Best Practices for Biosolids Management

Selecting Land Application Sites
April 16, 2013



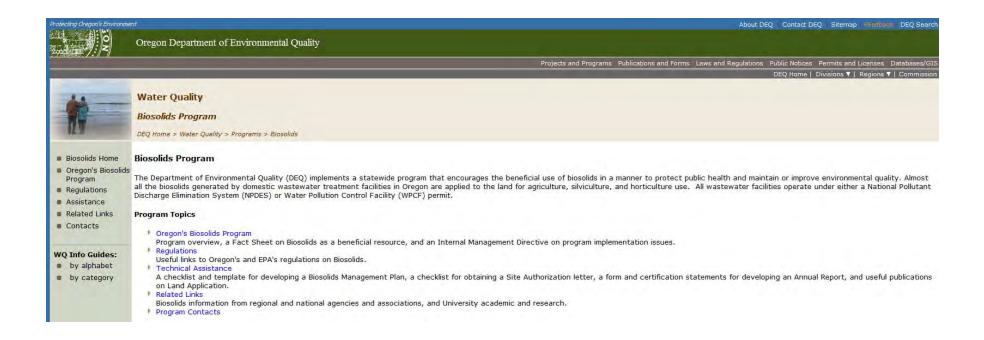




Presentation Overview

- Regulatory Policy
- Important Considerations
- Online Soil Survey Information
- Summary of Tools
- Questions and Discussion

http://www.deq.state.or.us/wq/biosolids/biosolids.htm



Regulatory Chronology

- July 21, 1978 "Guidelines for Handling, Disposal and Use of Sewage Sludge."
- 1983 The Oregon legislature mandates Oregon Administrative Rules (OARs) for beneficial use
- August 10, 1984 The EQC adopted rules (OAR 340 Div. 50)
- July 7, 1995 The EQC adopted revisions to the OARs to make the rules consistent with the 40 CFR Part 503 federal regulations.

Land Application Site Requirements

- All land application sites must be authorized in writing by DEQ prior to use considering:
 - Sensitive areas
 - Setbacks
 - Seasonal conditions
 - Soils
 - Crop management
 - Public comment

Criteria for site selection (340-050-0070)

- 1. Tillable, agricultural land
- 2. Site characteristics
 - a. Stable geologic formation
 - b. Groundwater depth
 - c. Topography (slope)
 - d. Soil depth
 - e. Saline or sodic soils
- 3. Proximity to residential areas and setbacks

Biosolids Land Application Site Authorization Request Documentation Checklist

- Site Information
- Soil information
- Crop Information
- Biosolids and Land Application Information
- Public Participation Information

NRCS Web Soil Survey Tool

http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm



You are here: Web Soil Survey Home



▶ National Cooperative

Soil Survey (NCSS)

Archived Soil Surveys

Dofficial Soil Series

▶ Soil Series Extent

Mapping Tool

▶ Soil Data Mart

Descriptions (OSD)

▶ Status Maps

START WSS

Welcome to Web Soil Survey (WSS)



Web Soil Survey (WSS) provides soil data and information produced by the National Cooperative Soil Survey. It is operated by the USDA Natural Resources Conservation Service (NRCS) and provides access to the largest natural resource information system in the world. NRCS has soil maps and data available online for more than 95 percent of the nation's counties and

anticipates having 100 percent in the near future. The site is updated and maintained online as the single authoritative source of soil survey information.

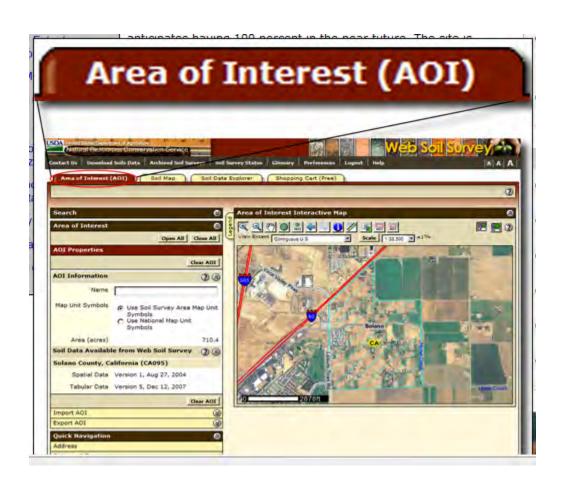
I Want To ...

