State of Oregon Department of Environmental Quality

Beneficial Use of Solid Waste Determination

Evaluation Form

Contact: Ryan Lewis
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Applicant: Portland Water Bureau (PWB)	
BUD#: 20240402	
Solid Waste: Contaminated Soils	
Summary of proposed beneficial use: PWB proposes to reuse contaminated soils removed from the surface of the construction area for the Bull Run Filtration Project which includes a filtration facility and a raw water pipeline. The contaminated soils are impacted by historical chlorinated pesticide use including dieldrin. The soils deeper than 1.5 feet below the surface meet clean fill criteria.	
Reviewer: Ryan Lewis	Date: April 3, 2024
Tier: ☐ One ☒ Two ☐ Three	

Beneficial use of solid waste

Beneficial use of solid waste is a sustainability practice that may involve using an industrial waste in a manufacturing process to make another product or using a waste as a substitute for construction materials.

The environmental benefits of substituting industrial waste materials for virgin materials includes conserving energy, reducing the need to extract natural resources and reducing demand for disposal facilities.

Oregon Administrative Rules (OAR) 340-093-0260 - 0290 establish standing beneficial uses and a process for DEQ review of case-specific beneficial use proposals. Under these rules, DEQ may issue a beneficial use determination as an alternative to a disposal permit for proposals that meet the rule criteria. If approved, once a beneficial use determination is issued, DEQ no longer regulates the waste as a solid waste as long as the waste is used in accordance with the approved beneficial use determination.

Beneficial use determination evaluation summary

☒ Yes, the beneficial use of this solid waste meets all the case-specific performance criteria listed below and is approved.

☐ No, the beneficial use of this solid waste does not meet all the case-specific performance criteria listed below and is not approved.

☐ The beneficial use of this solid waste is approved for a 1-year demonstration project.

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Case-specific beneficial use performance criteria:

DEQ may approve an application for a case-specific beneficial use of solid waste only if all the following performance criteria are addressed:

1. Characterization of the Solid Waste;
2. Productive Beneficial Use of the Solid Waste; and,
3. The effect of the Proposed Beneficial Use on Public Health, Safety, Welfare and/or the Environment.

Did the applicant characterize the solid waste and proposed beneficial use sufficiently to demonstrate compliance with the rules for case-specific beneficial use determinations (OAR 340-093-0280) by submitting required information for the appropriate tier? (See tier sections below for detailed characterization information.)

☒ Yes ☐ No

Was the following information submitted for DEQ review and how adequate was it?

Tier 1: ☒ Applicable ☐ Not applicable

- Did the applicant provide an adequate description of the material proposed for beneficial use, the manner of generation and the estimated quantity to be used beneficially each year?

  ☒ Yes ☐ No

Notes:
The total estimated volume of contaminated soil for the proposed beneficial use is approximately 116,000 cubic yards (cy), which will be generated over the course of the project for several years. Approximately 110,000 cubic yards will be generated from tax lot 400 and approximately 6,000 cy will be generated from tax lot 100. The contaminated soil will be stockpiled on PWB property during the construction phase of the project and maintained via 1200CA permit requirements. The contaminated soil will be placed above the regional groundwater table. The contaminated soil is the surface soils (0-1.5 feet below ground surface [ft bgs]). Deeper soils have been identified as meeting clean fill limits.

The contaminated soil will be covered with one of two methods of covering (1) a geotextile fabric will be placed over the contaminated soil and 1 foot of clean fill will be placed over the top of the fabric. (2) if no geotextile is used, a 3-foot cover of clean fill will be placed over the contaminated soil. The protective cover will be maintained and vegetated post-construction until stabilized

PBS Environmental submitted the January 2024 Clean Fill Determination Report (CFDR) prior to the PWB's BUD application. The Phase II Environmental Site Assessment – Supplemental Investigation Report (Phase II) data was also submitted with this application. The application presents the data from CFDR of samples using incremental sampling methodology (ISM) of 2 decision units (DUs) in triplicate (6 samples). One DU comprising of 0-1.5 ft bgs and the other DU comprising of the material from 1.5 ft bgs to 5 ft bgs. The application presents the Phase II data of 10 composite samples of soil from 0-0.5 ft bgs from 10 composite areas and two composite samples inclusive of all composite locations from surface 0-0.5 ft bgs and 0.5-1.0 ft bgs (12 samples).

