Analysis of Brownfield Cleanup Alternatives
Ko'Kwel Wharf Property - Lot 2

Tremont Street, North Bend, Oregon

Cooperative Agreement Number:
BF-01J86301

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Sign-off Sheet

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Acronyms and Abbreviations

CFR	Code of Federal Regulations
ABCA	analysis of brownfield cleanup alternatives
AOC	area of concern
ASTM	American Society of Testing and Materials
bgs	below ground surface
CAA	Clean Air Act
COC	contaminant of concern
COPC	contaminant of potential concern
CUL	cleanup level
CY	cubic yard
DEQ	Oregon Department of Environmental Quality
DU	decision unit
EPA	US Environmental Protection Agency
ESA	environmental site assessment
ft	feet
OAR	Oregon Administrative Rule
HASP	health and safety plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
ISM	incremental sampling method
LBP	lead-based paint
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
PAHs	polycyclic aromatic hydrocarbons
pg/kg	picograms per kilogram
ppm	parts per million
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
SF	square feet
SMP	soil management plan
Stantec	Stantec Consulting Services Inc.
SVOCs	semi-volatile organic compounds
TEQ	toxicity equivalent quotient
TCLP	toxicity characteristic leaching procedure
VCP	voluntary cleanup program
VOCs	volatile organic compounds

1.0 INTRODUCTION AND BACKGROUND

On behalf of Mith-ih-kwuh Economic Development Corporation (MEDC), Stantec Consulting Services Inc. (Stantec) has prepared this Analysis of Brownfield Cleanup Alternatives (ABCA) report for the Ko'Kwel Wharf Property – Lot 2 located on Tremont Street in North Bend Oregon, Oregon (referred to as "Property"). This ABCA was funded through a US Environmental Protection Agency (EPA) Community-Wide Assessment Grant (Cooperative Agreement No. BF-01J86301).

The Property is an approximately 13.7-acre parcel of land located on Tremont Street in North Bend, Oregon, and comprised of a single Coos County Tax Lot (25S13W15-105). The Property contains five existing structures historically used to manage the various commercial and industrial enterprises on the Property and adjacent tax lots. The Property is zoned by The City of North Bend as General Commercial (C-G) and Light/Heavy Industrial (M-L and M-H). Coos Bay is located adjacent east to the Property. Surrounding sites are generally industrial, commercial, and residential (across Highway 101) in use. A Property location map is illustrated on **Figure 1**.

This ABCA report presents practical remedial alternatives that would reduce contaminant exposure on the Property to levels protective of human health and the environment. Alternatives were selected based on site-specific conditions, technical feasibility, and preliminary cost evaluations. This ABCA was completed in general accordance with United States Environmental Protection Agency (EPA) guidelines for conducting removal actions (National Contingency Plan 300.415[a][4][i]) and Oregon Department of Environmental Quality (DEQ) removal authority (Oregon Administrative Rules [OAR] 340-122-0040).

1.1 SITE ASSESSMENT FINDINGS

The following section provides a summary of the environmental background and recent investigations completed at the Property.

1.1.1 2019 Stantec Environmental File Review

In 2019 Stantec completed an environmental file review for the Property and identified previous environmental records associated with the Property including a DEQ Environmental Cleanup Site Information listing (ECSI #4082). The DEQ issued a No Further Action (NFA) determination for the ECSI listing dated May 15, 2007. Overall, the Property has been well characterized and environmental conditions are well documented.

Based on a review of environmental records constituents of potential concern (COPCs) at the Property include:

- Total petroleum hydrocarbons (TPH) as gasoline range organics (GRO), diesel range organics (DRO) and oil range organics (ORO);
- Volatile organic compounds (VOCs);
- Semi-volatile organic compounds (SVOCs);
- Pentachlorophenol (PCP);

- Heavy metals;
- Polychlorinated biphenyls (PCBs); and
- Dioxins and furans.

1.1.2 2022 Stantec Phase II Environmental Site Assessment

In 2022, Stantec completed a Phase II ESA (Stantec 2023a) on the Property to assist MEDC with the redevelopment goals for the Property. The 2022 Phase II ESA included incremental sampling method (ISM) soil sampling from five Decision Units (DUs), composite soil sampling from five direct-push borings (SB-04 through SB-08), and grab groundwater sampling from five temporary wells associated with those direct push borings.

