Vernon County Solid Waste and Recycling Committee

Financial Analysis Update and Groundwater Environmental Risk Assessment

July 15, 2020
SCS Presentation

• SCS Engineers Introduction
• Financial Analysis Update
  • Betsy Powers, Christine Collier and Vita Quinn
• Groundwater Environmental Risk Assessment
  • Betsy Powers and Sherren Clark
• Questions
Financial Analysis Update
Vernon County Solid Waste and Recycling
Vernon County Landfill

• Expected to reach capacity in 2024
• Evaluating future landfill and recycling services
• Financial analysis of three operational scenarios
Vernon County Landfill Options

1. Expand landfill and continue operations
2. Close landfill at end of current life and convert to a transfer station
3. Close landfill at end of current life and let private haulers determine where waste will go
Information Sources

• Solid Waste Management Options Analysis Report
  • Foth Infrastructure & Environment, LLC (Foth) dated February 1, 2009 (Appendices G through L were not available).
  • Evaluated 5 options, including expanding the landfill and converting to a transfer station.

• Current and historical reports, data, and schedules from Department staff
Information Sources (continued)

• Brian Kent of Short, Elliot, Hendrickson (SEH)
  • Remaining constructed life
  • Future site feasibility
  • Design
  • Schedule
  • Construction
  • Costs

• Conference calls with Department staff
Information Sources (continued)

• Southwest Sanitation
  • Southwest Sanitation recently built a nearby transfer station.
  • Approximately 95% of the waste collected by Southwest Sanitation goes to the Vernon County Landfill by contract.
  • Southwest Sanitation indicated it provides approximately 75-80% of the waste that the Vernon County Landfill receives.
  • If tipping fees increase, Southwest Sanitation may no longer take waste to the Vernon County Landfill.
Information Sources (continued)

• AA Dumpster Service:
  • AA Dumpster Service would like to see the landfill expand. They would continue to bring waste to the landfill.
  • The $60 per ton tipping fee was not cost prohibitive to them.
## Current Tip Fees

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee per Ton</th>
<th>FY2019 Tons</th>
<th>% Total FY 2019 Tonnage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracted MSW</td>
<td>$49</td>
<td>18,470</td>
<td>91.3%</td>
<td>State licensed waste transporters contracted with the Department</td>
</tr>
<tr>
<td>Non-Contracted MSW</td>
<td>$60</td>
<td>1,400</td>
<td>6.9%</td>
<td>Haulers that do not have a contract with the Department</td>
</tr>
<tr>
<td>Residential MSW</td>
<td>$120</td>
<td>144</td>
<td>0.7%</td>
<td>Residents who directly haul waste to the landfill</td>
</tr>
</tbody>
</table>
Options

1. Landfill Expansion
2. Transfer Station
3. Close Landfill and Recycling Center
Common Assumptions

- Financial assumptions
- Department provided financial and operational information
- Current constructed airspace will be utilized to full extent
- Debt service for future capital improvements and vehicle replacements
- Closure and post closure funds will be utilized to close the landfill and perform post-closure care/maintenance
- Excess funds stay with landfill for future costs
Option 1: Landfill Expansion – 3 Scenarios Evaluated

<table>
<thead>
<tr>
<th>Scenario Number</th>
<th>Contracted MSW Tip Fee per Ton</th>
<th>Contracted MSW Tip Fee Rebate per Ton</th>
<th>Non-Contracted MSW Tip Fee</th>
<th>Residential MSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$49 (same as current)</td>
<td>N/A</td>
<td>$60 (same as current)</td>
<td>$120 (same as current)</td>
</tr>
<tr>
<td>2</td>
<td>$60</td>
<td>N/A</td>
<td>$63</td>
<td>$120</td>
</tr>
<tr>
<td>3</td>
<td>$60</td>
<td>Up to 9% $5.40 per ton (net $54.60 per ton tip fee)</td>
<td>$63</td>
<td>$120</td>
</tr>
</tbody>
</table>

