



6500 SW Macadam Avenue, Suite 200
Portland, OR 97239

P: 503.244.7005
F: 503.244.9095

Memorandum

DRAFT

Subject: City of Bellingham Biosolids Market Survey
Date: February 28, 2018
Project: 150048.210.212
To: Tadd Giesbrecht
From: Steve Wilson

Introduction

The City of Bellingham will discontinue thermal combustion of wastewater solids in favor of anaerobic digestion and biosolids beneficial use. As a matter of due diligence, the City asked Brown and Caldwell to identify potential markets for biosolids products. The final decision as to whether digestion will result in a Class A or B product has not been finalized. So, options were considered for both Class A and B biosolids. Approximately 10 dry tons (DT) per day or 3650 DT/year will be produced. For agricultural land application, roughly 1000 acres per year will be needed.

The approach for this survey was to identify potential biosolids users in the local area as well as east of the Cascades. Hauling Class B biosolids east of the Cascades is a common approach for agencies that treat wastewater because year-round operation is feasible. Several contract entities provide hauling, agricultural liaison, permitting, and application services for a fee.

Local utilization of biosolids as a fertilizer and soil amendment would be limited by seasonal wet weather. For an exclusively local program, seasonal storage of dewatered biosolids would be necessary. Alternatively, Class B biosolids could be further processed via composting to produce a more marketable Class A product. For biosolids produced via Class A anaerobic digestion, other options may be available including topsoil manufacturing. Topsoil could be produced at either a City-owned site or through an existing private operation.

For this survey, representative biosolids generators were identified and then interviewed where operations were similar to the model envisioned for Bellingham. The focus was on local generators; exemplary programs like the City of Tacoma and King County have already been considered. Private contract operations including land appliers and topsoil manufacturing companies were also identified. Meetings included additional resources including the Whatcom County Agricultural Extension agent, and a specialist consultant.

A summary of identified generators, contractors, and other resources is presented in Table 1 below, along with contact information. Where available, operational cost and contract fee information is also provided.

Table 1. Summary of Identified Generators, Contractors, and Other Resources		
Producer	Product Description	Contact information
Area Biosolids Generators		
City of Everett	Approximately 2500 DT of Class B biosolids are dredged from extensive storage lagoons every other year for land application and limited composting. A contract operator is used for all operations. Everett has unusual flexibility compared with other biosolids generators in western Washington because of the long-established storage lagoons. Storage allows them to conduct beneficial use operations 100% locally.	Chris Chesson, Biosolids Manager 425-257-8878
City of Burlington	Processes 275 DT/year through a Fenton thermal dryer to generate dried product for local land application.	Don Ericson 360-757-4085
City of Mt. Vernon	Produces 550 DT/year of Class B dewatered biosolids for contract land application through BPI (see contractor contacts).	Gary Duranceau 360-336-6219
La Conner	Small scale compost operation with local reuse.	Kelly Wynn 360-466-4314
City of Arlington (on-site interview)	<p>Aerated static pile compost facility located in an industrial park remote from the WWTP. Approximately 240 DT of dewatered, waste activated sludge are dewatered and composted. Facility does not have capacity for 100% of biosolids, so some is contract land applied as Class B product east of the cascades via Tenelco (contractor). Purchase of wood chip bulking agent and compost product give-away result in a unit cost of \$118/wet ton of biosolids to make compost. Contract land application is cheaper at \$80/wet ton. However, the City values local use of the Class A composted product for rate payers and the general public. The off-site location is also considered useful for equipment and construction materials storage.</p> 	Fred Rapelyea 360-403-3540

Figure 1. Arlington ASP compost facility

Table 1. Summary of Identified Generators, Contractors, and Other Resources

Producer	Product Description	Contact information
Area Biosolids Generators (continued)		
<p>City of Lynden (on-site interview)</p>	<p>600 DT of extended aeration solids dewatered to 15% via rotary fan press. Approximately 3,000 CY of compost product produced via aerated static pile method and a combination of yard waste plus sawdust and hog fuel bulking agent. Compost facility has been operating since 1997. Compost product is sold for \$8-11/CY and markets include US Compost Council (USCC) certified DOT projects. Fifty percent of biosolids go to contract land application (BPI) at a cost of \$0.29/lb of dry solids (\$580/DT). They estimate that it costs about the same amount to produce compost as it does to go with contract land application.</p>  <p style="text-align: center;">Figure 2. Lynden SP compost facility</p>	<p>Tami Adams 360-354-0663</p>
Contract Land Appliers		
<p>Boulder Park Inc. (BPI)</p>	<p>BPI provides contract hauling and land application to several area cities including Lynden, Sedro Woolley, and Mt. Vernon. They have a driver that lives in the local area, and a well-established land application network in Douglas County. BPI serves many other generators in the Puget Sound area including King County. The price quoted for Bellingham was \$63.87/wet ton, the same as smaller communities in in Whatcom and Skagit counties. The price could be negotiable for a larger quantity from Bellingham.</p>	<p>Dave Ruud 509-683-1142</p>
<p>Elysian Field Farms (Kurt Bartelheimer)</p>	<p>Kurt farms but has also done much of the beneficial use contracting for the City of Everett in recent years. Both Class B land application and composting to produce a Class A product are included in his experience with the City. He would be interested in marketing or contract applying biosolids from Bellingham. In his view, the concept of beneficially reusing biosolids will be most feasible if the product meets Class A standards. He sees the greatest potential in Skagit County as a fertilizer for row crops.</p>	<p>Elysian Fields elysianfieldsfarms@gmail.com</p>
<p>Tenelco, Inc.</p>	<p>Referred by the City of Arlington</p>	<p>Catherine Tenold-Eldredge, 425-397-7770</p>

