Responses to NMED Comments on Part A and Part B Permit Renewal Application for the Triassic Park Waste Disposal Facility

Following are New Mexico Environment Department (NMED) comments dated February 5, 2013, and DBS&A responses regarding the Part A and B Permit Renewal Application for the Triassic Park Waste Disposal Facility, October 17, 2011, Revision 1 - April 30, 2012 (Renewal Application) dated April 30, 2012. These responses have been prepared based on guidance from the NMED at a meeting in Santa Fe on May 15, 2013, and on a conference call on June 18, 2013. Issues discussed in these responses have been incorporated into Revision 2 of the permit renewal documents, where applicable.

1. Section 7, Process Codes and Design Capacities, page 3: Section 7 lists D80 (i.e., Landfill), as the only process code under column 4 of the table. However, the fifth column of the Table XIV Description of Hazardous Wastes, (pages 1-30) lists T01, T02, S0l, and S02 as process codes for the characteristic or listed wastes identified in column 1. The Revised Application indicates that the Permittee does not intend to store and treat hazardous waste prior to disposal at the Facility. Remove these codes from the Part A Application or explain why these process codes are still listed on the application if hazardous wastes are not to be stored in the tanks (S02), in the containers (S01), treated in the tanks (T01), and treated in the surface impoundments (T02).

Process codes have been updated to reflect the intent to no longer store or treat wastes at the facility.

2. Section 7, Process Codes and Design Capacities, page 3 of 6: Under the Process Codes and Design Capacities Section (page 3 of 6), the design capacity of the landfill is listed as 553.2 cubic yards (cy) and in Section 2.5.1.1 it is listed as 553,200 cy. Resolve the discrepancy and revise the table accordingly.

The typo in Section 7 of the Hazardous Waste Information Form has been corrected. 553.200 has been changed to 553,200. As stated in Section 2.5.1.1 of the Part B permit application, this refers to the capacity for the Phase 1A landfill cell.

3. Section 9, Table, Description of Hazardous Wastes and XIV Description of Hazardous Wastes, pages 1-30: The third column in this table reports "Estimated Annual Quantity of Waste". The Permittee's estimate for each of the waste codes listed in the table is the same amount, i.e., 42,120 tons. Clarify if this number is projected for individual waste codes or for the total amount of waste that is expected to be disposed in the landfill per year. It is not clear how the estimated annual waste quantity of 42,120 tons was derived. The proposed Phase 1A landfill does not have the capacity to contain that volume for each of the approximately 500 proposed waste codes. The estimated quantity appears to be for the ultimate build-out of the landfill (10.86 million bank cubic yards (CY) of waste space, 500 waste codes, and an assumed density of 1.9 tons/CY). Revise the estimated annual quantity of waste to correspond to the total Phase 1A capacity of 553,200 cubic yards and clarify the relationship between the design capacity and the waste expected to be disposed annually.

The estimated annual quantity of waste has been revised to reflect the total capacity for the Phase 1A landfill cell, and specifically the waste expected to be disposed of annually. Not enough information is currently available about the projected waste stream to differentiate annual quantities for individual contaminants. Quantities will be updated prior to acceptance of waste at the facility when more information is available.

4. Section 1.1.9, Facility Location, page 1-2 and Figure 1-2: Figure 1-2, depicts the location of Roswell as well as the proposed site location (marked by an X), but does not show the location of Tatum. Revise the figure to depict the location of Tatum as referenced in the text. In addition, highways 172 is mentioned in the text as a reference point but not depicted on the figure. Revise the figure to include all relevant reference points including Tatum and state highway 172.

Two different scales are provided on Figure 1-2, i.e., one inch=80 miles and one inch=16 miles. In addition, the date and survey source was not included in the figure. Revise the figure to include the appropriate scale, survey source, and the date.

Figure 1-2 has been replaced. The figure was revised to reflect the description in Section 1.1.9, including depicting the site in relation to Tatum and Highway 172. The figure also includes a scale, data sources, and a date.

5. Disposal Process, Section 2.5.1.6, Run-On/Runoff Control, page 2-5: The non-contaminated storm water collection basin within the landfill excavation, should be analyzed prior to its application or discharge outside of the landfill disposal area (such as pumping to surface ditches or the storm water detention basin) to ensure that this water is not contaminated. This is important in light of the proposed leachate recirculation measures within the cell.