Notes:
1. Non-Contracted MSW tip fee increase to $63 = 5% increase.
2. Scenario 3 Contracted MSW tip fee rebate would be similar to La Crosse County Landfill with a sliding scale up to X% for waste delivery contracted for Y years.
Option 1, Scenario 1 Results

Vernon County, WI
Solid Waste Revenue Sufficiency Analysis

<table>
<thead>
<tr>
<th></th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>FY 2025</th>
<th>FY 2026</th>
<th>FY 2027</th>
<th>FY 2028</th>
<th>FY 2029</th>
<th>FY 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund Balance SM</td>
<td>$0.03</td>
<td>$0.08</td>
<td>$0.20</td>
<td>$0.07</td>
<td>-$0.10</td>
<td>-$0.10</td>
<td>-$0.11</td>
<td>-$0.51</td>
<td>-$0.70</td>
<td>-$0.87</td>
<td>-$1.09</td>
</tr>
<tr>
<td>Residential MSW</td>
<td>$120.00</td>
<td>$120.00</td>
<td>$120.00</td>
<td>$120.00</td>
<td>$120.00</td>
<td>$120.00</td>
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<td>$120.00</td>
<td>$120.00</td>
<td>$120.00</td>
</tr>
<tr>
<td>Contracted MSW</td>
<td>$49.00</td>
<td>$49.00</td>
<td>$49.00</td>
<td>$49.00</td>
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<td>$49.00</td>
<td>$49.00</td>
<td>$49.00</td>
<td>$49.00</td>
</tr>
<tr>
<td>Non-Contracted MSW</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
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<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
</tr>
</tbody>
</table>

Cash Flows
- $2
- $- O&M
- $- Capital
- $- Cash In

Fund Balance
- $0.5
- $- Current
- $- Minimum Reserve Target

Borrowing
- $2.0
- $- Current

CIP Funding
- $2.0
- $- Current
Option 1, Scenario 2 Results
Option 1, Scenario 3 Results
Option 1: Results Summary

<table>
<thead>
<tr>
<th>Scenario Number</th>
<th>Fund Balance End FY2030</th>
<th>Year Fund Balance Goes Negative</th>
<th>Financially Viable?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>($1.09M)</td>
<td>2024</td>
<td>No</td>
</tr>
<tr>
<td>2</td>
<td>$1.03M</td>
<td>N/A</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>$0.00M</td>
<td>N/A</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes:
1. M denotes Million.
Option 1 Assumptions

- Feasibility and permitting occurring in FY2020 – FY2022
- Construction in 2024 and 2028
- Vehicle replacement includes the scale, loader, compactor, and day cab
- Staffing does not change
Option 2: Transfer Station

- Alternative scenarios to modify tipping fee charges not analyzed.
- Key waste hauler, Southwest Sanitation, owns a nearby transfer station.
  - Model assumes all current waste goes to the Vernon County transfer station.
Option 2 Results

Vernon County, WI
Solid Waste Revenue Sufficiency Analysis

<table>
<thead>
<tr>
<th></th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
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<th>FY 2025</th>
<th>FY 2026</th>
<th>FY 2027</th>
<th>FY 2028</th>
<th>FY 2029</th>
<th>FY 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fund Balance $M</td>
<td>$0.18</td>
<td>$0.40</td>
<td>$0.68</td>
<td>$0.81</td>
<td>$0.92</td>
<td>$0.64</td>
<td>$0.10</td>
<td>-$0.46</td>
<td>-$0.90</td>
<td>-$1.37</td>
<td>-$1.90</td>
</tr>
<tr>
<td>Residential MSW</td>
<td>$120.00</td>
<td>$120.00</td>
<td>$120.00</td>
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</tr>
<tr>
<td>Non-Contracted MSW</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
</tr>
<tr>
<td>Landfill Tip Fees $M</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.62</td>
<td>$0.63</td>
<td>$0.64</td>
<td>$0.65</td>
</tr>
<tr>
<td>Contract Haul $M</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.53</td>
<td>$0.54</td>
<td>$0.55</td>
<td>$0.56</td>
</tr>
</tbody>
</table>

