#toc-manufactured-stormwater-treatment-technologies

Summary[1] of Infiltration and Discharge Hierarchy Stormwater Management Requirements[2, 3]

Full Onsite Infiltration

Fully infiltrate the 10-year design storm.

Offsite Discharge to the Separated Stormwater System[4]

Pollution reduction required:

- Achieve 70% removal of total suspended solids (TSS) from the runoff from 90% of the average annual rainfall (1.61 inches over 24 hours 70% TSS removal from the runoff resulting from 90% of the average annual rainfall.)
- In watersheds for which total maximum daily loads (TMDLs) have been established or that are on DEQ's 303(d) list of impaired waters, stormwater management facilities should be capable of reducing the TMDL defined pollutant(s) of concern, as approved by the City BES. TMDL defined pollutants of concern for Columbia Slough include: lead, mercury, phosphorous, dioxins, polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane/ dichlorodiphenyldichloroethylene, and dieldrin.

Flow control required:

- For discharge to surface water bodies directly or indirectly (such as via a piped system), limit post-development peak runoff rates to pre-development rates for the one-half the 2-year event and for the 5-, 10-, and 25-year events.
- For discharge to storm-only systems that drain to large water bodies including the Willamette, Columbia Slough and Columbia River when there is a system need, limit the post-development peak runoff rates to pre-development rates for the 2-, 5-, and 10-year events.

The proposed outfall treatment projects may be exempt from the flow control requirements of the SWMM. Flow control exemptions will be granted only after review of applicable site, system and discharge characteristics.

Notes:

1. Table extracted from City of Portland 2020 Stormwater Management Manual (BES, 2020a).
2. All storm events are 24-hour events.
3. Unless otherwise exempt.
4. Vegetated surface facilities in the right-of-way where ponding is limited to 9 inches or less are exempt from the 25-year flow control requirement.

SECTION 3

Upland Source Control Actions in Selected City Outfall Basins

This section describes upland source control actions that the City will perform to support the planning, engineering design, and construction of stormwater treatment facilities in the identified City outfall basins.

The City will identify current ongoing significant pollutant sources in the basins identified for ROWs stormwater treatment in conformance with the process described in the *Columbia Slough Outfall Investigation and Basin Closure Work Plan* (BES, 2024) prepared in conformance with the Consent Judgment. The goal of upland site identification is to locate and identify and refer ongoing significant pollutant sources to the appropriate regulatory program to control pollutants at the source (e.g., upland third party property stormwater, tracking) before they enter the City's storm system.

The City will prioritize source identification and source investigations in outfall basins (1) in proximity to DEQ defined AOPCs (BES, 2024) and (2) within stormwater basins where City Capital Improvement Program (CIP) funds have been approved for construction of stormwater treatment facilities.

An objective of upland source identification is to obtain written DEQ approval that basin sources are sufficiently identified, and potential ongoing significant sources are in or have been referred to the appropriate regulatory program to support basin closure. Currently, available information about upland sources is presented in the *Columbia Slough Stormwater Basin Atlas* (BES and GSI, 2023). The City will prioritize site identification in basins with planned stormwater treatment to obtain written DEQ approval before the City completes final stormwater treatment system design documents and initiates system construction. The City will coordinate basin visits with DEQ Cleanup Program staff to perform a sidewalk reconnaissance of potential significant upland sources (i.e., observe current site activities, general housekeeping, trackout, spills, etc.) that may need to be referred to another regulatory program for additional source control. The City will submit appropriate updated information to document source identification and referrals are complete in accordance with the *Columbia Slough Outfall Investigation and Basin Closure Work Plan* (BES, 2024).

SECTION 4

Planning and Engineering Design of Basin Right-of-Way Stormwater Treatment Systems

Development of a feasible and cost-reasonable plan for the treatment of stormwater runoff from City-owned ROWs will be accomplished in two broad phases, planning and engineering design, as described below.

4.1 Planning

BES's Integrated Planning Group will identify stormwater treatment priorities and opportunities throughout the identified City basin, as well as develop alternatives to treat selected City-owned ROWs. The planning effort will result in recommendations for comprehensive, integrated solutions to reduce pollutant loading to Columbia Slough sediment to improve overall watershed health and prevent recontamination of slough sediments.