Water in the non-contact stormwater collection basin within the landfill excavation will be sampled prior to discharging outside of the landfill area. If not tested or if impacted above New Mexico Water Quality Control Commission (NMWQCC) standards, non-contact stormwater will be handled in the same manner as contact stormwater. If not impacted, the stormwater will be pumped to ditches or the stormwater detention basin as stated. The text in Section 2.5.1.6 has been updated accordingly.

6. Disposal Process, Section 2.5.1.6, Run-On/Runoff Control, page 2-6: The proposal to use vacuum trucks to spray water that would be collected from the landfill contaminated storm water basin could result in the spread of contamination outside of the lined landfill area if the spray trucks are operated from the access ramps. The water trucks should spray from the lined landfill area, and not from the access ramp, because the liner would be installed only halfway across the access road. The liner configuration beneath the access road would not be adequate for containing leaks and spills of leachate from the vacuum truck. Alternatively, modify the design so that the liner is placed under the entire access ramp to provide adequate containment for spraying from the access ramp. Discuss in detail the process of spraying leachate on the landfill that would prevent contamination of the unlined areas of the landfill.

Leachate recirculation will only occur from lined landfill areas. Spraying will only be in the direction of the lined landfill areas. There will be no spraying from the ramp or in an active work area. The ditch liner will be extended across the road. Additionally, if sustained wind speed is over 15 miles per hour (mph), no leachate sprayback will occur until wind speed has dropped below 15 mph. The text in Section 2.5.1.6 has been updated accordingly.

7. Disposal Process, Section 2.5.1.7, Wind Dispersal Control Procedures, page 2-6: The Permittee proposes management of leachate by application of accumulated leachate to the landfill soil cover. Explain the measures to be taken to control wind dispersion of contaminated soil particles (i.e., soil cover that has been impacted by leachate). Possible approaches could be to include placement of additional soil cover over spray-impacted soil, application of dust suppression foam, or covering with a synthetic layer. Nuisance dust control could be a significant issue if the weather conditions are dry and windy. Such conditions could benefit leachate evaporation in the recirculation system, but could also aggravate wind dispersion of contamination. In addition, with the 3-sided lined cell design, there are added concerns that applying leachate for evaporation by spraying onto the cover soil could result in wind dispersion of

spray, which may not be adequately contained. For adequate protection, lining all 4 sides of the landfill cell is appropriate. Either modify the design to address the above-mentioned concerns or provide an explanation of how contamination would be prevented from spreading to unlined areas of the landfill and areas outside the landfill.

Wind dispersion of contaminated soils will be handled operationally. Leachate will only be sprayed when wind levels are low. Daily cover will be placed on areas where leachate has been sprayed. Daily soil cover is believed to be sufficient to protect the unlined areas of the landfill. Additional language has been added to Section 2.5.1.7 to discuss daily soil cover of leachate-sprayed areas.

8. Groundwater Protection, Section 3.4.1.1, Regional Stratigraphy, page 3-7: The text indicates that there is a conformable relationship between the Permian Dewey Lake Formation and the overlying Triassic sedimentary deposits. However, on page 3-5, the text indicates that the Triassic sediments unconformably overlie Permian in Texas and New Mexico. A similar discrepancy was found in statements made in section 3.1.3 and 3.1.4 of Attachment H. Resolve the discrepancy and revise the text appropriately.

The discrepancy has been resolved in the Part B permit application text and Attachment H. It appears the relationship between the Dockum Group (Triassic) and Dewey Lake Formation (Permian) is conformable at the site. Literature reports that Triassic sediments unconformably overlie Permian sequences in west Texas and southeastern New Mexico where Lower and Middle Triassic strata are absent (Lucas and Anderson, 1993). However, at the site, the Lower Dockum unit is present and would conformably overlie the Dewey Lake Formation (McGowen, 1979). The presence of both the Lower Dockum basal sandstone and Dewey Lake Formation at the site is supported by data from nearby deep drillholes and oil well logs on file with the New Mexico Oil Conservation Division (OCD).

9. Groundwater Protection, Section 3.6.1, Regional Aquifers, page 3-15: Permittee Statement: RA 9568 was drilled to a depth of 550 feet in 1998. It was a dry hole and was plugged and abandoned on August 14, 1998.

NMED Comment: This is inconsistent with the information in Table 3-3 (Water Wells Within 10 Miles, page 3-31) which states that RA 09568 is a DOM (72-12-1, domestic one household well) owned by Andrus Ranch Inc. Resolve the discrepancy and revise the table and or text.