Findings of the 2022 Phase II ESA indicated concentrations of dioxins and furans in soil samples collected from 0 to 3 feet bgs on the Property in ISM samples collected from DU-5 and DU-6, and in the composite sample collected from SB-08. Concentrations in samples collected from these locations were reported in exceedance of the occupational direct contact DEQ Risk-Based Concentration (RBC) of 16 picograms per gram (pg/g) as published in DEQ's *Guidance for Risk-Based Decision Making for the Remediation of Contaminated Sites* (DEQ 2023). All other analytical concentrations of COPCs were reported below applicable DEQ RBCs, as indicated in the 2022 Phase II ESA Report.

1.1.3 2023 Stantec Supplemental Phase II Environmental Site Assessment

In 2023, Stantec conducted a Supplemental Phase II ESA (Stantec, 2023b) to further refine the location and extent of dioxin and furan impacts in soil identified in the 2022 Phase II ESA. This investigation included ISM soil sampling from DU-5 and DU-6 that were divided into quadrants (NE, NW, SE, and SW), a confirmation sample from SB-08, and 4 step-out borings to laterally delineate the exceedances observed at SB-08. Soil samples in this investigation were collected from two intervals: 0 to 1.5 feet bgs and 1.5 to 3 feet bgs. A Toxic Equivalent (TEQ) was calculated for each analyzed soil sample using published Toxic Equivalency Factors (TEFs) to normalize total dioxins and furans to a common toxicity to 2,3,7,8-TCDD to allow for risk screening. The calculated dioxin and furan TEQ was above the occupational receptor direct contact RBC in primary soil samples including SB-08-1.5-3, DU-5-NE-0-1.5, DU-5-SE-0-1.5, DU-6-NW-0-1.5, and DU-6-SW-0-1.5.

ISM DU quadrants were also sub-sampled discretely and submitted to the laboratory on hold pending analysis of the ISM samples. Follow on analysis was performed on the individual sub-samples collected from each DU quadrant with RBC exceedances that identified the following sub-samples with occupational direct contact RBC exceedances: DU-5-NE-A-0-1.5, DU-5-NE-B-0-1.5, DU-5-NE-C-0-1.5, DU-5-NE-H-0-1.5, DU-5-SE-I-0-1.5, DU-6-NW-D-0-1.5, DU-6-NW-F-0-1.5, DU-6-NW-I-0-1.5, and DU-6-SW-F-0-1.5. These exceedances established the Soil Management Area as defined below.

Overall, the Property is well characterized and is suitable for redevelopment. Site remediation and/or management activities are recommended for a portion of the Property, limited to two areas as depicted in **Figure 2** and **Figure 3** and defined below:

1. The Soil Management Area, estimated at 26,400 square feet and a calculated conservative in-situ volume of approximately 1,950 cubic yards, and
2. The immediate vicinity of SB-8, which is a calculated in-situ volume of approximately 400 cubic yards.

Soil samples collected from the Property indicated that concentrations of dioxins and furans exceed ecological RBCs published by DEQ in select areas. However, there is no current suitable habitat or a plan to create habitat for ecological receptors on the Property. Therefore, no cleanup or further investigation was recommended to protect ecological receptors on the Property.

Based on the findings of the Phase II ESA and Supplemental Phase II ESA, Stantec has prepared this ABCA to review remedial alternatives to address environmental conditions associated with the former industrial timber operations.

2.0 APPLICABLE REGULATIONS AND CLEANUP STANDARDS

Cleanup actions performed must provide adequate protection of human health and the environmental health based on the current and future uses of the Property.

2.1 POTENTIAL RECEPTORS AND EXPOSURE PATHWAYS

Based on the findings of the Phase II ESA and the Supplemental Phase II ESA for the Property (Stantec, 2022 and Stantec, 2023, respectively), the contaminants of concern for the Property have been determined to be limited to dioxins and furans. The concentrations of dioxins and furans detected were above the *Soil Ingestion, Dermal Contact, and Inhalation* RBC in the central portion of the Property (DU-05 and DU-05) as shown on **Figure 3**.

Considering that remedial excavation and potential redevelopment activities are expected at the Property, construction workers, excavation workers, and trespassers have been identified as the most applicable potential human receptors. Redevelopment and reuse plans for the Property are still in the planning phase; however, the projected future use of the Property is anticipated to be industrial or commercial. Therefore, occupational receptors were also considered in the conceptual site model.