4.2 Engineering

BES's Engineering Group will be responsible for designing and constructing stormwater facilities that treat runoff from selected public roadways within the identified outfalls.

4.2.1 Treatment System Design Process

The Engineering Group is responsible for the preparation, review and approval of the basin treatment system engineering design drawings and specifications to ensure SWMM requirements and City design standards[3] requirements are met. Key engineering tasks include:

- Project Management: Manage resources for timely delivery, to ensure project quality, to develop and encourage an effective project team, and to report project progress.
- Field & Research Activities: Perform or review appropriate investigations of existing field/site conditions before beginning the design process. These investigations will be basin specific and may include:
    - Field surveys to document location and elevation of City storm assets.
    - Phase I Environmental Site Assessment report for the project area to identify the potential presence of contaminated media or areas of concern.
    - Review of Upland Source Identification and Assessment(s) documentation (see Section 3). Stormwater pollutants in the project area(s) may be discharged into the City stormwater system from business practices (industrial, manufacturing, recycling, etc.) occurring on third party sites. BES source control staff will be

[3] https://www.portland.gov/publicworks/public-works/manuals-and-standards

engaged to prepare an assessment of potential upland sources within the project area(s). This assessment will identify pollutants of concern within the project area(s), potential or likely sources of those pollutants and provide recommendations to the project team for treating stormwater runoff from the project area(s) in a manner that addresses significant upland pollutants that may differ from those typically associated with public roadways. The BES Columbia Slough Program will coordinate early source identification process with DEQ (see Section 3) including joint basin reconnaissance of selected areas and potential upland sources. This information will be used to inform the Engineering project team during selection of the type and level of treatment provided within the project area(s).

- Geotechnical Investigations to support system design, seismic resiliency, and local infiltration rates.

- Public Outreach: Conduct property owner outreach in support of the field and research activities, and to obtain input on green infrastructure locations, need for traffic slowing, etc.
- Design Process: The design process will follow the BES typical 30%, 60%, 90% and Final Design process with review periods following each milestone.

  ***30% Design*:** The 30% Design process is intended to define the components required for construction of the infrastructure including: confirming the planned infrastructure facility size, location and number, confirming and locating the existing infrastructure and utility conflicts, considering long-term operation and maintenance requirements and impacts to City budgets, and identifying and framing big-picture decisions that influence project design, cost or implementation. Key elements include:

  - 30% Construction Plans – Develop a set of preliminary construction drawings that include a cover sheet, index, general notes, grading, temporary and permanent erosion control, staging and access to the sites.
  - 30% Construction Cost Estimates – Develop a 30% level construction cost estimate that reflects the 30% level design.
  - Permits – Determine what, if any, permits are required and from which agency they will have to be acquired.
  - Portland Bureau of Transportation (PBOT) Coordination – Since many of the project elements are located in the ROW, BES will conduct extensive coordination with PBOT.
  - Property Acquisition – Based on the 30% Design, BES will define potential private property acquisition and easement needs. Coordination with the PBOT ROW group will begin.
  - Public Outreach – Begin implementation of the public involvement plan to support the design phase as well as begin educating the property owners about project goals. Assess public awareness and determine effective means to communicate with the public.

  DEQ Review and Approval of 30% Design: The City's Columbia Slough Sediment Program will provide updates to DEQ on each project on a regular basis through the Semiannual Status Reports (see Section 4.2.3), meetings or emails during the

development of the 30% Design documents to facilitate a timely review. In the event the City adopts an expedited CIP project delivery model, DEQ's review and approval may occur at the 60% Design or based on other mutually agreed upon documents.

DEQ will strive to review the design documents within the City's typical review schedule of 15 to 20 business days and provide written comments for consideration and incorporation into the 60% Design. The City will provide a written response to DEQ comments within 15 business days for each system design.

60% Design: The 60% Design process is a refinement of the 30% Design level of deliverables. The 60% Design process begins with incorporating design review comments and comments received during the City's Streamlining process meeting. The culmination of activities within this task is 60% Design documents and the initial notification of utilities.

90% Design: **Objective –** The 90% Design process is a refinement of the 60% Design level of deliverables. The 90% Design process is a continuation of refinement of the design incorporating comments received from the 60% Design review. In addition to refining the design elements, the erosion control plan will be developed as part of this task.