Andrus Ranch Inc. attempted to install well RA 09568. It appears that the purpose of the well was domestic and stock use. However, the borehole for the well was dry. It was therefore plugged, and a well was never completed. The well record on file with the New Mexico Office of the State Engineer shows plugging and abandonment of the borehole on March 12, 2001. The well has been removed from Table 3-3.

10. Groundwater Protection, Section 3.6.2.2, Upper Dockum- "Uppermost Aquifer", pages 3-17 and 3-18: The text refers to an offset borehole 14-o that was completed 400 feet to the east of borehole 14. However, figures 3-11 and 3-14 (also figure 3-6 of Attachment H) identify this borehole as 14-C. Resolve the discrepancy.

Figures from the original permit application incorrectly designated offset borehole PB-14o as PB-14-C. Where this borehole is first referenced in Section 3.6.2.2 of the Part B permit application, text has been added stating that the borehole is “also referred to on figures as PB-14-C.”

11. Groundwater Protection, Section 3.6.3.1, Saturated Flow Modeling, page 3-20: The second paragraph states that for the purpose of calculating travel time, contaminants are assumed to travel from borehole PB-3 (which is near the center of the facility) to the perched groundwater downgradient of the site. The last paragraph of the same Section on page 3-22 states that, for travel time calculations, the distance of 2,500 feet, from the eastern boundary of the landfill to the perched groundwater was used. However, Figure 3-20 (and Figure 4-2 of Attachment H) indicates that the distance between PB-3 and the perched groundwater is much greater than 2,500 feet. In addition, Figure 3-21 of Part B, Section 5.2.2, 2nd and last paragraphs of Attachment H, and Figure B-1 of Attachment H give the distance from the landfill to the perched aquifer of 3,600 feet. Resolve the discrepancy and revise the travel time calculations, if necessary.

The second bullet of page 3-20 erroneously used the word "fades" instead of "facies". Correct the typographical error.

Distances of 2,500 and 3,600 feet refer to the distances to perched groundwater from the landfill facility boundary and landfill Cell 1A, respectively. Both distances are reasonable assumptions for travel time calculations for the landfill. Travel times were calculated using multiple iterations of different groundwater modeling methods. While different distances were used with different methods, the assumptions are clearly stated and the results appear to be reasonable and do not need to be revised.

The typographical error found in the second bullet on page 3-20 has been corrected. “Fades” has been changed in two places to “facies.”

12. Groundwater Protection, Section 3.6.3.1, Saturated Flow Modeling, page 3-21: The equation (1) uses the "&" symbol that is not defined in the notes. Revise the text to define the"&" symbol.

The “*” symbol should have been used in place of the “&” symbol to indicate multiplication. The equation has been revised accordingly.

13. Groundwater Protection, Section 3.6.3.2, Unsaturated Flow Modeling, page 3-22: Permittee Statement: Leakage rates were based on preliminary HELP (Hydrologic Evaluation of Landfill Performance) modeling results presented in Tables 3-3 and 3-4. NMED Comment: These results are presented in Tables 3-4 and 3-5 rather than Tables 3-3 and 3-4. Revise the text accordingly.

The text in Section 3.6.3.2 has been revised to refer to HELP modeling results presented in Tables 3-4 and 3-5.

14. Groundwater Protection, Section 3.6.3.2, Unsaturated Flow Modeling, page 3-22: Permittee Statement: Brooks and Corey (1964) correlated the N exponent with the pore size distribution index a. Mckee and Burnb (1988) by confirmation of theoretical derivations by Irmay (1954) suggest an optimal value of 3 for η.· NMED Comment: The text incorrectly uses the symbols "N" and "η" in referring to the "n" exponent. Revise the text accordingly.

The symbols "N" and "η" have been replaced with the letter "n" to correctly reference the exponent in the expression for hydraulic conductivity described by Equation 5.

15. Groundwater Protection, Table 3-1 and Table 3-2, page 3-29: The title of the Table 3-1 indicates that it lists temperatures from 1977 to 1978 at Roswell. However, the table lists temperatures from January to December of a single year, clarify if the temperatures reported are for 1977 or 1978. In addition, since the

renewal application was submitted in 2011, the most recent available data should have been utilized or a justification should be provided for using data from 1977 or 1978.

