

April 4, 2011

Project No. 063-7079-200

Mr. Jon Taylor  
Nevada Division of Environmental Protection  
Solid Waste Branch, Bureau of Waste Management  
901 South Stewart Street, Suite 4001  
Carson City, NV 89701

**RE: MODIFICATION TO APPLICATION FOR A PERMIT TO CONSTRUCT AND OPERATE A  
CLASS 1 LANDFILL FACILITY, JUNGO DISPOSAL SITE, HUMBOLDT COUNTY, NEVADA**

Dear Mr. Taylor:

On behalf of Jungo Land & Investments, Inc. (JLII), this letter responds to the Nevada Division of Environmental Protection's (NDEP's) letter dated February 7, 2011 regarding Technical Comments on the Jungo Disposal Site Application. Modifications to the Application are enclosed as discussed below. We have organized our responses to follow NDEP's comment letter, which is divided into "General Comments" and "Specific Comments."

## 1.0 GENERAL COMMENTS

Responses to NDEP's General Comments are provided below.

1. **Nevada Department of Wildlife Comments.** Nevada Department of Wildlife (NDOW) provided comments on the JDS Application in their letter dated October 5, 2010. Recology has been in consultation with NDOW regarding their concerns. At this time, Recology has made some minor modifications and clarifications in the Plan of Operations and Report of Design in response to NDOW's comments regarding daily cover, water sampling in the run-on/run-off control basin, fencing, revegetation, and weedy species. Once the site begins development, Recology will continue to consult with NDOW to assess the need for different perimeter fencing (see Section 7.0 of the Plan of Operations), successful revegetation measures, and to implement periodic weed inspection and controls, if necessary. A response to NDOW's letter will be submitted under separate cover, with a copy provided to NDEP.
2. **Proof of Ownership.** Recology is aware and understands NDEP's comment regarding proof of ownership prior to permit issuance.
3. **Settlement Monitoring Program.** The settlement monitoring program is included in the revised Report of Design for NDEP review and approval.
4. **Settlement Impact on Drainage.** Based on our discussion with NDEP, we understand that NDEP is requesting Golder to calculate the maximum head for the portion of the base liner that is expected to experience the greatest amount of slope flattening. To address this request, we have attached a supplemental calculation to Appendix G of the Report of Design. In regards to these calculations, we note the following:
  - The grades of NDEP's concern appear to be those that occur along the flow lines in a north-south direction where the landfill has LCRS pipes. The appropriate analysis for this portion of the landfill is based on the capacity of the pipe as opposed to calculating the head build-up in the gravel. Note the liquid depth will be less than pipe diameter (6-inches and this was verified as part of the LCRS calculations included in the Report of Design.

- Along the majority of landfill base, leachate drainage will occur within the gravel blanket toward the LCRS collection pipe. The base grades will be initially steeper at 2% and will be subject to a lower amount of grade flattening because the flow directions are angled toward the north-south flow lines (and therefore differential settlement occurs over a longer distance).
- We consider the methodology used by Golder to estimate maximum head in the gravel blanket to be the most appropriate due to the very limited head build up on the liner. In our opinion, Giroud's Method and McEnroe's Method cited by NDEP is more appropriate when the volume of leachate generation relative to the permeability of the LCRS blanket layer is such that a leachate mound develops on the liner. The Jungo Disposal Site LCRS is designed with a high capacity LCRS that precludes leachate mounding on the liner. However, the supplemental calculations in appendix G also consider Giroud's Method as well as the "Mound Method" cited by the Environmental Protection Agency (1993). Regardless of the method used, they all verify that the maximum predicted leachate head on the liner is only a fraction of one inch and several orders of magnitude lower than required by Nevada Administrative Code and Federal regulations.