Final Design: The Final Design process will incorporate all of the remaining design comments into the construction documents. The Final Design report will be prepared based on the standards outlined in the CIP Implementation Manual, Bid Books prepared, and the final documents routed for signatures.

Advertise for Bid: This task includes the work of routing final documents for signature, making last minute changes as directed, printing the required number of contract books, and scheduling advertising with Purchasing.

Construction Period: This task includes providing technical support to the Construction Services group throughout the construction period.

BES's Engineering Design Team will prepare internal project work plans which will include a target design and construction schedule. An example schedule is shown below:

Phase	Timeline	Activities/Milestones
30% Design	August 2014 – February 2015	Field survey, environmental sampling/characterization, geotechnical, upland source assessment, public outreach and involvement and 30% construction documents. Gather upland source assessment data if needed. Obtain DEQ review for approval.
60% Design	February 2015 – July 2015	Finalize upland source assessment, environmental assessment and geotechnical analysis, investigate permitting requirements, continue public outreach and involvement, acquire property and easements and prepare 60% construction documents.

Phase	Timeline	Activities/Milestones
90% Design	July 2015 – November 2015	Respond to 60% Design review comments, prepare 90% construction documents and conduct public outreach and involvement.
Final Design	December 2015 – April 2016	Respond to 90% Design review comments, prepare final construction documents, prepare Final Design Report, and conduct public outreach.
Construction Bidding	April 2016 –August 2016	Prepare construction bid documents, complete procurement process, award contract and notice to proceed.
Construction	September 2016 – January 2017	Mobilization, excavation, off-haul, disposal and erosion control.
Closeout	January 2017 – March 2017	Closeout project and prepare Construction Report.

Concurrent with the City's planning and design efforts, the following work may be performed by the City to meet internal policies and directives concurrent with the development of recommended stormwater solutions. While this work will improve watershed health, this work is not subject to the terms of this Consent Judgment:

- Obtaining meaningful community input of proposed actions
- Addressing equity implications of the stormwater and ROW work
- Identifying and implementing partnership opportunities with other City Bureaus for community improvements (e.g., Americans with Disabilities Act [ADA] accessible sidewalk ramps, use of green infrastructure for traffic calming, sidewalk improvements, creation of local improvement districts to improve local neighborhoods)
- Identifying and implementing watershed restoration opportunities in the Columbia Slough. Projects will be selected and implemented by the City that are feasible, readily implementable, and provide a direct benefit to one or more of the following:
    - Local communities adversely affected by contamination in the Slough (neighborhood trees, improving access to Slough or other green/open spaces, etc.)
    - Slough riparian areas (tree planting, invasive species control, etc.)
    - Wetland restoration (introduction of culturally significant plants, invasive species control, etc.)
    - Land acquisition
    - Other

4.2.2 City Project Team and Roles

The project team will be composed of the following primary team members from City BES. Additional BES staff will contribute to the project during various phases of pre-design and design.

- Project Manager. A project manager may be assigned by the BES Project Management Office (PMO) to facilitate project development, tracking, scheduling, budgeting, and interagency coordination.
- Design Manager/Engineer. An Oregon licensed professional engineer (P.E.) will provide project management and design services throughout the project life.
- Environmental Specialist (Watershed Operation and Management) will provide input on project impacts or potential improvement to the management of the Columbia Slough watershed.
- Environmental Regulatory Coordinator will provide guidance regarding project direction and project outcomes needed to meet requirements of the ROD and this Consent Judgment. This person will also participate in identifying and pursuing policy level decisions needed from BES managers.
- Community Engagement staff will conduct Public Involvement services, as necessary.
- Environmental Assessor. An Oregon licensed engineer (P.E.) or registered geologist (R.G.) from BES' Coordinated Site Assessment team will perform or oversee the required environmental assessments.
- Upland source assessment will be conducted in collaboration with the Industrial Stormwater Permitting group, if needed.
- Maintenance Engineering staff will provide input on the design, location, and long-term maintenance and worker safety requirements for the selection of stormwater treatment facilities.
- PBOT Survey will provide survey coordination and oversight of the field crew.
- BES Watershed Revegetation Program will provide revegetation design / management and technical review.
- BES Engineering Services – Construction staff will provide construction management services and technical review of project design.
- BES Engineering staff will provide computer aided design (CAD) drafting and construction plan production.
- Senior BES Engineering staff will provide peer review.

