

Meeting Date: July 27, 2012

Presenter: Heather Overholser/Sean O'Malley

Submitting Department: ISWR/Engineering

Subject: Review of REVISED Golder DRAFT Landfill Closure Alternatives

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## STATEMENT/PURPOSE

To review the Golder Associates REVISED DRAFT report on landfill closure alternatives for the Horsethief Canyon Landfill and to offer staff recommendations.

## BACKGROUND/ALTERNATIVES

This is a follow up staff report to the report prepared for the July 17, 2012 JIM meeting to review the landfill closure alternatives draft report from Golder Associates.

Since we received the original draft report from Golder, staff has discussed with the Commission and Town Council the risks associated with Alternatives 2 and 3, as presented in the first version of the draft report. Alternatives 2 and 3 both include operations on top of the landfill cap.

Unfortunately, there are some unavoidable risks associated with all the options we are exploring. Landfilling is inherently a risky proposition. For example, there are more short term risks associated with waste excavation and more long term risks associated with capping, especially when conducting future operations on top of the cap. In the revised draft report, Golder has explored options that remove all operations on top of the cap, with the exception of a road across the cap to access the ridge area, and a specially engineering "double-cap" area for low-impact activities. These new options will allow Teton County to do its best to minimize future risks, remediate the groundwater problem, and set the stage for a solid waste facility that will be well-equipped to serve the community for decades.

With the three alternatives presented in the first version of Golder's draft report as a starting point, we've worked closely with Golder and the ISWR advisory board to rework Alternatives 2 and 3. In order to achieve additional work areas that are not on the cap, some waste excavation is necessary. However it should be noted that Alternatives 2 and 3 are still predominately capping alternatives, unlike Alternative 1, which is a total waste removal option. These hybrid alternatives, that have elements of both excavation and capping, will satisfy DEQ requirements for closure, meet our own environmental obligations for future generations, and address our community's solid waste needs for today and the future.

## The Revised Alternatives

Alternative 1: Total MSW Removal – No change from previous draft report.

This alternative includes the following:

- Remove and segregate topsoil;
- Remove and segregate remaining final cover;
- Remove municipal solid waste (MSW) and dispose in another (off-site) solid waste landfill;
- Regrade surface to "natural conditions" on USFS property using stockpiled soil and topsoil and revegetate;
- Regrade surface using stockpiled soil on County property to allow for continued solid waste management activities;
- Regrade area near Test Pit 3 (TP-3) on hill in the southeast corner of the Site to allow for composting operations;

- Control surface water by installing armored channels along the east and southwest boundaries of waste removal (i.e., current waste footprint) to collect and convey runoff to discharge points along the southwest boundary of the Site; and,
- Incorporate the revised groundwater monitoring program into post-closure activities. This is necessary because there is evidence that contaminants may have migrated from the MSW into underlying soils that would not be removed under this alternative.

Alternatives 2A and 2B: Regrading and Capping; Composting on USFS Property; Excavation of 2 acres on Teton County property; 2-acre area with a double-cap.

These alternatives include the following:

- Remove and segregate topsoil;
- Remove and segregate remaining final cover;
- “Reshape” waste and use segregated soil as needed to develop foundation grading for cap subgrade. This would also include grading an approximate area of about 5 acres on USFS property for a composting operation;
- Regrade subgrade surface on County property by reshaping MSW and using stockpiled soil on property to allow for continued solid waste management activities;
- Place gas collection layer and gas vents, PVC liner, drainage layer, vegetation support layer and topsoil, and revegetate to form final cover system for 30 acres;
- Regrade 5-acre area on USFS property, and construct haul road to allow for composting operations;
- Control surface water by installing armored channels along the east and southwest portions of the landfill perimeter to collect runoff from the final cap and convey it to discharge points along the southwest boundary of the Site;
- Remove waste on 2-acre area adjacent to Transfer Station;
- *Alternative 2A grades excavated waste on Teton County property and remainder of MSW is disposed at off-site landfill;*
- *For Alternative 2B, all MSW removed from 2-acre area is regraded on Teton County and USFS properties;*
- Allow for double-lined cap in capped waste management area on 2-acre area of Teton County property near Transfer Station; and,
- Incorporate the revised groundwater and landfill gas monitoring program into post closure activities. This is necessary because there is evidence that contaminants may have migrated from the MSW into groundwater, and also because MSW will remain in-place and continue to generate landfill gas.

Alternatives 3A and 3B: Regrading and Capping; Composting on Teton County Property near TP-3; excavation of 5 acres on Teton County property; 2-acre area with a double cap.