5. **Liner Stresses Under Elongation and Seismic Stresses.** The Report of Design (Section 2.3.4) has been modified to address NDEP's concern. In summary, we note that textured HDPE geomembranes exhibit the ability to accommodate strains of more than 12 percent before yielding. Industry standard specifications (GRI-GM13) for textured HDPE geomembrane include a minimum yield strain of 12 percent and a minimum strain at break of 120 percent. Golder's experience in performing construction quality assurance testing on numerous textured geomembrane samples indicates that textured geomembranes readily exceed these specifications, and in most cases, exhibit yield strains of 15 to 18 percent and do not break until the strains exceed 500 percent.

The computed strain due to base settlement is estimated to be less than 2.3 percent as discussed in the Report of Design (Section 2.3.4.1). The computed permanent seismic displacement is less than 1-inch (approximately less than 0.4 to 0.6 inches), which for all practical purposes is negligible. Current industry criterion accepts that HDPE geomembranes can tolerate permanent seismic displacements of up to 6 to 12 inches without compromising the integrity of the liner system.

With computed maximum displacements that are lower than accepted displacements by more a factor of 10, and settlement related strains that are less than maximum specified yield strains by a factor of 5 or more, the addition of seismic related strains to settlement related strains will be well within the tolerable limits for HDPE geomembranes.

Please note that as part of this modification to the Jungo Disposal Site application, Golder updated the seismic characterization and analyses to reflect the USGS's latest ground motion predictions. This updated characterization is discussed in Section 2.1.6 and updated analyses addressed in Section 2.3.4.4 in the Report of Design. The updated seismic characterization and analyses indicate that our previous characterization and analyses were slightly conservative.

6. **Groundwater Separation.** Drawings 3 and 3A through 3D were modified to note that the separation distance between groundwater and wastes will be at least 29 feet immediately following construction. The previous reference to a separation distance of 25 feet referred to the anticipated separation distance following settlement of the base due to the weight of the overlying refuse.
7. **Interim Groundwater Wells.** As requested by NDEP, the groundwater monitoring plan has been revised to include interim groundwater wells to monitor the initial development of the landfill in the northeastern portion of the site. The revised Monitoring Plan (Revision 3) is attached.

8. **Additional Background Groundwater Monitoring Well.** An additional background groundwater well will be installed as discussed in the revised monitoring Plan (Revision 3). The additional background well will be installed at least one year prior to the disposal of refuse and will include at least 4 separate sampling and analytical testing events to characterize background water quality prior to refuse disposal.
9. **Volume III Table of Contents.** The Groundwater Monitoring Program is discussed in the Monitoring Plan, which is discussed in Section 15 and described in detail in Appendix D. Section 15 and Appendix D are both identified in the Table of Contents of Volume III. We have also included an Appendix tab with this submittal.
10. **Groundwater Monitoring Report Format.** As requested by NDEP, assessment monitoring and detection monitoring will be reported using the format provided by NDEP.
11. **Liquefaction Assessment.** A preliminary liquefaction assessment was completed using the available subsurface exploration data and computing factors of safety based on the cyclic stress ratio of the soils. These analyses indicated factors of safety greater than 1.2 for the dense silty sands and sandy silts that occur at the base of the landfill, which indicates that liquefaction is unlikely for the design earthquake. As noted in the Report of Design, additional subsurface explorations and geotechnical testing will be completed prior to the design of each landfill cell to confirm the soil conditions and geotechnical properties of the soils. As part of this work, additional analyses will be completed to verify that liquefaction of the soils is not a concern.

## 2.0 SPECIFIC COMMENTS

NDEP provided Specific Comments on the Plan of Operations and Report of Design. Responses to these comments are provided in the following sections.

