



# Oregon

Kate Brown, Governor

Department of Environmental Quality

Northwest Region

700 NE Multnomah Street, Suite 600

Portland, OR 97232

(503) 229-6900

FAX (503) 229-6945

TTY 711

April 15, 2022

*via electronic delivery*

Dwight Leisle, P.E.  
Port of Portland  
7200 NE Airport Way  
Portland, OR 97218

RE: Draft Remedial Design Investigation Work Plan  
Willamette Cove Uplands  
ECSI# 2066

Dear Dwight:

DEQ staff reviewed the *Draft Remedial Design Investigation Work Plan, Willamette Cove Upland Facility* ("site") prepared by Apex on behalf of the Port of Portland (Port) and dated February 23, 2021. The Willamette Cove property is situated on the east bank of the Willamette River between River Miles 6 and 7. The approximate 19-acre site is comprised of the upland area, or Uplands, located above top of riverbank (or TOB) of the Willamette Cove property. USEPA is lead agency for cleanup of the adjacent Willamette River and sediment, and the Willamette Cove riverbank (below TOB). DEQ's March 2021 Record of Decision (ROD) documents the selected a remedial action to address soil contamination in the Uplands and corresponding site-specific remedial action objectives (RAOs) to achieve protectiveness of human health, ecological receptors, and beneficial uses. The selected remedial action requires a pre-remedial design investigation to support remedial design/remedial action (RD/RA) and residual risk assessment of the constructed remedy, both which are of critical importance for this project. The Willamette Cove property under Metro ownership will be redeveloped as a nature area park.

DEQ met with the Port of Portland and Metro on several occasions to develop a comprehensive approach to remedial design sampling. The sampling strategy is founded on strengthening statistical confidence and data reliability (i.e., reduce uncertainty) by using a uniform systematic approach comprised of incremental sampling methods (ISM) applied across the Uplands, smaller spatial scale ISM decision units of approximately 0.5 acres, improved resolution of the vertical profile, and analytical testing for the full suite of contaminants of concern for each sample. To this end, the scope of the upland Remedial Design Investigation Work Plan (RDI WP) planned for implementation this Spring-Summer 2022 is significant and will provide a high-quality robust dataset. DEQ has the following General and Specific comments on the draft RDI WP.

## General Comments

1. Decision Unit size and configuration. DEQ recommends modest modification to the decision units (DUs) to more closely adhere to the recommend 0.5-acre size and a more consistent configuration. Specific considerations are provided below regarding DU placement to follow historical and current features such as roads, trails, soil piles, and topography.

2. Increment Design. Following agreement on DU design, maps with increment design should be prepared for review to ensure the subsamples are systematic, and that DU replicate placements are appropriate and represent independent field samples.
3. Sampling in relation to irregularities in site topography. Two topographic features of concern are noted in relation to DU sampling: 1) the presence of large soil piles, berms and hummocks; and 2) low-lying areas, both of which add a dimension of complexity/uncertainty to proposed sampling. Please identify these features and discuss how sampling will be modified (or not) to address these features.
4. Assignment of COCs on Local versus Broad Scale basis (Section 3.3.1). DEQ believes that this discussion is premature, has prompted some confusion, and should await receipt and review of the results of the comprehensive ISM effort. We recommend removal of this section or note that it has not been approved by DEQ.
5. Potential need for deeper sampling. Sampling below 3 feet below ground surface (ft bgs) is not contemplated in this sampling effort. If significant contamination (including hot spots) is detected in samples from the 2 to 3 ft bgs range, deeper sampling may be necessary in a follow-up RD investigation effort. This matter can be discussed after receipt and review of sampling results. As noted in previous correspondence, it is DEQ's expectation that the constructed remedy and corresponding exposure unit (i.e., 0-3 ft bgs) requires characterization to support a residual risk assessment.
6. Extent of upland sampling. Please confirm that upland DUs will extend to the top of bank along the riverward portion of the site, and to the property boundary on the inland side (adjacent to UPRR). Discuss how these will be determined, along with the upriver boundary for the East Parcel and downriver boundary for the West Parcel. Please confirm whether an existing site survey exists or will be available which will be referenced in identifying the coordinates for DUs. Note, on Figures 6 and 7 the riverward DU margins are said to "correspond to top of bank plus areas of potentially erodible soil", the meaning of which is not entirely clear. Please discuss/clarify. Preparation of detailed maps representative of TOB and property boundaries is recommended to refine DU placement.
7. Sample collection methods. A number of different methods are proposed for sample collection, leading to DEQ concern about both the effectiveness and consistency in sampling methods, differing potentials for cross contamination, etc. We suggest a "field pilot" be completed prior to full-scale implementation to gauge the effectiveness and refine sampling methods. DEQ would also appreciate participating in the field pilot and subsequent discussions of best methods and practices.
8. Nomenclature. DEQ prefers the use of Decision Units rather than Sampling Units as this more consistent with, for example, nomenclature used by DEQ and others and commonly in use. We nevertheless will not *require* use of "DU". Regardless, DEQ considers these DUs and correspondingly during the first phase of analysis decisions will be made on each 0.5 acre DU for the identification of areas exceeding hot spot concentrations for human health and ecological receptors, and for an evaluation of ecological risk which occurs over a scale of 0.5 acres. This approach is consistent with DEQ's 2020 guidance *Conducting Ecological Risk Assessments* and nomenclature used by ITRC's 2020 *Incremental Sampling Methodology (ISM) Update*. DEQ acknowledges that a part of the second phase of analysis will involve conducting residual risk assessments where it may be appropriate to combine concentrations from several DUs to calculate exposure point concentrations for certain exposure scenarios.