4.2.3 Oregon Department of Environmental Quality Oversight

The City will inform DEQ regarding the status of planning, design, and construction for each identified basin on a semi-annual basis (see Section 6.1). A semi-annual status report will be prepared (see Section 6.1) and submitted to DEQ in April and October of each year.

The reports will provide an overview of the planned ROW treatment at major design milestones (planning milestones, 30%, 60%, 90%) of treatment system designs. BES will be responsible for approval of the design, construction, and acceptance of constructed stormwater facilities.

SECTION 5

System Operations and Maintenance Plan

The City Engineering Group will prepare a basin-specific Operations and Maintenance (O&M) Plan for the ROW stormwater treatment facilities installed in general conformance with recommended practices in the SWMM (BES, 2020a). This plan will include the following, as appropriate:

- Description and photos of the stormwater treatment system.
- Clear maintenance expectations, activities, and inspection and maintenance schedules designed to allow treatment systems/components ability to function as designed.
- Identify the BES group responsible for system inspections and maintenance and the type of expertise that will be needed for distinct O&M activities.
- The anticipated budget for long-term O&M activities.
- Inspection and maintenance procedures (e.g., an example O&M inspection checklist).
- Maintenance documentation procedures.

This plan will be provided to BES Stormwater Operations and Maintenance team to ensure proper maintenance and that the stormwater facility functions as intended and reduces pollutant discharges to the Slough. The City will enter the maintenance schedule into the BES Hansen database (or equivalent asset management system) to trigger maintenance activities.

The ROW stormwater treatment facilities installed in 15 priority basins will be selected from BES approved technologies documented to meet SWMM requirements[4] or best management practices (BMPs) or technologies with well-documented records for pollutant removal[5],[6],[7]. Given the planned stormwater treatment facilities are being designed and will be maintained to meet City SWMM standards and removal of total suspended solids, performance or effectiveness monitoring will not be performed based on consideration of, but not limited to the following factors:

- Presence of contaminants of potential concern (COPC) sources within the basin at various phases of source control.
- Only selected City ROWs will be treated.

[4] https://www.portland.gov/bes/stormwater/swmm#toc-manufactured-stormwater-treatment-technologies

[5] International Stormwater BMP Database 2020 Performance Summary Statistics: https://www.waterrf.org/system/files/resource/2020-11/DRPT-4968_0.pdf

[6] Stormwater Best Management Practices in an Ultra-Urban Setting: Selection and Monitoring. U.S. Department of Transportation- Federal Highway Administration. Environmental Tool. https://www.environment.fhwa.dot.gov/env_topics/water/ultraurban_bmp_rpt/uubmp6p1.aspx

[7] Stormwater Best Management Practices (BMP) Performance Analysis. Revised Document: March 2010. Prepared for: United States Environmental Protection Agency – Region 1. Prepared by: Tetra Tech, Inc.

- Variability in COPC concentrations in stormwater grab samples can vary depending on the frequency and magnitude of storms and the timing of sample collection relative to the onset of flow (DEQ, 2010).
- As detailed in DEQ's 2020 Portland Harbor Stormwater Strategy Update report (DEQ, 2020), multiple studies have demonstrated reductions in concentrations of multiple hydrophobic contaminants (e.g., PCBs, pesticides, etc.) in association with TSS reductions. TSS comprises particles that are too small or light to settle out from stormwater under high flow conditions. In many ways, TSS is a surrogate measure for water quality; therefore, the percentage of TSS removal from stormwater is an accepted standard to measure pollution reduction (BES, 2020a).
- The City expects the TSS reductions achieved by City ROW treatment systems will be amplified by on-going implementation of NPDES 1200Z permits, upland source control activities in the selected basins, and implementation of City Code as redevelopment occurs throughout the watershed. These reductions will also reflect reductions in concentrations and loads of hydrophobic contaminant concentrations, including the focused contaminants of potential concern (e.g., metals, semi-volatile organic compounds, PCBs, pesticides) for Columbia Slough sediment.