### 2.1 Plan of Operations

1. **Availability of Cover Material.** Section 9.0 of the Plan of Operations was modified to expand the discussion of alternative daily cover (ADC) including additional evaluations and potential limitations to using ADC.
2. **Seismic Impact Zone.** Section 2.6 of the Operations Plan was modified to state that the seismic conditions for the site are summarized in Section 2.1.6 of the Report of Design and that the seismic impact evaluations are discussed in Section 2.3 of the Report of Design.
3. **Proof of Compliance.** Section 2.8 has been modified to state that compliance with NAC 444.678 will be based on the Groundwater Monitoring Plan.
4. **Waste Management Equipment and Personnel.** Section 3.1 of the Plan of Operations was modified to include a detailed list of anticipated equipment needs (type and number) for managing refuse disposal at the Jungo Disposal Site. Section 3.2 also includes list of positions, number of employees, and job descriptions for these positions.
5. **Waste Handling Procedures.** Section 5.0 was modified to state that screening programs will be implemented at the point of origin, and that manifests identifying weights and waste types will be delivered to the Jungo Disposal Site. These records will be maintained as part of the operating records at the site. In addition, Sections 5.0, 5.4, and 5.7 were modified to state that the Jungo Disposal Site will not accept asbestos or sludge.
6. **Hazardous/PCB Waste Exclusion Program.** Section 5.8.5 was modified to include reference to 40 CFR 22.30 through 262.34.

7. **Random Inspections of Incoming Loads.** Section 5.8.2 was modified to include a schedule of random load inspections at a rate of 5 containers per train load. This is expected to correspond to an average inspection of approximately 3 percent of the total number of containers received per train load.
8. **Record Maintenance.** As indicated in Section 11 of the Plan of Operations, all operations-related records will be contained in the administrative/office trailer at the site.
9. **Handling Procedures for Hazardous or PCB Wastes.** As requested by NDEP, regulatory citation of handling hazardous or PCB wastes has been removed from Section 5.8.5.
10. **Control of Explosive Gases.** The proposed monitoring wells and probes are now included in the Volume II Drawings at scale. In addition, Section 6.0 of the Plan of operations has been modified to replace “permanent on-site structures” with “any structures used for occupation by site or visiting personnel”
11. **Cover of Compacted Waste.** Section 9.0 was modified to state that cover will be applied to refuse at least once per operating day. In addition, cover inspection protocols are included.
12. **Operating Records.** Section 11.0 was modified to remove the regulatory citation, state the location where records will be maintained, and provide a reporting schedule for the operating records.
13. **Closure and Postclosure and Financial Assurance.** Financial assurance documentation is attached with this submittal (Attachment 4).
14. **Closure and Postclosure Monitoring and Maintenance Plan.** The Appendix C of the Plan of Operations, Section 2.2 was modified to include appropriate notification to NDEP.
15. **Postclosure Inspection and Maintenance Activities.** The Appendix C of the Plan of Operations was modified to define large and small depressions.

## 2.2 Report of Design

**Base Settlement Concerns.** Section of 2.3.4.2 has been updated to include various factors of safety computed for the hydraulic capacity of the landfill floor and along the north-south oriented flowlines prior to and following settlement. These are supported by the LCRS calculations in Appendix G. Please note that the computed factor of safety values indicate that positive drainage is predicted because the factor of safety is dependent on the base drainage grades. If the grades were flat (no drainage), the computed factor of safety would be zero.

## 3.0 APPLICATION UPDATE INSTRUCTIONS

Please update the Jungo Disposal Site Application as follows:

### **Volume I – Report of Design**

- Replace the text with attachment text
- Add new Figure 14
- Replace Appendix G with attached Appendix G
- Add new Appendix K

**Volume II – Design Drawings**

- Replace Drawings 1, 3, 3A, 3B, 3C, 3D, 3E, 5, 5A, 5B, 5C, 5D, 6, 7, 10, 11, 12, 13, and 14 with the Attached Drawings

**Volume III – Plan of Operations**

- Replace the text with attached text
- Replace Table 1 with new Tables 1 and 2
- Replace Appendix C text with the attached text
- Replace Appendix D text and Figure 2 with the attached text and figure

**4.0 CLOSURE**

Please call if you have any questions or need additional information.

Sincerely,

**GOLDER ASSOCIATES INC.**



Kenneth G. Haskell  
Principal/Practice Leader

Enclosures: Attachment 1 – Report of Design (Text, Figure, and Appendices G and K)  
Attachment 2 – Selected Drawings  
Attachment 3 – Plan of Operations (Text, Tables, and Appendices C and D)  
Attachment 4 – Trust Fund Documentation

KGH/REK/\*\*\*