

Beneficial Use of Solid Waste Determination Evaluation Form

 <p style="margin: 0;">State of Oregon Department of Environmental Quality</p>	Applicant: Clean Water Services	
	BUD#: BUD-20130829	
	Solid Waste: Municipal street sweeping fines	
	Summary of approved beneficial uses requested by applicant:	
	Nonresidential construction and utility trench fill (e.g. landscaping fill along streets within a public right of way, common fill at commercial and industrial construction sites, landscaping features such as berms and vegetated areas along parking strips and excavation backfill and utility trench fill where native backfill is approved for use and deemed appropriate by the engineer of record)	
	Reviewer: Daniel Hough, DEQ Northwest Region	Date: July 1, 2014
Tier:	<input type="checkbox"/> One <input checked="" type="checkbox"/> Two <input type="checkbox"/> 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 Rule (OAR) 340-093-0280 through 340-093-0290 establishes 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.

Identify if the applicant met the three performance criteria (OAR 340-093-0280, Case-Specific Beneficial Use Performance Criteria), or identify any deficiencies in the application and any DEQ recommendations for further action for the beneficial use application.

Notes:

DEQ received a beneficial use application from Clean Water Services (CWS) on August 28, 2013 requesting that DEQ evaluate and approve beneficial use of street sweeping fines as nonresidential construction and utility trench fill (e.g. landscaping fill along streets within a public right of way, common fill at commercial and industrial construction sites, landscaping features such as berms and vegetated areas along parking strips and excavation backfill and utility trench fill where native backfill is approved for use and deemed appropriate by the engineer of record). CWS also requested approval of beneficial use of street sweeping fines as a soil amendment (e.g. the addition of street sweeping fines to non-food crop farmland and landscaped areas to improve soil texture and increase drainage and aeration in heavy clay soils) and as agricultural fill.

DEQ evaluated the application and associated analytical results and determined that screened street sweeping fines meet the case-specific performance criteria in the checklist below for nonresidential

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construction and utility trench fill including landscaping fill along streets within a public right of way, common fill at commercial and industrial construction sites (regardless of zoning), landscaping features such as berms and vegetated areas along parking strips and excavation backfill and utility trench fill where native backfill is approved for use and deemed appropriate by the engineer of record.

DEQ has not received sufficient information to approve the beneficial use of screened street sweeping fines as a soil amendment or as agricultural fill.

This evaluation focuses on approved uses of screened street sweeping fines.

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

1. Characterization of the Solid Waste

- 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

Clean Water Services proposes to make 8,000-9,000 cubic yards per year of screened street sweeping fines available for the proposed beneficial uses. The fines are swept (with regenerative air sweepers) from within the CWS District which consists primarily of residential land uses, with some commercial and even less industrial land use, within the urban growth boundary of Washington County’s incorporated areas (Beaverton, Hillsboro, Sherwood, King City, Durham, Cornelius, North Plains, Forest Grove, Banks) and unincorporated areas (Aloha, Metzger, Bethany). The service area is primarily composed of residential streets with some arterials and collectors. The sweepings are not collected from interstate freeways, other high traffic state highways, or heavy industrial areas. Material is transferred to a processing site at the Forest Grove Wastewater Treatment Plant. After the material is dewatered, it is mechanically screened via a Vermeer Wildcat Trommel one-inch screen to remove the “garbage” (approximately 30 percent of swept material is screened out and disposed of at the Hillsboro Landfill), leaving the material referred to as “street sweeping fines.”

- Did the applicant provide an adequate description of the proposed beneficial use and justify how the proposed use is beneficial? Yes No

CWS states that the use of street sweeping fines as nonresidential construction and utility trench fill, and as a soil amendment, is productive and are not speculative:

***“The use of street sweeping fines debris as non-residential construction and utility trench is productive because it replaces clean fill, which can be conserved for use in more restrictive settings, such as residential locations and sensitive environments.*”**

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There are several identified sites where the District can use the material. For example, the District is in the early stages of planning a new material processing facility, which will require non-residential construction fill for constructing berms as visual barriers and landscaping at the facility.

The District owns and operates four wastewater treatment plants, several large sewage pump stations, a Field Operations complex, and administrative offices, all of which periodically require landscaping and soil amendments. As improvements are constructed at these sites, particularly the treatment plants, there is a steady need for fill material. The District will be able to productively use street sweeping fines as a non-residential construction fill at these sites.

In addition to using the material on District property, the District has had requests for street sweeping fines for use on property controlled by other public agencies and private property owners. Staff from the City of Forest Grove has expressed an interest in using street sweeping fines as non-residential construction fill in medians and shoulders of public rights of way."