Cash Flows $5

 Millions $-
20 21 22 23 24 25 26 27 28 29 30

Fund Balance $1.0

 Millions $-
20 21 22 23 24 25 26 27 28 29 30

Borrowing $2.0

 Millions $-
20 21 22 23 24 25 26 27 28 29 30

CIP Funding $2.0

 Millions $-
20 21 22 23 24 25 26 27 28 29 30
Option 2 Assumptions

• Transfer station in the second half of FY2024
• Transfer station building modifications
• Department hauling
  • Tractors, trailers, staff, fuel, maintenance
• Contract hauling
  • Staff
• Receiving landfills
Option 3: Close Facility

• Vernon County residents and businesses contract or haul waste on their own
• Fees and services to residents and businesses determined by private entities
• Department ends recycling services
  • Assist municipalities in Vernon County with alternative recycling plans.
Option 3 Results

Vernon County, WI
Solid Waste Revenue Sufficiency Analysis

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<td>Non-Contracted MSW</td>
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<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
<td>$60.00</td>
</tr>
</tbody>
</table>

Cash Flows $2
- O&M
- Capital
- Cash In

Fund Balance $2.0
- Current
- Minimum Reserve Target

Borrowing $2.0
- Current

CIP Funding $2.0
- Current
Option 3 Assumptions

• No further vehicle replacement or major capital improvements will occur prior to closing
• Sale of existing capital (equipment) in FY2025
• Partial staffing in FY2025 to complete closure
## Summary of Financially Viable Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Fund Balance End FY2030&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>Tip Fees (per ton)&lt;sup&gt;(2)&lt;/sup&gt;</th>
<th>Recycling Operations Continue?</th>
<th>Achieve Minimum 3-Month Operational Reserve?</th>
<th>In-County Landfill Available?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Contracted MSW</td>
<td>Non-Contracted MSW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1, Scenario 2</td>
<td>$1.03M</td>
<td>$60</td>
<td>$63</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>1, Scenario 3</td>
<td>$0.00M</td>
<td>$54.60&lt;sup&gt;(3)&lt;/sup&gt;</td>
<td>$63</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>$1.64M</td>
<td>$49</td>
<td>$60</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Notes:
1. M denotes Million.
2. Residential MSW tip fee remains at current $120 per ton for each option shown.
3. Reflects potential of offering rebate program similar to La Crosse County Landfill.
Purpose

• Independent review of risk for groundwater contamination from the Vernon County Landfill
• Based on existing data and documents for existing landfill
Information Reviewed

• **Site geology** from existing boring logs and reports

• **Water table elevations** and groundwater flow directions from site monitoring wells

• **Landfill design** from site permitting documents

• **Leachate quality** from existing leachate monitoring and sampling results

• **Groundwater quality** from site monitoring well sampling data

• **Published scientific information** on the performance of Subtitle D landfill liners
Background

• Landfill designed in 1992; opened in 1993.
• Vertical expansion in 2005.
• Design and permitting included numerous soil borings and monitoring wells.
• Groundwater monitoring and reporting throughout site life.
• Additional evaluation and permitting would be required for an expansion.
Site Geology

• Conditions:
  • Current landfill is located in area of low permeability (fine-grained) soils.
  • Bedrock is located approximately 16 to more than 50 feet below ground surface.
  • Bedrock is primarily fractured dolomite, but deeper zones are more heterogeneous.
  • Karst features have been observed in Vernon County. No evidence identified in previous geologic investigations.