SECTION 6

Project Deliverables

6.1 Semi-Annual Reports

The City will prepare and submit quarterly status reports to DEQ regarding the status of planning, design, and construction for each identified basin. The brief status report will include, as appropriate:

- Basin Planning/Design Phase
- Major roadways to be treated
- Types and numbers of stormwater treatment facilities
- Design issues
- Required permits
- Need for property acquisition or easements
- Public concerns

6.2 Final Project Report and As-Built Drawings

The City will prepare a Final Project Report and as-built drawings for the stormwater treatment constructed in each outfall basin to meet internal BES requirements. A copy of this report will be provided to DEQ to demonstrate project completion. As-built drawings will be publicly available through https://www.portlandmaps.com/.

SECTION 7

References

BES. 2020a. *Stormwater Management Manual*. Prepared by the City of Portland, by and through its Bureau of Environmental Services. December 2020. Available at https://www.portland.gov/bes/stormwater/swmm.

BES. 2020b. *Sewer and Drainage Facilities Design Manual*. Available at https://www.portland.gov/bes/documents/sewer-and-drainage-facilities-design-manual/download.

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DEQ. 2005. *Record of Decision, Remedial Action Approach for Columbia Slough Sediment, Portland, Oregon*. Prepared by the Oregon Department of Environmental Quality, Northwest Region Office. July 2005.

DEQ. 2010. *Guidance for Evaluating the Stormwater Pathway at Upland Sites.* Prepared by Oregon Department of Environmental Quality, Environmental Cleanup Program. January 2009 (updated October 2010). Links updated in July 2017.

DEQ. 2020. *Portland Harbor Stormwater Strategy Update – Status of Recontamination Prevention.* Prepared by: Oregon Department of Environmental Quality – Northwest Region – Cleanup. Submitted to: US Environmental Protection Agency - Region 10 – CERCLA. March 2020.

Figures

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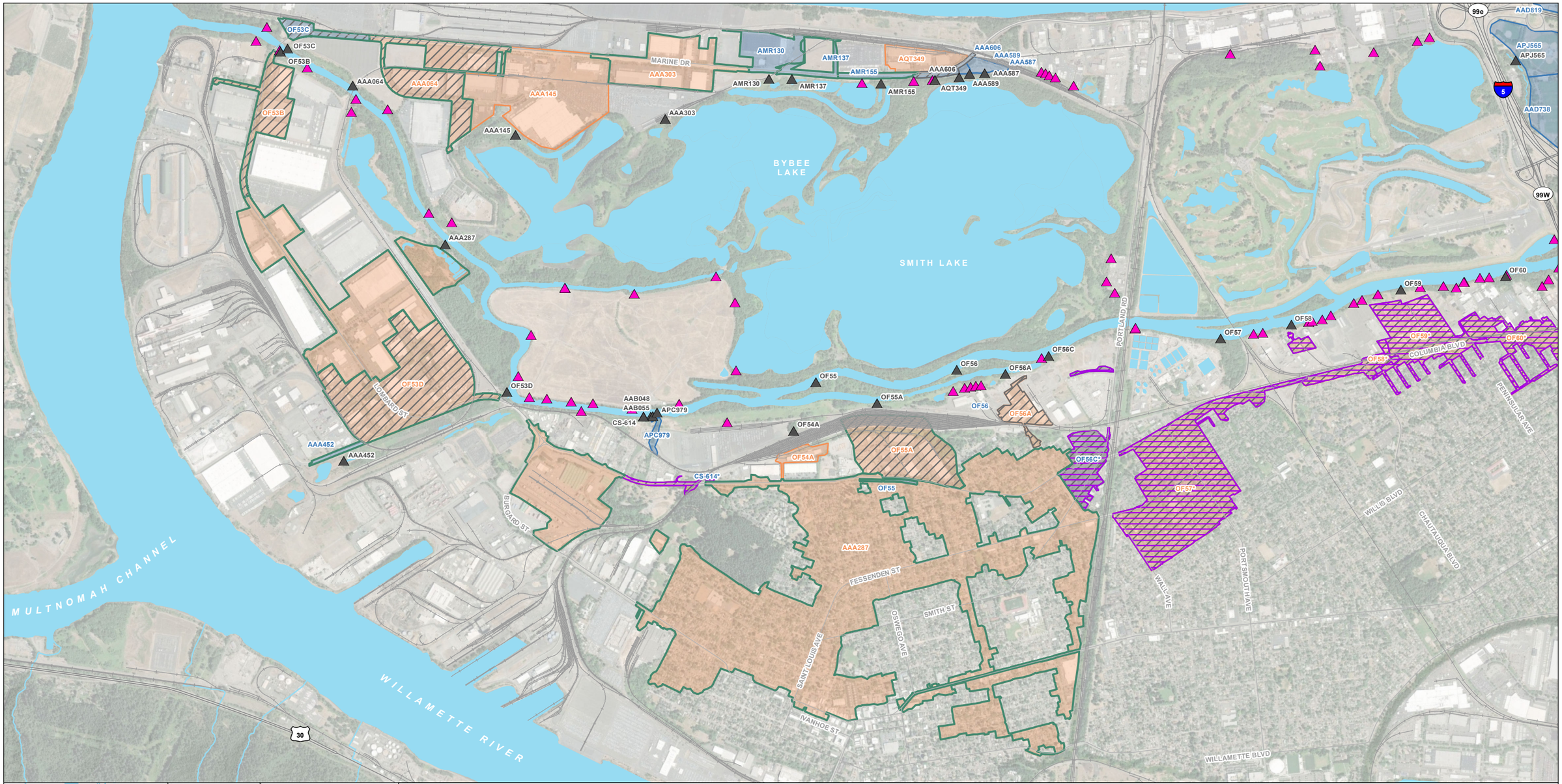