## Specific Comments

1. Section 1.1, Purpose and Objectives. Identify that data generated from the RDI is also intended to support the Residual Risk Assessment. In accordance with the Upland ROD, a final quantitative evaluation of residual risk will occur after collection of additional data (i.e., remedial design sampling) and completion of a remedial design.

2. Section 1.2, Regulatory Framework. Following the last paragraph of the section noting DEQ's 2021 ROD, we recommend a brief discussion outlining RAOs for upland site cleanup.
3. Section 2.1.1, Extent of Upland Facility.
  - a. The upland area has been slightly refined since the 2019 Feasibility Study to 18.63 acres. Please explain and clarify that the upland site, as based on the TOB designation, is approximately 18.6 acres in size. Site boundaries and dominant features will need to be verified through surveys and/or precision mapping methods, such as the railroad right-of-way/easements in relation to Metro property and the extent of the concrete pad area. In addition, clarification on the status of the Metro owned property at Radford & N Richmond Avenue is needed. Some maps incorporate this lot as part of the Willamette Cove property, while others do not.
  - b. DEQ has recommended conducting a professional survey to inform work identified RDI WP and subsequent RD/RA activities. It is our understanding that a survey will be conducted in coordination with the in-water project. Please provide the schedule.
4. Section 2.2.2, 2019 Feasibility Study.
  - a. Complete migration pathways are identified as "erosion of riverbank soil and groundwater to surface water", which fails to acknowledge the primary concern of park user and ecological receptor exposure to soil contamination via direct contact. Please revise and clarify that you are referring to the complete source control pathways as being "groundwater to surface water *migration pathway*" and that the primary pathway of concern for upland exposure it to park users and ecological receptor exposure to soil contamination via direct contact.
  - b. DEQ agrees dioxins/furans are a primary risk driver. Please note, plants, invertebrates, and amphibians and reptiles are most significantly impacted from metals and petroleum (TPH and PAHs).
5. Section 3.3.1, RDI Contaminants of Concern and Risk Levels.
  - a. Please refer to General Comment No. 4 and confirm all COCs will be analyzed in all DUs and depths and compared to PRGs in Tables 1 and 2.
  - b. In the first bullet of the section, text references samples collected on the BNSF railroad embankment and above the M&B cap as being "far from the site" and therefore excluded from analysis. The forthcoming survey should determine whether these areas lie within the site boundary, but they certainly do not seem to be "far from the site". Based on historical photos showing an active dock extension along the railroad tracks to the UPPR bridge, and the observed presence of brick and slag, this area is part of the locality of facility and should not be excluded from ROD implementation, and specifically chromium should not be eliminated as a COC on the East Parcel.
6. Section 5.0, Data Gaps. Data gaps include lateral delineation of all COCs for comparison to PRGs (or cleanup levels) in Tables 1 and 2. Please remove *selected* from the second bullet.
7. Section 6.2, Sampling Approach. As noted above, DEQ prefers the use of Decision Units rather than Sampling Units. This section states that the targeted ISM SU areas range in size from 0.49 to 0.54 acres while the SAP, page C-10, states that each SU ranges from 0.43 to 0.70 acres. The latter is consistent with Table C-1. Please explain this apparent discrepancy.
8. Section 6.3.1, ISM Sampling.
  - a. Please also see General Comments. The work plan identifies a combination of methods to accomplish sample depth. DEQ recommends identifying a consistent primary/preferred sampling collection method to ensure non-biased soil collection, and second tier alternative methods based