Detected concentrations of dioxins and furans in analyzed samples from DU-05 and DU-06 exceeded occupational DEQ RBCs. Exposure to contaminated soils by occupational workers on the Property could occur during future redevelopment or other subsurface activities (utility installation, maintenance and repairs) through inhalation, ingestion, and/or dermal contact.

Potential exposure during the remedial work would be managed with a Health and Safety Plan designed to protect site workers and the public from contaminants of concern during remedial activities. An exclusion zone in the form of a perimeter fence would be in place during remedial work to prevent the public from accessing the Soil Management Area. Potential future exposures to residual contamination, if any, would be mitigated using institutional and engineering controls and a Site Management Plan. No potential impacts are anticipated to ecological receptors as part of this remedial effort; although, if the Property is to be designated as habitat or ecological receptors are anticipated to be impacted by remedial activities, then the applicable cleanup standards and remedial action objectives presented below should be revised accordingly.

2.2 CLEANUP STANDARDS

Contaminants of concern at the Property are defined as the substances for which the concentrations in soil exceed the associated Oregon DEQ RBCs. The RBC values exceeded at the Property are for protection of human health via the ingestion, dermal contact, or inhalation pathways.

Impacted soil having contaminants above DEQ RBCs that may be left in-place would be managed with a soil management plan for potential future subsurface disturbances and with environmental engineering and institutional controls (e.g., placement of a clean soil cover and an Easement and Equitable Servitude (EES) that would be attached to the deed).

Relevant regulations and cleanup standards for the Property are listed below:

- OAR 340-122-0040 (2)
- OAR 340-122-0090
- Hazardous Waste Regulations, 40 CFR 261.31

2.3 CLEANUP GOAL

Stantec has not been made aware of specific future development plans for the Property; however, the Property is zoned for commercial/industrial use. As such, the intention of the remedial alternatives presented herein is to achieve compliance with applicable DEQ cleanup regulations and remediate the Property to levels appropriate for commercial land use. The cleanup criteria are summarized in Table 1, below.

The remedial action objectives are:

- Prevent direct contact between human receptors and soil exceeding occupational RBCs;
- Remediate/remove source-area soils to the extent feasible (especially if highly concentrated "hot spots" are encountered during remediation activities).

Table 1: Cleanup Criteria for Commercial Land Uses

Analyte	Remedial Action Objective (pg/g)
Dioxins/furans TEQ	16 pg/g

3.0 CLEANUP ALTERNATIVES

3.1 CLEANUP ALTERNATIVES CONSIDERED

The nature and extent of Property contamination are presented in the Phase II ESA (Stantec, 2023a) and the Supplemental Phase II ESA (Stantec, 2023b). The following sections provide a description of alternatives analyzed as part of this report.

Under DEQ removal authority (OAR 340-122-0040) and EPA guidance, remedial alternatives are evaluated using the following criteria:

- Effectiveness;
- Implementation Feasibility;
- Remedial Costs;
- General Reasonableness; and
- Sustainability.

To address impacted soil at the Property, four remedial alternatives were considered:

- Alternative #1: Capping Impacted Soils and Managing In-Place
- Alternative #2: Excavation and Off-Site Disposal of Impacted Soils
- Alternative #3: On-Site Incineration of Impacted Soils
- Alternative #4: No Action

An opinion of probably cost (OPC) assumptions and details for each alternative are presented in **Table 2** and **Table 3**.

3.1.1 Base Scope of Work and Description of Alternatives

The base scope of services includes remedial elements that will be required for each proposed alternative (with the exception of Alternative #4: No Action). For this Property, the base scope of services includes dewatering of the ponded water that is perennially present in DU-5.

The cost to perform the base scope of work is included for alternatives 1-3 within the OPC.

3.1.2 Alternative #1 – Capping Impacted Soils and Managing In-Place

This alternative would involve capping the impacted soils with asphalt in order to eliminate the exposure pathway. The cap would be graded so that when covered it would match the necessary grade for desired redevelopment. The impacted soils would be covered with a minimum of 6 inches of stone base imported from a local source followed by a 4-in asphalt layer and managed in-place. Approximately 115,000 square feet of the Property would be covered by the asphalt cap. This area would include the Soil Management Area and area of SB-08. The estimated square footage includes a 10% buffer. This alternative would also include the base scope of services presented in Section 2.4.1.