Tables 3-1 and 3-2 have been updated with full record, and nearby text and titles have been corrected.

16. Table 3-6 (also Table B-3 of Attachment H), report the residual saturation value for a clay berm as being lower than the same value for the Upper Dockum, which is comprised mostly of siltstones. Residual saturation values for clays are generally higher than for siltstone. Explain the discrepancy or make appropriate corrections and revise the modeling if necessary.

The S_r value for the clay berm is based on published values presented in Rawls et al. (1982). Table 3-6 reports S_r values of 0.279 and 0.161 for the Lower Dockum and Upper Dockum, respectively, based on site-specific information. The Upper Dockum is primarily composed of mudstones interbedded with siltstones and sandy siltstones, while the Lower Dockum is primarily composed of mudstones interbedded with thin layers of siltstone. Bumb et al. (1988) report S_r values for different rock and soil types. The reported values range from 15.5 to 58.0 percent of saturation, with rock materials generally having higher S_r values. The S_r values reported in Table 3-6 are expressed as a fraction of saturation and based on published and site-specific information. We do not believe there is a discrepancy or that the modeling needs to be revised.

17. Groundwater Protection, Figure 3-14, Structure Contour Top of Lower Dockum: Figure 3-14 (also Figure 3-6 of Attachment H) depicts a depression in the top of the Lower Dockum between boreholes PB-14 and PB-14c. However, Figure 3-10 (also Figure 3-5 of Attachment H) shows the same depression extending to the west of PB-14, with the deepest part in the vicinity of PB-14. Resolve the discrepancy. In addition, show the northern, western, and southern extent of the depression on the figure, which is not well defined.

Figures 3-14 of the Part B permit application and Figure 3-6 of Permit Attachment H have been revised and are now consistent with Figure 3-10 of the Part B permit application and Figure 3-5 of Permit Attachment H, respectively.

Based on discussions with NMED, it is DBS&A's understanding that the depression in the top of the Lower Dockum at PB-14 has been adequately characterized. The depression is shown on Figure 3-14 and represents an approximately 45-foot elevation drop for the contact between the Upper and Lower Dockum that occurs somewhere between boreholes PB-14 and PB-14o (offset boring, also referred to on figures as PB-14-C). This subsurface discontinuity explains the presence of water observed only at borehole PB-14 (as stratigraphically trapped groundwater).

18. Groundwater Protection, Figures 3-21, 3-25, and 3-26: These figures include the symbols "Gandy" or "MTR" but a definition or explanation for these symbols is not provided. This comment also applies to figure B-1 and B-5 of Attachment H. Revise the figure to define these symbols.

Figures 3-21, 3-25, and 3-26 of the Part B permit application and Figures B-1 and B-5 of Attachment H, Groundwater Monitoring Waiver Request, have been redlined to refer to MTR as "minimum technology requirements" and Gandy as the Phase 1A landfill cell. These figures define boundary conditions used for groundwater modeling.

19. Waste Analysis Plan, Section 4.1.2, Prohibited Waste, page 4-1: For clarification, add another bullet that states that any hazardous waste that does not meet land disposal restrictions (LDRs) will not be accepted for disposal.

Although Section 4.1.1 states that only waste that meets LDR treatment standards will be accepted, a bullet has been added to Section 4.1.2 stating that hazardous waste that does not meet LDRs will not be accepted.

A bullet has been added to Section 4.1.2 to clearly state that free liquid waste will not be accepted at the facility.

20. Waste Analysis Plan, Section 4.1.2, Prohibited Waste, page 4-2: The New Mexico Environmental Protection Regulations have been updated since the original permit was issued in March 18, 2002. The correct reference for the definition of radioactive/nuclear materials is 20.3.14.7.

The New Mexico Solid Waste Regulations were revised on August 2, 2007; the correct reference for the New Mexico Solid Waste Management General Requirements is 20.9.2 NMAC. The Renewal Application cites 20.9.1.105.AL as a reference for the definition of infectious waste: the correct reference now would be 20.9.2.7.1(5) NMAC. Similarly the correct reference for the special waste (i.e., packing house and killing plant offal) is 20.9.2.7.S(13(b)) NMAC. Review the entire document to update citations for NMAC rules.

New Mexico Administrative Code (NMAC) references have been updated throughout the permit application to refer to current numbering sequences.