- on field conditions. Please provide a decision tree for identifying how the selection of sampling method will be made.
- b. Regarding field replicates, DEQ accepts 20% of DUs for 30 increment DUs. See attached map with recommended replicate locations and DU design. Replicate locations provided consider site use, soil and habitat type, potential presence of hot spots, and the need for replication depth.
9. Section 6.3.2, Other Sampling. The proposed sampling strategy for the concrete pad area (estimated as approximately 1-acre in the 2019 FS) is insufficient considering the sampling area size, proposed spacing, and methodology. DEQ recommends that all samples collected from below the concrete pad area be analyzed on an individual basis for a complete list of Table 1 and 2 COCs (i.e., not compositing for select analytes). Note, additional sampling may be necessary based on results and/or if the concrete pad is removed.
  10. Section 6.3.3, Inadvertent Discovery Plan. DEQ generally agrees encountering archeological significant artifacts is unlikely due to the depth of fill (i.e., 20-30 feet in depth and deeper in the former log pond area). With that said, clarify whether a recent Archaeological Inadvertent Discovery Plan (IDP) has been prepared in consultation with Oregon State Historic Preservation Office (SHPO) and appropriate Tribal governments. If substantial time has lapsed since development of an IDP, DEQ also recommends consultation to ensure recommendations/protocol have not changed substantially. Note, DEQ's guidance was updated in December 2020 regarding Tribal Engagement and Cultural Resource Protection at Cleanup Sites.
  11. Section 6.4 Analytical Testing.
    - a. A comprehensive COC list, including chromium, should comprise the analytical testing program.
    - b. DEQ recommends the PCB analysis for congeners rather than Aroclors. In general, DEQ has a preference for PCB analysis for congeners which provides a more accurate assessment, including PCB *weathering* that may have occurred since the release. Alternately, a subset of the samples analyzed for Aroclors could undergo congener analysis.
  12. Section 7.2, Reporting. The outlined report content provided is considerably brief. Please provide clarity on how the data will be presented and used. Included in this discussion should be Upland Soil Source Control Evaluation identified as item No. 6 in the "outline". Prior to submission of the report, DEQ would like to discuss in greater detail, how the results of this comprehensive site investigation effort will be reported.
  13. Figures 5 through 7. DEQ appreciates the effort that went into factoring human and ecological risk, and past removal activities, in developing DUs illustrated in the work plan figures. As noted in General Comment No. 1 above, DEQ has a number of revisions and has prepared the attached map for consideration. We want to discuss DU design and anticipate further refinement, and once better clarity regarding site boundaries and TOB is provided. The incorporation of the conceptual site model and site layout of process areas and source areas is critical to the design of decision units to ensure confidence in the use of the data for decision-making. Accordingly, DEQ has the following recommendations to the DU design:
    - a. DEQ feels the recommended 0.5 acre DU can be achieved with some adjustments to DU configurations and as needed incorporating additional DUs.
    - b. Please see comments above regarding Richmond Ave. on the Western Parcel and adjacent to the railroad on the Eastern Parcel. Additional discussion is needed to determine if supplemental DUs are necessary to characterize these areas.
    - c. DEQ recognizes the tradeoffs in trying to match DUs with human health and ecological risks. One suggested refinement is to adjust the DUs to consider current and historical features such as