Table 1. Summary of Identified Generators, Contractors, and Other Resources		
Producer	Product Description	Contact information
Topsoil Manufacturing		
Various	Many companies are listed as topsoil providers in the Bellingham area. A partial list is provided under contact information. Two additional companies, Green Earth Technology and Grow Source, were selected for personal meetings based on website information and location.	Skagit Soils, 360-424-0199 Custer Sand and Topsoil, 360-961-8989 Ferndale Ready Mix, 360-354-1400 Iverson Earthworks, 360-366-3476 Bell/Alger Sand and Gravel, 360-733-3483
Green Earth Technology (GET)	<p>GET grew out of the sand and gravel business to begin composting manure and expand. They now accept food waste and yard waste from Whatcom County sources including the City of Bellingham, and have a solid waste permit from the County for this purpose. Composting technology is aerated static pile, with GORE covers. They collect approximately 24,000 tons of yard waste yearly and produce 18,000 cubic yards of compost which is blended with sand and gravel. They use public outreach to maintain support for the operation and help market products. Compost is USCC certified and fits specifications for DOT projects.</p> 	<p>Stephanie Harvey 360-354-4936 https://www.greenearthtechnology.com/</p>
Grow Source	Grow Source is owned and operated by Todd Beld, who is also in the farming business. Todd is interested in Class A biosolids if that is the direction Bellingham chooses. Class B permitting would require outside support. Todd intends to visit the City of Tacoma topsoil blending facility to learn more about how Tagro is made. He also sees opportunities for Class A land application in Skagit County.	<p>Todd Beld 360-318-8554 http://www.growsource.com/</p>

Figure 3. Green Earth Technology ASP composting

Table 1. Summary of Identified Generators, Contractors, and Other Resources

Producer	Product Description	Contact information
Emergency disposal		
Republic Services (local landfill)	Landfill disposal is an option for emergencies when there is a process breakdown or beneficial use is otherwise unavailable. Disposal is available at the Roosevelt Landfill in Klickitat County. Modal transport by rail is available from a transfer station near Ferndale. 25 ton drop boxes are loaded by the WWTP and hauled by truck to that location, where the boxes are transferred for rail transport to Roosevelt. Cost is approximately \$70/wet ton. An application and quote is attached.	Teresa Dillashaw, Republic Services 206-652-8893
Local Marketing Resources		
Terre-Source	Compost consultant based in Mt. Vernon. Specialties include planning, permitting, product quality, and market development. Could assist Bellingham with developing a biosolids market in a variety of ways including serving as a liaison for setting up a demonstration project.	Tamara Thomas, PE 360-336-3536 http://terre-source.com/
Whatcom County WSU Extension	<p>Chris is the agricultural agent for the county and has an interest in recycling organics as soil amendments. He co-authored a paper on remediating brownfields with biosolids and is knowledgeable about both benefits and environmental issues (attached). He suggested that land application has better potential in Skagit County than Whatcom County. Acreages in commercial ag production (exceeding 100,000 acres) are similar in both counties, but Whatcom County produces and land applies more manure, while Skagit County has more emphasis on row crops.</p> <p>Statistics for crop production are available at http://whatcom.wsu.edu/ag/statistics.html. Similar statistics for Skagit County are available at the Skagit County Extension website.</p> <p>Chris strongly recommended beginning with public outreach for a biosolids product at an early stage and is willing to help coordinate that. He is connected with community garden and master gardener programs. The concept of importing Tagro product for demonstration purposes was discussed and he believes that would be an excellent way to start.</p>	Chris Benedict 360-676-6736, ext. 50280 chrisbenedict@wsu.edu

Conclusions

A variety of opportunities appear to be available for processing and marketing a Bellingham biosolids product. Class B land application would be the most challenging approach from a permitting and logistical standpoint. At least half of the year, Class B biosolids would need to be hauled east of the Cascades for land application on dryland wheat, or processed further into Class A compost for subsequent local use.

Generating Class A biosolids through enhanced digestion would improve local (west side) land application potential and also broaden program opportunities to produce manufactured soil blends and partner with the private sector. Off-site options for the City to conduct either composting or soil blending operations are still unclear and working with the private sector might be a solution. If the City elects to develop its own off-site facility, operations could be similar to Arlington and Lynden compost production, or a Tagro-style soil blend operation. Markets for the new product will take time to develop and in the short-term direct land application will be the best approach. Most Cities choose to do land application through a qualified contractor.

Regardless of whether the City pursues future operations, some interim market development in cooperation with WSU will be helpful. Using biosolids-derived compost or manufactured soil in local demonstrations can help raise public (and rate payer) awareness about the benefits of biosolids. Both governmental (WSU Extension) and professional (Terre-Source) resources are locally available to assist in this endeavor.

Recommendations

- City staff meet with Chris Benedict to discuss options for a demonstration/community garden project and similar ideas to begin market development
- Until Bellingham can hire staff for the biosolids program, consider utilizing Terre-Source to assist with initial market development opportunities.
- Private sector soil manufacturing and composting operations are in operation now and may provide an opportunity to avoid additional capital investment in an off-site facility.
- Continue to focus on Class A biosolids digestion to provide an end product that is easier to permit and manage.

Attachments:

1. Republic Services application and quote for emergency disposal at Roosevelt Landfill.
2. Chris Benedict paper on soil remediation with biosolids.