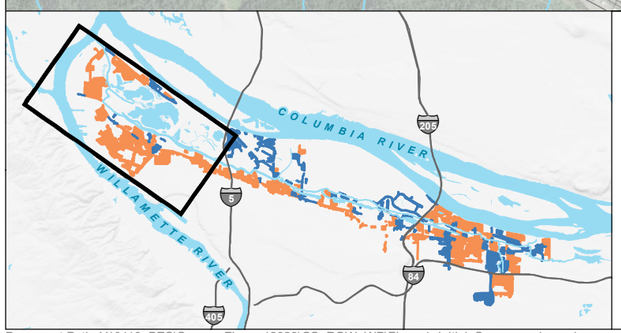

LEGEND

- Outfall, City
- Outfall, Non-City
- ROW Treatment
- Treated Basin
- Sampled Basin
- No Source Identified
- Known or Potential Source Present

All Other Features

- Railroad
- Major Road
- Watercourse
- Waterbody

NOTES

Basin names with asterisk are proposed for treatment

Treated Basin indicates current City installed stormwater water quality treatment of selected public rights-of-way.
Sampled Basin indicates stormwater or stormwater solids samples have been collected by the City within the stormwater outfall basin between FY2008 and FY2023.
No Source Identified indicates the stormwater outfall basin does not contain either DEQ ECSI site(s) or NPDES 1200z permitted site(s).
Known or Potential Source Present indicates stormwater outfall basin contains either DEQ ECSI site(s) and/or NPDES 1200z permitted site(s).
ROW Treatment indicates basins the City will construct in accordance with this Work Plan and the Consent Judgment.

FIGURE 1

City Stormwater Outfall Basin Overview - Lower Slough

2024 Columbia Slough Basin
Stormwater Treatment Projects Work Plan

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Feet

GSI Water Solutions, Inc.