These alternatives include the following:

- Remove and segregate topsoil;
- Remove and segregate remaining final cover;
- “Reshape” waste and use segregated soil as needed to develop foundation grading for cap subgrade;
- Regrading an area of approximately 5 acres on County property near TP-3 for a composting operation or other uses;
- Construct aggregate haul road to TP-3 area;
- Remove MSW on 5-acre area near Transfer Station;
- *Alternative 3A grades minimal excavated MSW on Teton County property and remainder of MSW disposed at off-site landfill;*
- *For Alternative 3B, all MSW removed from 5-acre area is regraded on Teton County and USFS properties;*
- Regrade subgrade surface on County property by reshaping MSW and using stockpiled soil on property to allow for continued solid waste management activities;

- Place gas collection layer and gas vents, PVC liner, drainage layer, vegetation support layer and topsoil, and revegetate to form final cap system;
- Provide double-lined cap area for MSW management activities on capped area 2-acre area of Teton County property near Transfer Station;
- Control surface water by installing armored channels along the east and southwest portions of the landfill perimeter to collect runoff from the final cap and convey it to discharge points along the southwest boundary of the Site; and,
- Incorporate the revised groundwater and landfill gas monitoring program into post closure activities. This is necessary because there is evidence that contaminants may have migrated from the MSW into groundwater, and also because MSW will remain in-place and continue to generate landfill gas.

**I. Cost Estimates (Please see attached tables for detailed cost estimate review.)**

Alternative 1 - \$49,207,000 (total waste removal)

Alternative 2A - \$ 12,824,000 (capping, excavation of 2 acres with waste hauled off-site, double-capped 2 acres, 5 acres for operating on the cap on FS property)

Alternative 2B - \$9,291,000 (capping, excavation of 2 acres with waste remaining on Teton and FS properties, double-capped 2 acres, 5 acres for composting on the cap on FS property)

Alternative 3A - \$21,917,000 (capping, excavation of 5 acres with waste hauled off-site, double-capped 2 acres, 5 acres for operating on the ridge near TP-3)

Alternative 3B - \$9,800,000 (capping, excavation of 5 acres with remaining on Teton and FS properties, double-capped 2 acres, 5 acres for operating on the ridge near TP-3)

**II. Advantages/Disadvantages**

a. Alternative 1: (Total Removal)

i. Advantages

- Would reduce environmental liability at the current site.
- Would allow unlimited activities to be conducted on County property (i.e. buildings for composting, recycling, etc.).
- Would not require ongoing landfill gas monitoring as source of landfill gas would be removed.
- Ongoing O & M costs (no cover maintenance, landfill gas monitoring) would be less than capping alternatives.
- Would remove original source of groundwater contamination

ii. Disadvantages

- Capital cost very high, significantly higher than capping alternatives.
- High cost uncertainty due to uncertainty in waste volumes and the potential for special/hazardous wastes (with higher handling and disposal fees) to be excavated.
- Higher potential environmental liability at receiving landfill site.
- Would require continued groundwater monitoring.

b. Alternatives 2A and 2B: Regrading and Capping; Composting on USFS Property; Excavation of 2 acres on Teton County property; 2-acre area with a double-cap.

i. Advantages

- Capital cost low compared to total MSW removal alternative.

- Would allow for current solid waste management activities to continue on top of cap.
  - The geomembrane liner in cap would limit infiltration of precipitation and ongoing sources of groundwater contamination.
  - Less disruption to site activities than total MSW removal alternative.
  - Grades for final cap are in the 10% to 25% range and provide for stable cap conditions and low erosion potential
  - Alternative 2B is more cost-effective as regrading would be allowed on USFS property.
- ii. Disadvantages
- Higher potential liability at current site compared with total waste removal.
  - In the unlikely event of significant displacement along the Hoback fault during post-closure, the geomembrane in the cap might require repair.
  - Will require ongoing landfill gas and groundwater monitoring. Depending on effectiveness of passive landfill gas venting system, some active landfill gas removal may be necessary.
  - O & M costs associated with landfill gas monitoring and maintenance of cap would be higher than for total MSW removal alternative.
  - Activities on top of cap requiring an enclosed building would be precluded.
  - Activities on top of cap could increase risk of continued and increased groundwater contamination.
  - Would provide less space for unrestricted activities compared to Alternatives 3A and 3B.
- c. Alternatives 3A and 3B: Regrading and Capping; Composting on Teton County Property near TP-3; excavation of 5 acres on Teton County property; 2-acre area with a double cap.
- i. Advantages
- Capital cost low compared to total MSW removal alternative.
  - Would allow for current solid waste management activities to continue on top of cap.
  - The geomembrane liner in cap would limit infiltration of precipitation and ongoing sources of groundwater contamination.
  - Less disruption to site activities than total MSW removal alternative.
  - Grades for final cap are in the 10% to 25% range and provide for stable cap conditions and low erosion potential
  - Composting in the area of TP-3 could be conducted in an enclosed building with minimal concern for settlement and landfill gas accumulation.
  - Creates more space for unrestricted activities (buildings, composting).
- ii. Disadvantages
- Higher potential liability at current site compared with total waste removal.
  - In the unlikely event of significant displacement along the Hoback fault during post-closure, the geomembrane in the cap might require repair.
  - Will require ongoing landfill gas and groundwater monitoring. Depending on effectiveness of passive landfill gas venting system, some active landfill gas removal may be necessary.
  - O & M costs associated with landfill gas monitoring and maintenance of cap would be higher than for total MSW removal alternative.
  - Activities on top of cap requiring an enclosed building would be precluded.
  - Higher cost and higher cost uncertainty than mostly capping alternative.
  - Higher slopes for cap near southern end of property.
  - Alternative 3A high cost if grading not allowed on USFS property.