- historical site development, roads, trails, and soil piles. For example, borders of DUs should delineate and not traverse these features and removal areas (e.g., SU-17, and SU-15 and SU-16).
- d. Delineation of the concrete pad is needed to refine and properly consider the area of adjacent DUs.
  - e. DEQ reviewed historical aerial photos and is suggesting modifications to the DUs using criteria outlined above. This includes consideration of site use features and operations, the north/south bifurcation of the site with filling, roads, and industrial development. The attached map illustrates these modifications.
  - f. It would be helpful to provide additional rationale for DUs in the work plan, such as in a summary table, to complement DU figures.
14. Appendix C - Sampling and Analysis Plan. The SAP should be modified, as necessary, to address both the General Comments and Specific Comments.
  15. Appendix C, Section 4.1, Decision. Preliminary Remediation Goals were calculated to protect the beneficial uses and potential receptors and site data screened against PRGs are presented in the FS. These Preliminary Remediation Goals, or acceptable risk levels, are referenced in the ROD (see ROD Tables 3 and 6). DEQ recommends an alternative acronym to represent site-specific cleanup levels going forward (or retain PRGs) in place of CULs to prevent confusion with the PHSS CULs which are based on differing criteria, such as aquatic risk-based levels.
  16. Appendix C, Section 4.6, Optimizing the Design.
    - a. Field sample mass is proposed as 5,500 grams from each DU from 30, 1-foot increments. The entire field sample should be submitted to the laboratory for processing.
    - b. The sampling tool should be consistent with the objective of collecting 183 grams from each increment without a bias toward particle size.
  17. Appendix C, Section 5.0, Sample Process Design.
    - a. Significant filling has occurred at portions of the site, and the degree to which contamination is located at depth is uncertain. As noted above regarding completion of a residual risk assessment, one recommended objective of this sampling plan is to characterize COC concentrations to a minimum depth of 3 feet in all parcels to evaluate exposure to human and ecological receptors.
    - b. Please see DEQ's recommended modifications to the locations and sizes of the DUs in the attached map.
  18. Appendix C, Section 5.3, Sample Processing Procedures. This section does not indicate the specific methods used for each of the laboratory sampling steps. This will be critical in representatively processing the 5,500 grams of soil from each DU. Given the size and scope of this work plan, a site-specific laboratory SOP that details the proposed laboratory methods should be provided. DEQ advises the following:
    - a. Sieving, particle size of interest. The entire field sample should be dried and sieved. If a subset of the total field mass is to be ground, the methodology for collecting a representative sub-sample should be outlined in the workplan.
    - b. DEQ recommends defining soil as <2mm, but also recording larger size fractions present that may contain contamination such as wood particles, brick pieces, slag, or sandblast grit that may break down into smaller fractions of concern. In these cases, consultation with DEQ should occur to analyze particles >2mm.
    - c. Laboratory Replicates: Independent laboratory replicates should be taken to assess the precision in the laboratory subsampling procedures.
  19. Appendix C, Section 11.2.1, Field Quality Control Samples. DEQ defines appropriate precision as a relative standard deviation (RSD) calculated from independent field replicates of <35% (DEQ Decision

Unit IMD, 2020). RSDs >35% considered unacceptable. 90% UCL on the mean of the ISM triplicate concentrations should be calculated from the replicates, and the RSD should be used to upwardly adjust data for DUs where replicate samples were not collected. This section proposes to do this only if the RSD is >50%, which allows for too high of an error rate. This is particularly important since only 30 increments are proposed per DU, as compared to the recommended >50 increments. Additionally, because not all DUs are proposed for replication in triplicate, DUs with the highest expected variability should be selected. Recommended DUs replication is provided on the attached map.

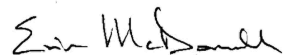
20. Appendix C, Section 11.2.3, Quality Control Flags and Qualifiers. For dioxin/furan results, estimated maximum concentrations (EMPCs) should be reported and noted with the appropriate flag. DEQ considers EMPCs as “J” flags and usable for calculation of dioxin/furan TEQ. Ensure all results are reported down to the method detection limits.
21. Appendix C, Table C-2 and C-3. Please ensure all COCs are included in the sampling plan for all samples, including chromium (all tables), and a full list of COCs under the concrete slab on the East Parcel (C-3).

## NEXT STEPS

Submit a revised work plan incorporating DEQ’s comments. DEQ also recommends submittal of the final document after our scheduled meeting later this month to discuss and resolve outstanding comments.

Please contact anytime about the project at [erin.k.mcdonnell@deq.oregon.gov](mailto:erin.k.mcdonnell@deq.oregon.gov) or (503)229-6900.