Because the impacted soil would be contained on the Property, institutional and engineering controls would be used to mitigate residual risk. An institutional control in the form of an EES, or deed restriction, may be required. Long-term operation & maintenance (O&M) in the form of routine inspection to document conditions would also be required. Repairs would need to be implemented when issues are identified during inspections.

A portion of the asphalt cap would cover an area that is currently prone to collection of stormwater runoff, which could compromise the durability of the cap. It is Stantec's understanding that stormwater management improvements are planned for the Property; therefore, estimates and opinions for this alternative assume that ponding in the vicinity of the asphalt cap would be rectified by stormwater improvements prior to, or concurrent with, the installation of the cap.

3.1.3 Alternative #2 – Excavation and Off-Site Disposal of Impacted Soils

This remedial alternative would include the excavation and disposal of impacted soils from DU-05 and DU-06 with dioxins and furans concentrations greater than DEQ RBCs for occupational receptors as presented in **Table 1**. This alternative would also include the base scope of services presented in Section 2.4.1.

In DU-05 and DU-06, pre-characterization of soils would entail collecting waste characterization samples with a geoprobe or an excavator. Assuming the samples are favorable for disposal at a designated receiving facility, the materials would then be excavated and directly loaded into trucks for transport to the facility. Direct loading at the Property would remove the requirement for on-site stockpiling of soils. Proper disposal of these soils as a non-hazardous waste would be confirmed via waste characterization sampling conducted per the selected disposal facilities requirements prior to excavation.

Based on the available data, it was estimated that a total of 2,000 cubic yards of soil would be excavated and disposed of off-site. Estimated volumes are inclusive of the eastern portion of DU-05, the western portion of DU-06, and the vicinity of SB-08 at various depths. Soils in DU-05 and DU-06 would be excavated from surface grade down to 1.5 feet bgs. Soils in the vicinity of SB-08 would be excavated from surface grade down to 3 ft bgs. All excavated soils would be transported off-site for disposal at a Subtitle D Landfill. Due to the large volume of soils excavated as part of this scope and inherent uncertainty of environmental investigation, a 10% increase was applied to the exact Soil Management Area and SB-08 excavation footprints to account for contingency.

Collection of confirmatory soil samples from the floor and sidewalls when excavations are deemed complete to be submitted for laboratory analyses. Excavation areas would not be backfilled until confirmation samples are received to ensure that remedial action objectives (RAOs) are met. Backfill material would be sourced from on-site soils that are not impacted above DEQ RBCs where possible and/or imported clean fill from a local source. It is anticipated that the required backfill soil volume would be approximately 2,000 cubic yards.

3.1.4 Alternative #3 – On-Site Incineration of Impacted Soils

This alternative would involve the on-site incineration of impacted soils. This alternative would also include the base scope of services presented in Section 2.4.1.

Based on the available data, it was estimated that a total of 2,000 cubic yards of soil would be excavated in accordance with applicable local, state, and federal regulations. Soils in DU-05 and DU-06 would be excavated from surface grade down to 1.5 feet bgs. Soils in the vicinity of SB-08 would be excavated from surface grade down to 3 ft bgs. Due to the large volume of soils excavated as part of this scope and inherent uncertainty of environmental investigation, a 10% contingency was applied to originally calculated soil volumes for the vicinity of SB-08.

Excavated soils would be loaded into an incinerator which would be transported to the Property and temporarily housed on-site. Depending on the design, the components of the treatment system could include a rotary kiln or liquid-injection incinerator, a quench tower, baghouse, gas conditioner, scrubber, and/or mist eliminator. The soils would be incinerated at a temperature sufficient to destroy dioxins and furans.

Incinerated soils would be managed and staged in 150 CY stockpiles pending confirmation analytical testing. Stockpiles yielding analytical results above DEQ RBCs would be re-treated. Stockpiles with concentrations of dioxins and furans below DEQ RBCs during the screening process would be reused on-site as backfill. Excess soil with concentrations of dioxins and furans below DEQ RBCs would be re-used elsewhere on-site.

Confirmatory soil samples from the floor and sidewalls when excavations are deemed complete would be submitted for laboratory analyses. Excavation areas would not be backfilled until confirmatory samples demonstrate acceptable levels and ensure that RAOs are met.