For the Phase II, samples were sent for lab analysis for the following contaminants:

- Total metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc) by EPA Methods 6020B
- Pesticides by EPA 8081B
- Chlorinated Acid Herbicides by EPA 8151A

For the CFDR, the DU-1 and DU-2 samples were sent for lab analysis for the following contaminants:

- Seventeen Agricultural Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc) by EPA Methods 6000/7000 series
- Organochlorine Pesticides by EPA 8081B
- Organophosphate Pesticides by EPA 8141A
- Chlorinated Acid Herbicides by EPA 8151

Pesticides were detected in surface ISM soil samples and composite samples at concentrations above the Clean Fill Criteria and DEQ Eco Risk for ground feeding birds and mammals. These pesticides include 4,4-DDE, 4,4-DDT, and Dieldrin. The samples below 1.5 feet did not show detections above Clean Fill Criteria.

All metals were detected below Clean Fill Criteria concentrations in both ISM surface soils and soils at depth (DU-1 and DU-2). Concentrations of metals were consistent with naturally occurring background levels.

- Did the applicant provide an adequate description of the proposed beneficial use and justify how the proposed use is beneficial?

  ☒ Yes ☐ No

Notes:
The proposed beneficial use of the contaminated soil is to reuse excavated soil as non-structural fill and limit trucking emissions and impacts to landfill capacity.

- Did the applicant provide a sufficient comparison of the chemical and physical characteristics of the material proposed for beneficial use with the material it will replace?

  ☒ Yes ☐ No

Notes:
PWB's BUD application includes sampling results for pesticides, herbicides, detected metals from the 17 agricultural metals list. Table 1 of Application shows the summary of the analytical results from the 2 ISM samples (in triplicate) of soil that each consisted of 50 discrete soil cores taken from locations across the project area. The upper DU included depths from 0-1.5 ft and the lower DU included depths from 1.5-5 ft. DEQ evaluated and agrees that the samples and analysis for the selected contaminants sufficiently characterize the soil being moved during the PWB Filtration Facility construction process. Clean Fill Criteria and DEQ eco risk exceedances for ISM samples are described above. These values are also compared in the table to the following risk screening levels:

- DEQ's human health risk-based concentrations (RBCs) for occupational soil ingestion, dermal contact, and inhalation
- DEQ's ecological risk for top consumers birds and mammals (Threatened and Endangered (T&E) and non T&E))
- DEQ's ecological risk for direct toxicity to plants and invertebrates

The metals concentrations are below the clean fill criteria and are consistent with naturally occurring background levels.

The proposed use of the contaminated soil from the Proposed Bull Run Filtration project as non-structural fill within the filtration facility construction area meets the beneficial use criteria of being productive and is suitable for use in construction as non-structural fill. The slightly contaminated soil can be used as described in the application and the conditions of this BUD.

As shown, the concentrations for pesticides at DU-1 (surface soil) exceeds the lowest T&E eco risk based concentration (RBC). This eco RBC pertains to ground feeding birds and mammals. The presence of threatened or endangered species that utilize the site is not confirmed or discussed in the application. As the location has been used for agricultural

purposed most recently, it does not provide suitable habitat or resources for threatened or endangered species. The proposed placement and reuse of contaminated soils is not anticipated to adversely affect any plant or wildlife species.

- Did the applicant successfully demonstrate compliance of the proposed beneficial use with the performance criteria in OAR 340-093-0280 based on knowledge of the process that generated the material, properties of the finished product, or testing?

  ☒ Yes ☐ No

Notes:
The soil is slightly contaminated as discussed above. The contaminated soils have been identified to contain concentrations of pesticides that are above clean fill criteria but below occupational RBCs for soil materials. The soil reuse site requires import of soil as non-structural fill but will be below 3 feet of soil meeting clean fill criteria or underneath a geotextile under 1 foot of soil meeting clean fill criteria.

- If required, did the applicant provide any other DEQ required information to evaluate the proposal?

  ☐ Yes ☐ No

Notes:
Not applicable. DEQ did not require additional information.

Tier 2: ☒ Applicable ☐ Not applicable

- Did the applicant submit all the information required for a Tier 1 application?

