City of Bend Class A Biosolids for Ranch and Home.

Building Healthy Soils for the Future.

41st Annual ORWEF Water Environment School at Clackamas Community College
City of Bend Water Reclamation Facility
Bend Water Reclamation Facility

- Average Daily Flow: 5.8 MGD
- Recycled Water - Pronghorn Golf Course: >2.5 MGD
- Digester Sludge Concentration: 3.3%
- Dry to Class B
- New in 2017 – Dry to Class A
- Biosolids Production: 3.0 DT/Day (1100 DT/YR)
- Available Application Land: 1600 acres
Headworks Equipment - 3MM and 6MM Screening
Anaerobic Digesters - one 900,000 & two 450,000 Gallons
12 Acres of Drying Bed Capacity
Summer Drying Period
Brown Bear Turning Operation
Mid to Late Summer Operation: 88-90% Solids
Dried Biosolids Covered - Storage Area 2,500 Cu/yds
Land Application Class B Program
Dec. 2014 USFS Clear Creek Study Site: End Date 2018
Sample a Pile?.......
# Class A Standard Exceptional Quality

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pathogen Reduction</td>
<td>40 CFR Part 503.32(a)(6) Alternative 4 - (Sampling)</td>
</tr>
<tr>
<td>Vector Attraction Reduction</td>
<td>40 CFR Part 503.33 (b)(7) Option 7 - (&gt;75% Solids)</td>
</tr>
<tr>
<td>Pollutants</td>
<td>40 CFR Part 503.10 (e) - (Table 3 Metals)</td>
</tr>
</tbody>
</table>
# Class A Standard Exceptional Quality

<table>
<thead>
<tr>
<th>Parameter*</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fecal Coliform</td>
<td>&lt; 1,000 MPN/g of dry solids</td>
</tr>
<tr>
<td>Salmonella</td>
<td>&lt;3 MPN/4 g of dry solids</td>
</tr>
<tr>
<td>Viable Helminth Ova (parasitic worms)</td>
<td>&lt;1 Ova/4 g of dry solids</td>
</tr>
<tr>
<td>Enteric Virus (roto virus)</td>
<td>&lt; 1 PFU/4 g of dry solids</td>
</tr>
</tbody>
</table>

*Note Regulations do not require testing for both fecal coliforms and salmonella, just one along with viable helminth ova and enteric viruses.
Salmonella, Enteric Viruses, Helminth Ova

- 7 Discrete Samples
- 7 separate tests
- 7 different results
- No Composites
Metals

- 1 Composite Sample
Class A Standard Exceptional Quality
Hampton Ranch Trucking Operation
Hampton Ranch: Class A Program, Application
Deschutes Recycling
# Mix Design Criteria

<table>
<thead>
<tr>
<th>Mix Design</th>
<th>Ratios (volume)</th>
<th>Notes</th>
<th>Operation</th>
</tr>
</thead>
</table>
| A          | 1:1:1:1 (Yard Debris : Dried Biosolids : Yard Debris : Dried Biosolids) | Goal of this mix is to produce a biosolids/yard debris mix that has a high fertility value | • Layer the yard debris and biosolids based on the ratios provided.  
• Allow moisture to build-up in the layered mixes for 1-2 weeks.  
• Turn/mix the mixtures after the 1-2 week period to assess odor and “feel” test.  
• Depending on the qualitative assessment, turn the mixture again and let set for 1-2 weeks then turn the mixture again. |
| B          | 1:1:1 (Yard Debris : Dried Biosolids : Yard Debris) | Goal of this mix is to produce a biosolids/yard debris mix that has a lower fertility value and useful as a soil conditioner |
Class A Biosolids Exceptional Quality and Bend Recycling Soil builder
Mix Design. 50/50 Biosolids/Soil Builder
Environmental Center: Branding Meeting, Victory Garden
More Considerations

• No DEQ Site approval required: Unrestricted use
• Nitrogen Value = Future fee likely 50% of commercial cost to rancher.
• $50K annual savings related to application class “B”
• Branding our product: make available to local gardeners, Earth day.
• Annual Report: One page: Volume in /Volume out summery.
• Amend Biosolids Management Program.
• Partner with local Master Gardeners.
Questions: Scott Thompson 541-322-6338
sthompson@bendoregon.gov

Questions: Mark Cullington 503-423-4043
markcullington@kennedyjenks.com