CWS states that the proposed uses are a valuable part of a manufacturing process, an effective substitute for a valuable raw material, or commercial product, and do not constitute disposal: *"Street sweeping fines are an effective substitute for common fill in certain settings.*

CWS states that the proposed uses are in accordance with applicable engineering standards, commercial standards, and agricultural or horticultural practices: *"The use of street sweeping fines as non-residential construction and utility trench fill is proposed only in situations where it meets the applicable engineering standards. For example, street sweeping fines will meet standards required for construction or trench backfill where native backfill is approved. Other situations may require an engineer to evaluate the material's physical properties and approve the material if it meets the requirements of the specific application.*

However, DEQ has determined that CWS has not adequately demonstrated street sweeping fines used as agricultural fill could be isolated from food crop areas or potential food crop areas. CWS has also not adequately demonstrated that beneficial use as a soil amendment can meet the intent of the Oregon Department of Agriculture definition of "agricultural amendment" in Oregon Revised Statute 633.311(1)(a):

Agricultural amendment means a mixed or unmixed synthetic chemical substance, a chemically or physically modified natural substance, a naturally occurring substance or a manufacturing by-product, or a combination of those substances or by-products, intended to induce crop yields or plant growth or to produce any physical, microbial or chemical change in the soil.

Specifically, it has not been demonstrated that street sweeping fines will either chemically or physically enhance crop yield beyond yields achieved through use of native soils. This may be accomplished through a Tier Three application for beneficial use that includes a demonstration project as described in OAR 340-093-0290 and/or successful registration of the soil amendment product with the Oregon Department of Agriculture as an agricultural amendment (OAR 603-059).

- 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

Chemical characteristics:

CWS' Water Quality Lab staff used a sampling grid to locate eight randomly selected sampling points from screened street sweeping fines at the Forest Grove material processing site. Samples

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of approximately one liter were collected below the surface of the pile at each sampling point using a shovel. These grab samples were then mixed thoroughly in a clean five-gallon bucket and split into subsamples for distribution to Columbia Analytical Services (CAS) and the District's Water Quality Lab for analysis. To prevent loss of analytes, subsamples for volatile organics analysis were immediately placed into 4-ounce jars containing methanol, tightly capped, and mixed. Where results obtained by the District's Water Quality Lab differed from those obtained by CAS (due to sample heterogeneity and different digestion procedures) the higher concentration was used in characterization and risk analysis.

[Additional email clarification (02/18/14) - The sampled material was collected, screened, and stockpiled within 18 months prior to sample collection and testing.]

Review indicates the following street sweeping fines analytical results exceed DEQ clean fill standards (Portland Basin background level):

1. Benzo(a)pyrene = 0.059 mg/kg (Portland Basin background = 0.015 mg/kg, DEQ residential risk-based concentration for dermal contact with soil = 0.015 mg/kg, DEQ urban residential risk-based concentration for dermal contact with soil = 0.034 mg/kg)
2. Copper = 38.5 mg/kg (Portland Basin background = 34 mg/kg, DEQ residential risk-based concentration for dermal contact with soil = 3,100 mg/kg)
3. Antimony = 1.15 mg/kg (Portland Basin background = 0.56 mg/kg, EPA Region 9 resident soil regional risk-based screening level = 3.1 mg/kg)

DEQ also notes the following analytical results below clean fill standards but exceeding ecological screening levels and/or risk-based screening concentrations:

Physical characteristics:

CWS: "Physically street sweeping fines are similar to typical soils, sediments and aggregates. Street sweeping fines consist of a mixture of gravel, sand, silt and clay-sized material, along with leaves, twigs and other organic material. Visually, the material resembles a rich, dark soil or mulch. A sieve analysis for particle size distribution, along with moisture content and organic matter content is included in Attachment D. The sieve analysis shows predominantly coarse to medium sand-size material, 10% gravel and 12% silt and clay, with 5.9% organic matter."

- 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

[See notes for Tier 2 below and Sections 2 and 3.]

- If required, did the applicant provide any other DEQ-required information to evaluate the proposal? N/A No

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

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product, as applicable.)

Yes No

Chemical analysis results were evaluated against DEQ Risk-Based Concentrations for Individual Chemicals (Environmental Cleanup and Tanks Program, 06/07/2012 Version) and the DEQ Clean Fill Table for Uplands (12/20/2013 Version). The following analysis methods were used: EPA 3541 (Automated Soxhlet Extraction) with EPA 8270D (Semivolatile Organic Compounds by GC/MS), EPA 8082A (Polychlorinated Biphenyls (PCBs) by Gas Chromatography) and 8082B (Organochlorine Pesticides by Gas Chromatography); EPA 5035A/50 (Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples) with EPA 8260C (Volatile Organic Compounds by GC/MS) and NWTPH (Volatile Petroleum Products Method for Soil and Water); EPA 3050B (Acid Digestion of Sediments, Sludges, and Soils) with EPA 200.7 (Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Spectrometry) and EPA 200.8 (Determination of Trace Elements in Waters and Wastes by ICP-MS); EPA 1613B (Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS); 160.3M (Modification of Percent Moisture by Total Residue); EPA 9012B (Total and Amenable Cyanide (Automated Colorimetric with off-line Distillation)); EPA 9065 (Phenolics (Spectrophotometric, Manual 4-AAP with Distillation)); ATSM D4 (Standard Test Method for Bitumen Content)

- 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

Three analyzed contaminants exceeded DEQ clean fill standards: benzo(a)pyrene, copper and antimony. However, all contaminant levels detected are below relevant risk-based screening levels for the approved material uses (See Tier 1 Section, above). While benzo(a)pyrene results are above soil ingestion, dermal contact, and inhalation exposure risk-based concentrations for residential and urban residential (human receptors), the material is not proposed to be used in residential or urban residential settings.