  ☒ Yes ☐ No

- Did the applicant submit adequate sampling and analysis to make a determination of suitability for beneficial use? (Note: The analysis must provide chemical, physical, and biological characterization of the material proposed for beneficial use and identify potential contaminants in the material or the end product, as applicable.)

  ☒ Yes ☐ No

Notes:
DEQ considers the material testing conducted to be adequate. Sample results are discussed above.

- When applicable, did the applicant provide a risk screening comparing the concentration of hazardous substances in the material to existing, DEQ approved, risk-based screening level values, and demonstrate compliance with acceptable risk levels?

  ☒ Yes ☐ No

Notes:
A comparison to risk screening levels is discussed above. Contaminant concentrations were compared to human health risk screening levels and were found to be sufficiently low for the proposed beneficial uses. The applicant compared contaminant concentrations to ecological risk-based concentrations and is shown in Table 1 of the application.

- When applicable, did the applicant supply the location or type of land use where the material will be applied, consistent with the risk scenarios used to evaluate risk?

  ☒ Yes ☐ No ☐ NA

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Notes The contaminated soil is proposed for use as non-structural fill at the PWB property adjacent to the proposed filtration structures east of Gresham, Oregon in unincorporated Multnomah County.

- When applicable, did the applicant supply contact information of property owner(s) if this is a site-specific land application proposal, including name, address, phone number, email, site address and site coordinates (latitude and longitude)?

  ☐ Yes ☒ No ☐ NA

Notes: The soil reuse location is identified as Sec. 22, T. 1 S., R.4E. The contact information is:

Robert Fraley
Portland Water Bureau
1120 SW 5th Avenue Rm 405
Portland, OR 97204
503-319-9207
Robert.Fraley@portlandoregon.gov

- Did the applicant supply an adequate description of how the material will be managed to minimize potential adverse impacts to public health, safety, welfare, or the environment?

  ☒ Yes ☐ No

Notes:
The contaminated soils will be managed so that they will not create an adverse impact on groundwater, surface water, or public health or safety. Contaminated soil material will be stockpiled on site during construction and reused at the project area as non-structural fill. PWB will follow their 1200CA during the entire project until final grade is established and vegetated.

Tier 3: ☐ Applicable ☒ Not applicable

- Did the applicant submit all the information required for a Tier 1 and Tier 2 application?

  ☐ Yes ☐ No

- Did the applicant provide an adequate discussion of the justification for the proposal?

  ☐ Yes ☐ No

- Is there an estimated length of time that would be required to complete the project, if it is a demonstration?

  ☐ Yes ☐ No

- If it is a demonstration project, are their methods proposed to ensure safe and proper management of the material?

  ☐ Yes ☐ No

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2. Productive beneficial use of the solid waste

- Has the applicant demonstrated that the proposed beneficial use is a productive use of the material by providing information substantiating the criteria listed below?

  ☒ Yes ☐ No

Notes: PWB proposes to reuse the shallow soils contaminated with pesticides at the proposed Bull Run Filtration Facility underneath a cap consisting of either 3 feet of soil or a geotextile fabric with 1 foot of soil. The contaminated soil will be used as non-structural fill at the proposed location.

- Did the applicant successfully identify or demonstrate a reasonably likely proposed beneficial use for the material that is not speculative?

  ☒ Yes ☐ No

Notes: See discussion above.

This criterion consists of three parts.

1. **Identified use:**
   Has the applicant clearly stated what the waste is going to be used for, that the waste is compatible with that use and the proposed quantity is necessary?

   ☒ Yes ☐ No

   Notes:
   PWB estimates that the Bull Run Filtration Project will generate 116,000 cubic yards of contaminated soil and has described the non-structural fill reuse at the Tax Lot 100 and Tax Lot 400.

2. **Reasonably likely use:**
   Has the applicant identified, with supporting documentation, the timeframe within which this use is likely to occur (e.g., zoning info, master plan for development, letters from local jurisdictions, etc.)?

   ☒ Yes ☐ No

   Notes:
   The application states that excavation of approximately 116,000 cubic yards of contaminated soil is planned to begin in summer 2024. The applicant expects the excavation to be completed in 2027.

3. **Not speculative:**
   For land application - has this material been used at other sites for the same purpose, is the material feasible for use at this site for this purpose, or has the applicant identified a known potential for this use at this site?