21. Waste Analysis Plan, Section 4.3.3.1, Fingerprint Test Procedures, page 4-9: An inconsistency was observed in the section numbering sequence. Section 4.3.3.1 should be numbered 4.4.3.1; it is in section 4.4.3, rather than 4.3.3. Revise accordingly.

The section number referring to the fingerprint test procedure has been revised to 4.4.3.1 in the Part B permit application text.

22. Waste Analysis Plan, Section 4.4, Procedures for Incoming Waste Acceptance, page 4-7: The facility design has been changed from the initial permit to eliminate on-site treatment of waste. To provide adequate assurance that wastes entering the Facility will meet LDRs, toxicity characteristic leaching procedure (TCLP) analysis should be added to the fingerprint procedures. The contingency measures or corrective action to be taken in the event that a waste shipment arrives that fails LDRs should also be discussed. Generator certification and testing of the initial profile samples is appropriate, but is not necessarily adequate assurance that the incoming waste shipments will meet LDRs, given that there treatment facilities are not proposed in this permit application. The current permit required 10 percent, of incoming waste streams to be analyzed (Attachment N, Section 3 .2.2, item C); however, this frequency of testing is no longer adequate given that every shipment will be a direct bury load. Under the current permit, all treated wastes would have been sampled before disposal in the landfill (Attachment N, Section 3.2.4, deleted Item F). It appears that under the Renewal Application, there are fewer procedures in place to ensure that LDRs will be met before disposal in the landfill. Revise the permit application to propose an increased frequency of waste analysis to verify that LDRs are met.

Per 40 CFR 262.11, the waste generator is responsible for characterizing waste. TCLP analysis is required for pre-acceptance of all incoming waste (Table 4-1). This paperwork from the waste generator will be reviewed prior to acceptance at the facility.

As described in Section 4.4.3.1, fingerprint analysis will consist of abbreviated analysis to confirm forensically that an incoming waste shipment matches the expected chemical content of that waste. Each waste stream in each shipment will be sampled. Tables 4-2 and 4-3 list sample methods that apply to fingerprint analysis.

In addition, the facility will randomly sample a minimum of 10 percent of incoming waste streams (on an annual basis) to ensure compliance with LDRs (Sections 4.5.5.5 and 4.6.2.6). For initial shipments from new waste generators, this QA/QC sampling will be performed more frequently and will include the first shipment. This QA/QC sampling will mimic the sampling methods used by the waste generator to characterize the waste stream. 10 percent is common for this type of QA/QC sampling (see US Ecology Idaho's Grand View Landfill and Clean Harbors Deer Trail Landfill in Colorado). The random nature of this sampling is more critical to the QA/QC process than the numerical percentage.

23. Waste Analysis Plan, Section 4.5.1.1, Parameters for Waste Characterization, page 4-11: Permittee Statement: Radioactivity screen: This test screens each load using a gamma ray scintillation detector or other appropriate equipment. This test will be used to ensure that the level of radioactivity observed in NORM waste or equipment from oil, gas, and water production containing hazardous constituents, or other naturally occurring radioactive materials not regulated under 20.3.1.14 NMAC, is not above regulated limits as defined in 20.3.1.14 NMAC (i.e., the maximum radiation exposure reading at any accessible point does not exceed 50 microroentgens per hour [ΦR/hr] and the maximum radiation reading for sludges and scales contained in oil, gas, and water production equipment does not exceed 50 ΦR/hr, or, if the radiation readings for removable sludges and scales exceed 50 ΦR/hr, the concentration of radium 226, in a representative sample, does not exceed 30 picocuries per gram [pCi/g]).

NMED Comment: The reference to 20.3.1.14 NMAC has been updated. The correct reference would be 20.3.14.1403 NMAC. Revise accordingly.

The NMAC reference has been updated.

24. Waste Analysis Plan, Section 4.5.1.2, Additional Analysis to Ensure Compliance with the LDR Treatment Standards, page 4-12: Permittee Statements: Explosive meter vapor test (TLV sniff test): This test determines the fire-producing potential of the waste and whether it is regulated as flammable or combustible by the US Department of Transportation. If liquid waste exceeds 200 ppm, the waste will also be tested for ignitability using the flash point test. The tolerance range for the TLV sniff test is plus or minus 200 ppm.

Reactive sulfide: This test determines the reactive nature of the waste and indicates if the waste is prohibited. It is also used to determine whether the waste is compatible with liners, piping, structures, equipment, and other waste streams. Wastes containing total releasable sulfide with concentrations less than 500 ppm are considered non-reactive.