3.1.5 Alternative #4 – No Action

Alternative 4 is the baseline against which all other alternatives are compared. Under this alternative, contaminated soils would be left in place in their current configuration.

3.2 EVALUATION OF CLEANUP ALTERNATIVES

Potential cleanup alternatives are evaluated herein based on the following criteria: effectiveness, implementation feasibility, remedial costs, general reasonableness, and sustainability. **Tables 2 and 3** provide a breakdown of applicable costs and assumptions.

3.2.1 Alternative #1 – Capping Impacted Soils and Managing In-Place

Effectiveness – This alternative eliminates the potential for direct contact with the most-contaminated materials (sediment and hide splits) located on the Property and reduces a potential secondary exposure pathway of stormwater runoff. An asphalt cap would mitigate in-place the direct exposure risk posed by the impacted soil. The overall effectiveness of this alternative is considered high.

Implementation Feasibility – Implementation of this alternative would be feasible using relatively routine construction methods. The asphalt cap and required maintenance thereof on the central portion of the Property may restrict future redevelopment activities.

Remedial Costs – This alternative would be the most cost effective of the alternatives involving cleanup actions. Due to the requirement to maintain the cap, this alternative would require routine annual monitoring and reporting. This alternative would cost approximately $487,000, including the base scope of services.

General Reasonableness – This alternative's success will be dependent on long-term monitoring which substantially contributes to the overall costs and may restrict future redevelopment activities via a deed restriction/EES.

Sustainability – Alternative #1 would entail less truck traffic than Alternative #2 and would not involve the incineration of material as in Alternative #3; therefore, Alternative #1 would generate the least amount of greenhouse gases of the actionable alternatives. However, the Property would remain impacted by dioxins and furans. No site-specific risk factors were identified under this alternative with respect to climate change considerations.

3.2.2 Alternative #2 – Excavation and Off-Site Disposal of Impacted Soils

Effectiveness – Comprehensive soil excavation and off-site disposal is an effective remedial method since it removes impacted soils and utilizes an approved off-site disposal facility for final disposition. This alternative is an effective way to eliminate potential future exposure to contaminated soils at the Property through comprehensive source removal. This alternative effectively eliminates all future contact, human or environmental, with contaminated soils on-site. This alternative would achieve the cleanup goal of unrestricted commercial land use for the future development of the Property.

Implementation Feasibility – This alternative would logistically include more trucking, transportation and disposal than the other considered alternatives. Apart from trucking coordination, this alternative provides an easily executed plan for remediation of the Property. This alternative is contingent upon a local landfill (e.g. Dry Creek Landfill in White City, Oregon) being able to accept the waste as non-hazardous. If waste must be transported to a non-local landfill (e.g. Columbia Ridge Landfill in Arlington, Oregon), schedule, transportation costs, and landfill fees could be impacted.

Remedial Costs – The total estimated costs for this alternative, including the base scope of work, would be approximately $550,000. The cost includes premium wages for Hazardous Waste Operations and Emergency Response (HAZWOPER)-certified contractor(s) and consultant oversight.

General Reasonableness – This alternative provides good long-term management of the Property impacts. This option does not limit the potential reuse of the Property as the contaminated soils would not be retained on-site but requires significant volumes be transported and disposed of.

Sustainability: This alternative would entail the most truck traffic and therefore, when compared to remaining alternatives, would generate the most greenhouse gases. However, the Property would not remain impacted by dioxins and furans. No site-specific risk factors were identified under this alternative with respect to climate change considerations.

3.2.3 Alternative #3 – On-Site Incineration of Impacted Soils

Effectiveness –This alternative would effectively remove the risk of future direct human contact with contaminated soil through elimination of the contaminants.

Implementation Feasibility – This alternative is more complex than Alternatives #1 and #2 and involves transportation of specialized, non-standard equipment to the Property. Residence time in the incinerator affects the efficacy of the treatment, and analytical results could indicate re-treatment of material is required, extending the duration of cleanup activities.

Remedial Costs –For this Property, the added mobilization and shipping costs associated with on-site incineration are significantly more than disposal costs or costs of managing contaminated soils in-place. The estimated cost for this remedial method is approximately $3,500,000.

General Reasonableness – This alternative would not require long-term management of the impacted soils since impacts would be below applicable RBCs. Alternative #3 would also provide unrestricted commercial use of the Property for future development and reuse.