### **III. Staff Recommendations/Additional Information**

- Staff recommends Alternative 3B or 2A.
- Due to the extremely high cost estimate, overall cost unpredictability due to the uncertainty of what will be discovered during excavation, and no guarantee of complete elimination of groundwater contamination, staff recommends the dismissal of Alternative 1.
- A Special Use Permit from the Forest Service is required to move excavated waste onto the Forest Service portion of the landfill. If we are granted a Special Use Permit, Alternative 3B is a much more cost effective option than Alternative 2B. For just over \$500,000 more, Alternative 3B provides the ability to excavate three additional acres (five total acres) as compared to Alternative 2B (2 total acres). Therefore, staff is recommending the dismissal of Alternative 2B.
- If a Special Use Permit from the Forest Service is not granted for the ability to relocate excavated waste onto the Forest Service portion of the landfill, the only option is to remove from site any excavated waste that cannot be regraded onto the County's portion of the landfill. The removed waste would be hauled to an off-site landfill. This is an extremely expensive proposition, in the order of approximately \$65 per ton. (As a comparison, regrading waste on site would cost approximately \$3 per ton.) Avoiding the removal of waste from the site is highly recommended by staff. In the event that a Special Use Permit is not granted to relocate waste onto Forest Service property, staff recommends selecting Alternative 2A and dismissing Alternative 3A, due to the extremely high cost estimate.
- **Preferred Alternative:** Alternative 3B (if the Forest Service grants Teton County a Special Use Permit to relocate waste, regrade and cap on the Forest Service portion of the landfill).
- **Secondary Preferred Alternative:** Alternative 2A (if the Forest Service does not grant Teton County a Special Use Permit to relocated waste, regrade and cap on the Forest Service portion of the landfill). One adjustment staff recommends to Alternative 2A is the use of 5 acres on the ridge in lieu of 5 acres on top of the cap on Forest Service property. Any additional cost to the Alternative 2A cost estimate to make this change would be minimal.
- A few notes regarding the acquisition of a Special Use Permit from the Forest Service and the Preferred and Secondary Preferred Alternatives:
  - o Regrading and capping on the Forest Service portion of the landfill would also require a Special Use Permit; however, staff feels this would be simpler to acquire since the proposal would not involve increasing the volume of waste on the Forest Service area of the landfill.
  - o Although waste relocation would increase the volume of waste on the Forest Service parcel, the footprint of the waste and the grading/slopes of the site would remain as they are today.
  - o The Forest Service timeline for the Special Use Permit application process could be as long as one year, with no guarantee that Teton County will receive a Special Use Permit in the end. ***Therefore, to assure there are sufficient funds available for either of the two recommended alternatives, the prudent recommendation is Alternative 2A, since a) it requires relatively minimal US Forest Service approval and is therefore a more certain approach, and b) allocating funds for 2A will provide sufficient funding for 3B plus future facilities.***
- **SPET**

- *Alternative 2A, coupled with the landfill closure planning, design, permitting, environmental monitoring, possible debt service payments, Phase 2 planning and initial Phase 2 facility construction, the total amount for the SPET ballot is \$14,979,058.*

#### ATTACHMENTS

- REVISED Draft Landfill Closure Alternatives Report (Golder Associates, July 25, 2012)
- Staff report prepared for JIM meeting on July 17, 2012.

#### FISCAL IMPACT

Please see section of report on Cost Estimates.

#### STAFF IMPACT

This is a significant, multi-year project that will require many ISWR and Engineering staff hours. Because of the magnitude and high cost of this project, a staged approach will be necessary as resources are available and in accordance with the DEQ-approved project timeline and DEQ requirements/permits.

#### LEGAL REVIEW

N/A

#### RECOMMENDATION

Staff recommends the approval of Alternative 2A, with a cost estimate of \$12,824,000, with Alternative 3B (\$9,800,000) as the Preferred Alternative in the event the Forest Service issues a Special Use Permit for the relocation of waste onto their property.

#### SUGGESTED MOTION

I move to approve the selection of Alternative 2A for the closure of the Horsethief Canyon Landfill, with a cost estimate of \$12,824,000, with Alternative 3B (\$9,800,000) as the Preferred Alternative in the event the Forest Service issues a Special Use Permit for the relocation of waste onto their property.