Sincerely,



Erin K. McDonnell, P.E.  
Project Manager/Engineer  
Northwest Region Cleanup Program

Att: Attachment 1 – Decision Unit Design Map

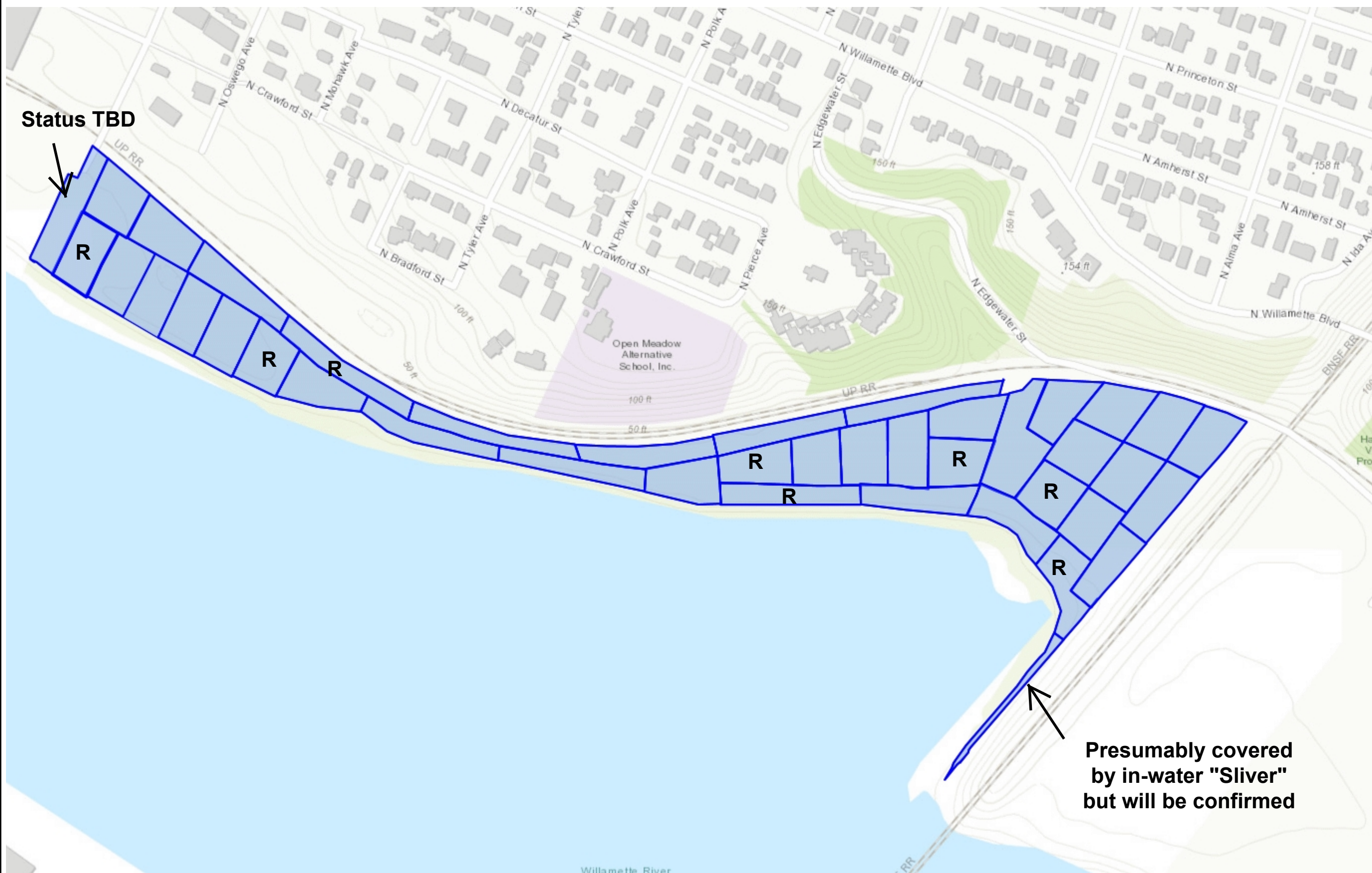
Cc: Daniel Hafley, DEQ  
David Lacey, DEQ  
Sarah Greenfield, DEQ  
Herb Clough, Apex  
Steve Misner, Apex  
Katy Weil, Metro  
Paul Slyman, Metro



## Attachment 1: Willamette Cove Decision Unit Design



**Legend**  
□ County Boundaries (2015)



0.1 0 0.07 0.1 Miles  
WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
© Oregon Explorer (<https://oregonexplorer.info>)

This map is a user generated static output for reference only from:  
[Oregon Explorer Map Viewer](https://oregonexplorer.info)  
Data layers that appear on this map may or may not be accurate, current, or reliable.  
THIS MAP IS NOT TO BE USED FOR NAVIGATION.

1:4,514



**Notes**

All DUs approx 0.5 acres except:  
1. West Parcel Sliver: 0.57 acres  
2. Concrete Pad: 0.8 acres  
3. East Parcel Sliver: 0.2 acres