- Start Web Soil Survey (WSS)
- Know the requirements for running Web Soil Survey — will Web Soil Survey work in my web browser?
- Know the Web Soil Survey hours of operation
- Find what areas of the U.S. have soil data

Announcements/Events

 Web Soil Survey 2.3 has been released! View description of new features.

Step 1 – Define Area of Interest



Step 2 – See Soil Map

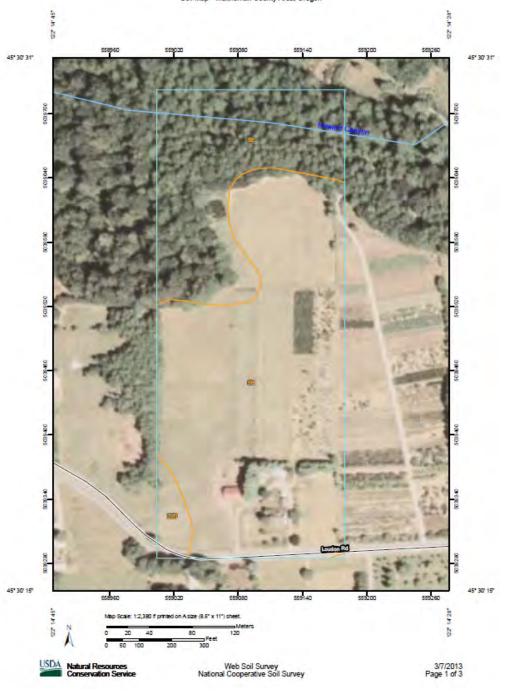


Step 3 – See Soil Data



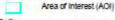
Step 4 – Printable Map and Report





MAP LEGEND

Area of Interest (AOI)



Solis

Soil Map Units

Special Point Features

- Blowout
- Borrow Pit
- % Clay Spot
- Closed Depression
- Gravel Pit
- Gravely Spot
- Landfli
- A Lava Flow
- 4. Marsh or swamp
- ⊗ Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- + Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- b Slide or Slip
- as Sodic Spot
- Spoil Area
- Stony Spot

7

- Wet Spot
- Other

Special Line Features



Short Steep Slope

Very Stony Spot



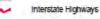
Political Features

Water Features

Streams and Canals

Transportation









Local Roads

MAP INFORMATION

Map Scale: 1:2,380 if printed on A size (8.5" x 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Multnomah County Area, Oregon Survey Area Data: Version 10, Aug 20, 2012

Date(s) aerial images were photographed: 7/23/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



Map Unit Legend

Multnomah County Area, Oregon (OR051)					
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI		
58	Bull Run silt loam, 3 to 8 percent slopes	12.7	66.8%		
5E	Bull Run silt loam, 30 to 60 percent slopes	5.7	30.2%		
27D	Mershon silt loam, 15 to 30 percent slopes	0.6	3.0%		
Totals for Area of Interest		19.0	100.0%		

Multnomah County Area, Oregon

5B-Bull Run silt loam, 3 to 8 percent slopes

Map Unit Setting

Elevation: 500 to 1,500 feet

Mean annual precipitation: 60 to 100 inches Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 100 to 180 days

Map Unit Composition

Bull run and similar soils: 85 percent

Description of Bull Run

Setting

Landform: Mountain slopes

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Mountainbase

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Silty material mixed with volcanic ash

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water capacity: Very high (about 15.0 inches)