   ☒ Yes ☐ No ☐ N/A

   For uses other than land application - has the material been used in a product before, is the material feasible for use in a product, or has the applicant identified a known potential for use in this product?

☐ Yes ☐ No ☒ N/A

- Is the use a valuable part of a manufacturing process, an effective substitute for a valuable raw material or commercial product, or otherwise authorized by the Department and does not constitute disposal?

  ☒ Yes ☐ No

Notes:
This is a substitute for use of clean fill to be used for regrading the soil reuse area. The reuse of the slightly contaminated soil will also prevent the material from filling valuable space in local landfills and reduce transportation costs.

- Is the use in accordance with applicable engineering standards, commercial standards, and agricultural or horticultural practices?

  ☒ Yes ☐ No

Notes:
The proposed uses of the onsite excavated soils conform and follow standard engineering practices and limit risks posed by the contamination found in the soil. Also the use limits the impact of trucking emissions and the filling valuable landfill space.

3. Effect of proposed beneficial use on public health, safety, welfare and/or the environment

Has the applicant demonstrated the proposed beneficial use will not create an adverse impact to public health, safety, welfare, or the environment, by providing information substantiating compliance with the criteria listed in the bullet list below?

☒ Yes ☐ No

Notes:
As discussed above, chemical testing of the contaminated soils indicates that the soil reuse area would not pose a risk to people or animals, if reused as described in the application.

- Has the applicant demonstrated that the material is not a hazardous waste under ORS 466.00?

  ☒ Yes ☐ No

Notes:
Contaminant concentrations are below applicable human health and ecological screening levels with the exceptions noted above.

- Has the applicant demonstrated that until the time this material is used according to a beneficial use determination, the material will be managed, including any storage, transportation, or processing, to prevent releases to the environment or nuisance conditions?

  ☒ Yes ☐ No

Notes:
The application states that contaminated soil will be managed at all times to meet the following proposed BUD conditions and 1200CA. The reused soil will be managed to prevent, at all times, windblown dust, runoff and soil erosion, releases to the environment or nuisance conditions. The reused soil will be placed away from environmentally sensitive areas to protect waters of the State (such as wetlands, wildlife refuges and parks). PWB will maintain records documenting the amounts of contaminated soil transported to the soil reuse location by year.

PWB will comply with all applicable federal, state, and local regulations when using the material. PWB identifies in the application and will manage the contaminated soil in accordance with the 1200 CA permit.

- Has the applicant demonstrated that hazardous substances in the material, if any, meet one of the criteria in the bulleted list below?

  ☒ Yes ☐ No

  - Hazardous substances do not significantly exceed the concentration in a comparable raw material or commercial product;
  - Hazardous substances do not exceed naturally occurring background concentrations; or
  - Hazardous substances will not exceed acceptable risk levels, including persistence and potential bioaccumulation, when the material is managed according to a beneficial use determination.

Notes:
Testing results indicate that the hazardous substances in the contaminated soils do not significantly exceed the concentration in a comparable raw material (soil).

- Has the applicant demonstrated that the proposed beneficial use will not result in the increase of a hazardous substance in a sensitive environment, such as a park, wildlife refuge or wetland?

  ☒ Yes ☐ No

Notes:
The material will not be placed in a sensitive environment. In addition, contaminant concentrations meet clean fill screening levels for most contaminants and exceedances are minor for those above clean fill values.

- Has the applicant demonstrated that the proposed beneficial use will not create objectionable odors, dust, unsightliness, fire, or other nuisance conditions?

  ☒ Yes ☐ No

Notes:
The application states that the reused contaminated soil will be managed in accordance with the procedures and best management practices outlined in the PWB 1200 CA permit.

- Has the applicant indicated that the proposed beneficial use will comply with any other applicable federal, state, and local regulations?

  ☒ Yes ☐ No

4. Public Involvement Evaluation (Note: this is not a beneficial use evaluation criterion)

Determine a public involvement recommendation using the current Guidance to DEQ Solid Waste Program Staff and Managers on Public Notice and Participation.

- Is public notice and participation being recommended for this application?

  ☒ Yes ☐ No

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Notes:
DEQ is aware of public interest in the proposed use of the material and will be posting a Public Notice requesting public comment for 14 days.