Reactive cyanide: This test determines if cyanide could potentially be reactive under acidic conditions, indicates if the waste is prohibited. It also determines whether the waste is compatible with liners, piping, structures, equipment, and other waste streams. Wastes containing total releaseable cyanide with concentrations less than 250 ppm are considered non-reactive.

NMED Comment: Above statement indicates that the liquid waste is expected to be disposed of at the Facility. According to the Renewal Application, the Facility will not accept waste that contains free liquids (see section 2.1.5). Resolve the discrepancy and revise the text accordingly.

EPA withdrew the July 1985 cyanide and sulfide reactivity guidance (cited above) in April1998. To determine whether the waste is reactive, a determination in accordance with 40 CFR 261.23(a) must be made. Revise this section accordingly.

Regarding the explosive meter vapor test, the sentence discussing liquid waste has been removed.

Section 4.5.1.2 regarding reactive sulfide and reactive cyanide has been revised to state that waste will be evaluated to determine the potential to generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment, in accordance with 40 CFR 261.23(a). Waste generators must use waste knowledge to determine if waste exhibits the characteristic of reactivity.

25. Waste Analysis Plan, Section 4.5.5.5, Waste Analysis Requirements Specific to the Landfill, page 4-16: Permittee Statement: The waste must be treated using the technology specified in the table ("technology standard") which are described in detail in 40 CFR 268.42, Table 4-1.

NMED Comment: There is no Table 4-1 in 40 CFR 268.42. Instead, Table 1 of 40 CFR 268.42 describes the technology-based standards. Revise the text to provide correct reference.

Section 4.5.5.5 (in the Part B permit application and Permit Attachment F) has been revised to refer to 40 CFR 268.42, Table 1, Technology Codes and Description of Technology-Based Standards.

26. Waste Analysis Plan, Section 4.5.5.5, Waste Analysis Requirements Specific to the Landfill, page 4-16: Permittee Statement: If the results of the analysis indicate that the waste does not conform with the applicable LDR requirements, the retained sample will be analyzed, generator-supplied information re-evaluated, and an evaluation made of the potential for the waste's variability based on the process that generates the waste stream.

NMED Comment: Portion of the above statement (i.e., the retained sample will be analyzed, generator-supplied information re-evaluated, and an evaluation made of the potential for the waste's variability based on the process that generates the waste stream) is repeated in the beginning of the next paragraph. Revise the text to remove the repeated text.

Redundant language repeated in the first sentence of the paragraph at the bottom of page 4-16 has been removed.

27. Waste Analysis Plan, Section 4.5.5.5, Waste Analysis Requirements Specific to the Landfill, page 4-17: Permittee Statement: Lab packs: Prior to acceptance by the Facility for disposal, hazardous wastes contained in lab packs will be treated to meet applicable treatment standards for each waste type identified. Lab packs will also be analyzed to ensure that they do not contain hazardous wastes listed in 40 CFR 264, Appendix IV [V]. In cases where hazardous lab pack wastes are combined with non-hazardous lab pack wastes prior to or during treatment, the entire mixture will be treated to meet the most stringent treatment standard for each hazardous constituent before being disposed of in the landfill.

NMED Comment: The Renewal Application indicates that the Permittee do not intend to treat waste at the Facility. However, the above statement implies that the where lab packs hazardous waste is mixed with non-hazardous waste, the lab packs would be treated. It is not clear from the above statement where the treatment of the mixed waste lab pack would be conducted prior to disposal in the landfill (i.e., at the generator's or at the Facility). Revise the text to clarify that treatment would not be conducted at the Facility.

In addition, revise the text to clarify who will be responsible for the treatment to render the ignitable and reactive waste non-ignitable and non-reactive, respectively. Similar references to treatment of waste found in Attachment N, Operations and Maintenance Plan, should also be revised.

Regarding lab packs in Section 4.5.5.5 of the Part B permit application text, a sentence has been added stating that required treatment will be handled by the waste generator off-site.

Regarding ignitable or reactive wastes in Section 4.5.5.5 of the Part B permit application text, the same sentence was added stating that required treatment will be handled by the waste generator off-site.

Similar language was added to Section 4.5.5.5 of Attachment F, Waste Analysis Plan, and Section 3.4.2 of Attachment N, Operations and Maintenance Plan regarding procedures for ignitable/reactive wastes.