• Groundwater Risk Implications:
  • Fine-grained soil below the landfill and above the bedrock provides additional natural containment for the landfill and limits surface infiltration to the aquifer.
Water Table Elevations and Groundwater Flow

• Conditions:
  • Two water tables
    • Lower **regional water table** at depth of 140 – 190 feet below ground surface.
    • Approximate 10-foot-thick **perched water table** at approximately 90 – 120 feet below ground surface.
    • WDNR requirement: 10 feet of separation to water table.
  • Horizontal velocity estimated at 1 – 2 feet per day for both, but can be variable.

• Groundwater Risk Implications:
  • Depth to groundwater provides separation.
  • Fractured bedrock can have variable flow velocities.
Landfill Site Design

• Conditions:
  • Liner design exceeds state and federal requirements.

<table>
<thead>
<tr>
<th>Liner Component</th>
<th>Vernon County Landfill</th>
<th>Wisconsin Requirements (NR 500)</th>
<th>Federal Requirements (Subtitle D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geomembrane liner</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Clay liner thickness</td>
<td>5 feet</td>
<td>≥ 4 feet</td>
<td>≥ 2 feet</td>
</tr>
</tbody>
</table>

• Landfill systems manage leachate and landfill gas.

• Groundwater Risk Implications:
  • Design meets or exceeds current standards established for protection of groundwater.
Leachate and Lysimeter Monitoring

• Leachate:
  • Leachate is collected at the base of the landfill, pumped to leachate storage tank adjacent to landfill, and hauled to Viroqua sewage treatment plant.
  • Leachate is sampled semiannually.
  • Leachate monitoring results are typical for a municipal solid waste landfill.

• Lysimeters:
  • Lysimeters located under landfill liner.
  • Lysimeter test results similar to groundwater quality, indicating the liner is effective in containing leachate and protecting groundwater.
Background Groundwater Quality

• Established as part of permitting
• Nitrate+nitrite (as Nitrogen), manganese, iron, and fluoride were reported at concentrations exceeding the Wisconsin groundwater standards.
• Background groundwater quality is associated with natural hydrogeologic conditions and/or human activities, such as agriculture.
• WDNR concluded that the proposed landfill was designed to achieve the lowest possible concentration of these substances in the groundwater that is technically and economically feasible.
Ongoing Groundwater Monitoring

• 21 groundwater monitoring wells installed near the existing landfill for the purpose of monitoring groundwater.
  • 20 are sampled for quality.
    • 7 intersect perched water table.
    • 8 installed near regional water table.
    • 5 installed as piezometers below the regional water table.
Existing Groundwater Quality

- Sampled semi-annually
  - Public health parameters
    - Volatile organic compounds (VOCs)
  - Public welfare parameters (not health-related, but may affect taste or odor)
    - Chloride
    - Sulfate
  - Indicator parameters (general water quality, not affecting public health or welfare)
    - Total hardness
    - Alkalinity

- Results
  - Groundwater sampling results do not show impacts indicating a release from the landfill.
Published Information on Subtitle D Landfill Performance

- Reviewed two references published in scientific resources from 2002.
  - Environmental Science & Technology article by Barlaz et al., “Critical Evaluation of Factors Required to Terminate the Postclosure Monitoring Period at Landfills.”
- 2010 report by Geosyntec Consultants, “Environmental Protection at the Managed Solid Waste Landfill.”
Published Information on Subtitle D
Landfill Performance

• Published research indicates that environmental impacts have been negligible for landfills designed and constructed with composite liners meeting the federal Subtitle D requirements.
Summary

• Groundwater risk appears to be low based on:
  • Composite liner system exceeds state and federal requirements.
  • Published information documents good performance of composite liner systems.
  • Geology includes fine-grained soil above bedrock.
  • Depth to groundwater provides separation.
  • Monitoring results do not indicate contamination from the landfill.

• If expansion pursued, additional geologic investigation of expansion area will likely be required.
Questions?

- Betsy Powers
- Vita Quinn
- Christine Collier
- Sherren Clark