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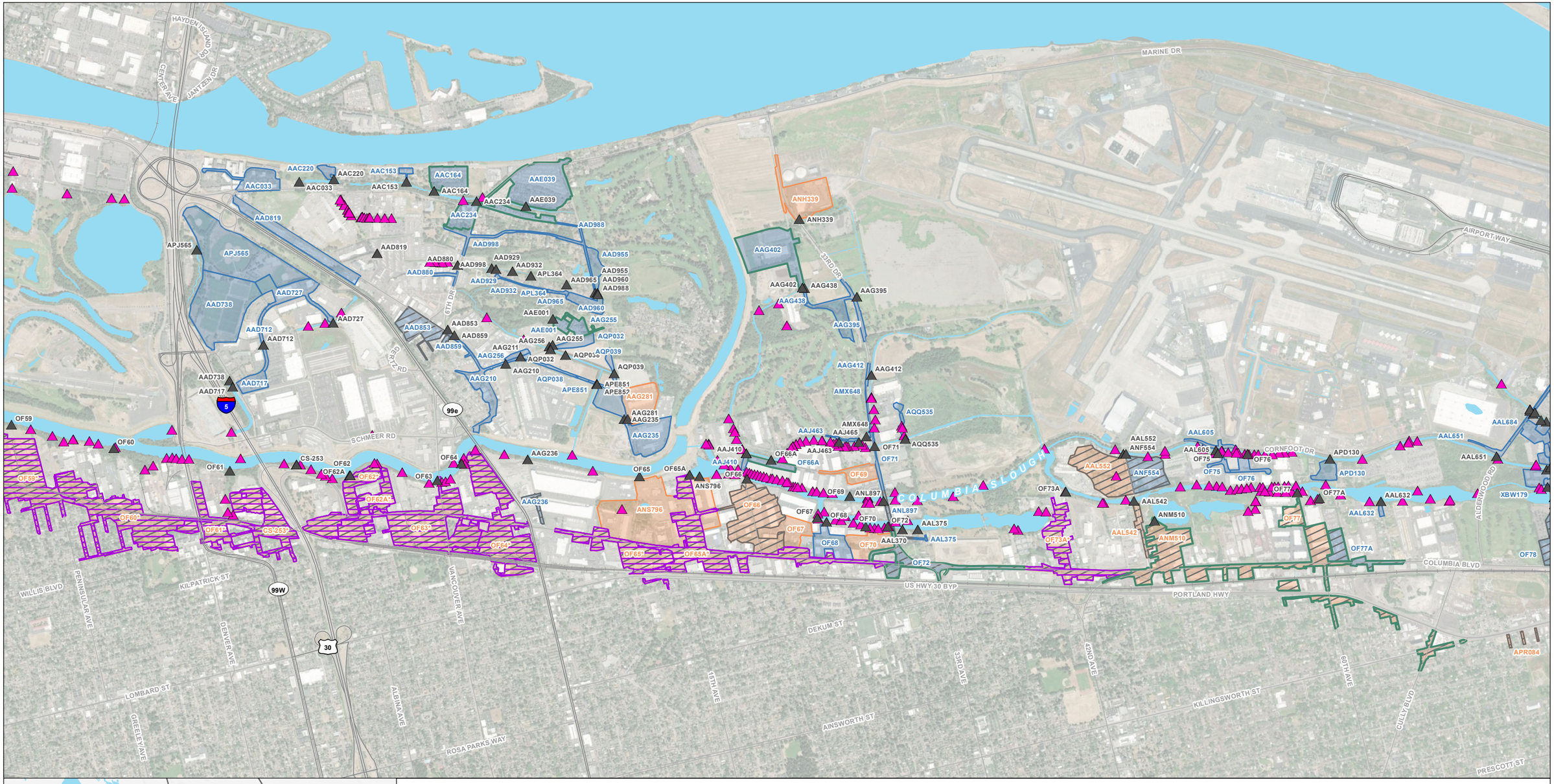

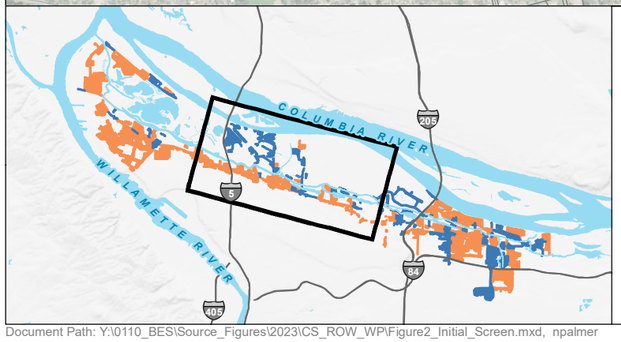

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ROW Treatment indicates basins the City will construct in accordance with this Work Plan and the Consent Judgment.

FIGURE 2

City Stormwater Outfall Basin Overview - Lower to Middle Slough

2024 Columbia Slough Basin
Stormwater Treatment Projects Work Plan

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0 1,000 2,000 3,000
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GSI Water Solutions, Inc.

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