Sustainability – Alternative #3 involves the incineration of material, which uses fuels and would produce significant air emissions; however, it would have reduced trucking impacts when compared to Alternatives #1 and #2. Also in this alternative, excavated soils would be treated and used on-site as backfill, thereby reducing volumes sent to a landfill. This reduction in generation of greenhouse gases gives Alternative 3 a slightly higher sustainability rating. No Site-specific risk factors were identified under this alternative with respect to climate change considerations.

3.2.4 Alternative #4 – No Action

Effectiveness – Alternative 4 has low effectiveness since there is no action implemented and thus no protection to ecological receptors is provided. It is also not protective of current or future receptors at the Site.

Implementation Feasibility - This alternative is easy to implement because no action is required. There is also low implementation risk associated with this alternative because no activities would be conducted.

Remedial Costs – There is no cost to implement this alternative.

General Reasonableness: Alternative 4 has low long-term reliability because it does not remove contamination or eliminate exposure pathways.

Sustainability: Alternative 4 is moderately sustainable. No greenhouse gas emissions would be produced by this alternative however the Property would remain impacted by dioxins and furans. No site-specific risk factors were identified under this alternative with respect to climate change considerations.

4.0 RECOMMENDED CLEANUP ALTERNATIVE

The recommended cleanup alternative is *Alternative 2 – Excavation and Off-Site Disposal of Impacted Soils*. This is relatively cost-effective remedial alternative (approximately comparable to Alternative 1) and will not leave the Property with long-term monitoring requirements and therefore redevelopment encumbrances. This alternative is a reasonable approach that is common in environmental cleanup projects and is also the most effective remedial alternative since it removes the contamination from the Property to protect future receptors. This alternative does have the highest carbon footprint of the alternatives evaluated because of trucking requirements however it is a very straightforward cleanup approach that has good implementation feasibility. Even if transportation costs are greater than expected due soils not being accepted at a local landfill, removal of the impacted soils offers the highest level of protection for future Property occupants and allows for the most flexible re-use of the Property of the examined alternatives.

5.0 OPINION OF PROBABLE COST LIMITATIONS

The opinion of probable costs (OPC) presented herein represents a Class 5 estimate as defined by the American Association of Cost Estimating (AACE) International. The AACE defines a Class 5 estimate as follows:

Class 5 estimates are generally prepared based on very limited information, and subsequently have wide accuracy ranges. They are often prepared for strategic planning purposes, market studies, assessment of viability, project location studies, and long-range capital planning. Virtually all Class 5 estimates use stochastic estimating methods such as cost curves, capacity factors, and other parametric techniques. Expected accuracy ranges are from –20% to –50% on the low side and +30% to 100% on the high side, depending on technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.

Stantec has used its professional judgement given the available information and our experience with similar remedial techniques on other sites. Accordingly, the Client agrees that Stantec cannot and does not make any warranty, promise, guarantee, or representation, either expressed or implied, that proposals, bids, project construction costs, or cost of operation or maintenance would not vary substantially from this good-faith cost estimate.

Data gaps remain in terms of fully delineating the horizontal extent of subsurface impacts. Accordingly, the extent and magnitude of subsurface impacts requiring remediation upon which the OPC has been developed is unknown. Therefore, the final extent of excavation, and resultant costs, would be dependent upon the collection and laboratory analyses of confirmatory soil samples at the time of excavation.

6.0 REFERENCES

Stantec 2023a. Ko'Kwel Wharf Property - Lot 2, Tremont Street, North Bend, Oregon. Phase II Environmental Site Assessment. January 27, 2023.

Stantec 2023b. Ko'Kwel Wharf Property - Lot 2, Tremont Street, North Bend, Oregon. Supplemental Phase II Environmental Site Assessment. July 14, 2023.

DEQ 2023. Guidance for Risk-Based Decision Making for the Remediation of Contaminated Sites. Concentrations for Individual Chemicals. Updated June 2023.

FIGURES

TABLES

TABLE 1

CLEANUP CRITERIA FOR UNRESTRICTED LAND USES

(PROVIDED WITHIN TEXT)

TABLE 2

COSTING ASSUMPTIONS

TABLE 3

PRELIMINARY OPINION OF PROBABLE CLEANUP COSTS