- 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

The proposed beneficial uses include applications on private land and in the public right of way (nonresidential only). The material will not be stored or used in any waterway, wetland, drainage application, or in any manner that poses a threat to waters of the state. CWS will be required to disclose all DEQ conditions of use to users of the material.

- 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

CWS will be required to submit an annual report to DEQ detailing entities beneficially using street sweepings as well as volume and locations of use. These records must be maintained for five years.

- 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

Material will be processed and stored at the CWS Forest Grove Wastewater Treatment Plant site. CWS: "The area where the material is stored drains to a sump which is pumped to the wastewater treatment plant, preventing discharges of nonstormwater to the MS4 or environment. The material retains moisture so it does not tend to be windblown. The screened material does not tend to

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cause odor issues. Incoming material is delivered to the site via a hook lift truck carrying a 20 yard container. Outgoing screened loads would be transported via hook lift truck or dump truck. Incoming and outgoing loads will be covered during transportation. The District is currently in the planning phase for a new materials processing facility. The new facility will be designed and operated to prevent releases to the environment and nuisance conditions during processing and storage of sweeper fines.”

Tier 3: Applicable Not applicable

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
- Did the applicant successfully identify or demonstrate a reasonably likely proposed beneficial use for the material that is not speculative? Yes No

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

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

Currently there is approximately 5,000 cubic yards of processed material stockpiled at the Forest Grove site pending beneficial use application approval prior to use. It is anticipated that, upon approval, the entirety of stockpiled material will be used within several months. Ongoing, CWS anticipates adequate demand for the 8,000 – 9,000 cubic yards of swept, processed, material produced every year.

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

DEQ is also proposing to allow Lane Forest Products to use composted street sweepings for similar nonresidential construction fill uses. The data provided by CWS demonstrates that contaminant concentrations in the screened street sweeping fines are similar to steel slag sediment and slightly contaminated soil that DEQ has approved for use in nonresidential construction fill applications.

CWS also proposed use of street sweeping fines as a soil amendment and for agricultural fill. DEQ does not consider the information provided sufficient to demonstrate that these uses are beneficial and therefore they cannot be approved at this time.

- 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? N/A

DEQ rules allow street sweeping fines to be used under a standing beneficial use for road sanding

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after winter storms and use as spill response absorbent. See OAR 340-093-0270(5).

- 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

The data provided by Clean Water Services demonstrates that contaminant concentrations in the screened street sweeping fines are similar to steel slag sediment and slightly contaminated soil that DEQ has approved for use in non-residential construction fill applications.

Research suggests that street sweeping fines can be used as an effective substitute for native or other fill materials in the approved applications.

- Is the use in accordance with applicable engineering standards, commercial standards, and agricultural or horticultural practices?
 Yes No

CWS: “The use of street sweeping fines as non-residential construction and utility trench fill is proposed only in situations where it meets the applicable engineering standards. For example, street sweeping fines will meet standards required for construction or trench backfill where native backfill is approved. Other situations may require an engineer to evaluate the material’s physical properties and approve the material if it meets the requirements of the specific application.”

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

- Has the applicant demonstrated that the material is not a hazardous waste under ORS 466.00?
 Yes No
- 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

Storage will be as described in the Tier Two section (above). CWS will also be required to advise users of screened street sweeping material in writing on conditions addressing proper storage and transportation and submit an annual report identifying where street sweeping fines are placed and used for fill.

- 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.

Hazardous substances will not exceed acceptable risk levels, including persistence and potential bioaccumulation, when the material is managed according to a beneficial use determination.

Has the applicant demonstrated that the proposed beneficial use will not result in the increase of a

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hazardous substance in a sensitive environment, such as a park, wildlife refuge or wetland?

Yes No

Street sweepings are not proposed to be used in sensitive environments such as on residential properties, agricultural land, parks, wildlife refuges or wetlands.

- Has the applicant demonstrated that the proposed beneficial use will not create objectionable odors, dust, unsightliness, fire, or other nuisance conditions? Yes No

CWS: “Street sweeping fines tend to have the same smell as typical soil. As proposed, street sweeping fines will not create more dust than the material it is replacing. Street sweeping fines resemble mulch or soil and are not unsightly; they are not flammable and do not create other nuisance conditions.”

- Has the applicant indicated that the proposed beneficial use will comply with any other applicable federal, state, and local regulations? Yes No

CWS will notify users of street sweepings that approval needs to be obtained from relevant local land use authorities prior to placement of the material.

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 & Participation**.

- Is public notice and participation being recommended for this application? Yes No

DEQ is not aware of public concerns with use of the material as nonresidential construction and utility trench fill (e.g. landscaping fill along streets within a public right of way, common fill at commercial and industrial construction sites, landscaping features such as berms and vegetated areas along parking strips and excavation backfill and utility trench fill where native backfill is approved for use and deemed appropriate by the engineer of record). DEQ will provide a two week public notice period.