Interpretive groups

Farmland classification: Farmland of statewide importance

Land capability classification (irrigated): 3e

Land capability (nonirrigated): 3e

Hydrologic Soil Group: B

Typical profile

0 to 2 inches: Slightly decomposed plant material

2 to 12 inches: Silt loam 12 to 62 inches: Silt loam

Data Source Information

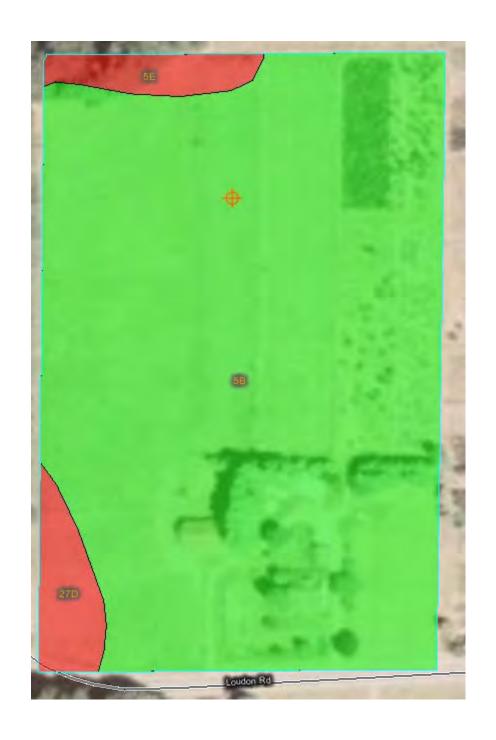
Soil Survey Area: Multnomah County Area, Oregon Survey Area Data: Version 10, Aug 20, 2012





$Tables-Land\ Application\ of\ Municipal\ Biosolids,\ summer\ (OR)-Summary\ By\ Map\ Unit$

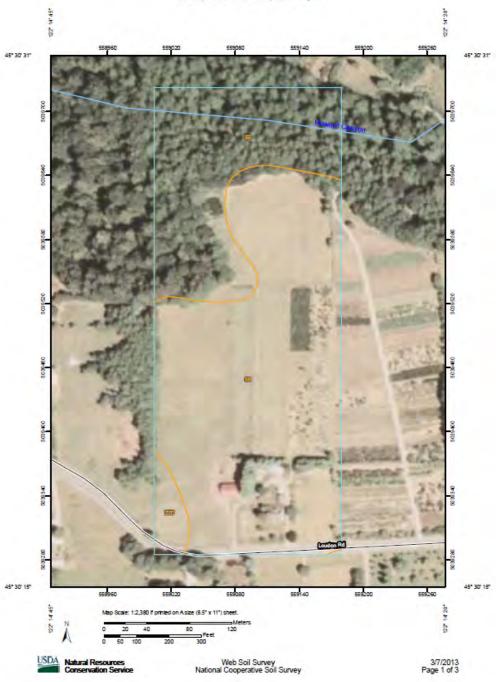
Summary by Map Unit — Multnomah County Area, Oregon (OR051)						
Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)		
5B	Bull Run silt loam, 3 to 8 percent slopes	Not limited	Bull Run (85%)			
5E	Bull Run silt loam, 30 to 60 percent slopes	Very limited	Bull Run (85%)	Slope (1.00)		
27D	Mershon silt loam, 15 to 30 percent slopes	Very limited	Mershon (90%)	Slope (1.00)		



Soil Physical Properties Available Water Capacity Available Water Supply, 0 to 100 cm Available Water Supply, 0 to 150 cm Available Water Supply, 0 to 25 cm Available Water Supply, 0 to 50 cm Bulk Density, 15 Bar Bulk Density, One-Tenth Bar Bulk Density, One-Third Bar Linear Extensibility Liquid Limit Organic Matter Percent Clay Percent Sand Percent Silt Plasticity Index Saturated Hydraulic Conductivity (Ksat) Saturated Hydraulic Conductivity (Ksat), Standard Classes Surface Texture Water Content, 15 Bar Water Content, One-Third Bar

Summary by Map Unit — Multnomah County Area, Oregon (OR051)						
Map unit symbol	Map unit name	Rating (micrometers per second)				
5B	Bull Run silt loam, 3 to 8 percent slopes	160.6667				
5E	Bull Run silt loam, 30 to 60 percent slopes	160.6667				
27D	Mershon silt loam, 15 to 30 percent slopes	9.0000				





Summary of Tools for Site Selection

- NRCS Web Soil Survey
- Google Earth
- Hand Auger
- Clinometer
- Tape for measuring setbacks
- Personal Contact with Neighbors

Questions?