28. Waste Analysis Plan, Section 4.5.6.1, Overview of the Waste Generated On-Site, page 4-18: Permittee Statement: Spills and leaks: Spills and leaks may occur during ordinary Facility operations (e.g., release of fluid from a leaking drum to the cell trench and sump in the drum handling unit, a spill at any loading or unloading area).

NMED Comment: The reference to the drum handling unit in the above statement should be removed. The Renewal Application does not include construction of the drum handling unit.

Regarding spills and leaks in Section 4.5.6.1 of the Part B permit application text and Attachment F, Waste Analysis Plan, the phrase “to the cell trench and sump in the drum handling unit” has been removed.

29. Waste Analysis Plan, Section 4.5.6.1, Overview of the Waste Generated On-Site, page 4-18: The text references several sections where information related to waste generated on-site is supposedly located. However, some of these sections could not be located (e.g., the second bullet refers to sections 5.2.5, 5.2.10, and 9.1.2 for information on decontaminated rinse water), these sections were likely deleted and are not in the Renewal Application. Similarly, sections 2.6.1.4 (referenced on page 4-18), 3.1.5 (on page 8-1), 4.6.2.8 and 4.6.2.9 (on page 4-22), 4.10 (on page (4-6), 6.2.2 (on pages 4-19 and 6-2), 6.3.5.1 (on page 6-8), 6.3.5.2 (on pages 4-18 and 6-8), 6.3.5.4 (on page 5-7), 6.3.8.2 (on page 6-9), were referred to in the text, but could not be located. Revise the document to provide correct references.

Section references have been updated and/or removed, where applicable, to reflect sections of the text that were removed due to removal of landfill components, such as treatment facilities and the truck wash.

30. Waste Analysis Plan, Section 4.7.4 and Section 4.7.5, Laboratory Requirements for Foreign Generators, page 4-33: Sections 4.7.4 and 4.7.5 duplicate each other. Revise the text to remove the duplicated section.

Redundant Section 4.7.5 of the Part B permit application text has been removed.

31. Waste Analysis Plan, Figure 4-1, Pre-Acceptance for First Time Waste: One of the rectangular box in the middle of the figure states "Determine if waste is acceptable for storage/treatment/disposal at facility according to permit terms", the text must be revised to reflect that the Facility does not intend to treat or store waste.

The words “storage/treatment” have been redlined on MWH Figure 4-1 of the Part B permit application and Attachment F, Waste Analysis Plan.

32. Waste Analysis Plan, Figure 4-2, Incoming Waste Shipment Procedures: The rectangular box at the bottom of the figure indicates that the waste will be transported to appropriate storage, treatment, or disposal area. The Renewal Application does not include storage or treatment of waste. Revise the Figure to indicate that the waste will be transported to the appropriate disposal area, instead of storage, treatment, or disposal area.

The words “storage, treatment, or” have been redlined on MWH Figure 4-2 of the Part B permit application and Attachment F, Waste Analysis Plan.

33. Procedures to Prevent Hazards, Section 5.1.2, Warning Signs, page 5-1: Permittee Statement: If ignitable wastes are stored or treated in the area, a "No Smoking" sign will also be posted.

NMED Comment: The Permittee does not intend to store or treat waste at the Facility. Remove references to storage and treatment of the waste and revise the text accordingly.

The sentence in Section 5.1.2 of the Part B permit application text regarding signage for ignitable waste has been removed, as ignitable waste will not be disposed of at this facility.

34. Procedures to Prevent Hazards, Section 5.4.1, Loading, Unloading and Waste Transfer Operations, page 5-6: The incoming waste will be disposed in the landfill. However, this section does not address the non-employee drivers travelling down the 10% access ramps to dispose of the hazardous waste since treatment would not be conducted at the Facility. It appears, but is not clearly stated, that over-the-road drivers will drive their vehicles into the landfill cell. Discussion on additional safety precautions for these drivers should be included. Similarly, section 5.4.6 (page 5-8) should include measures that would be taken to protect the non-employee drivers in the landfill cell during unloading. Include a discussion on protection of non-employee drivers that will be entering the landfill.

The facility will make available to hazardous waste haulers documentation regarding site-specific hazards, including posted speed limits, traffic control patterns, and facility signage. While on-site, waste haulers will be required to participate in the facility's health and safety plan, which will include site-specific training for drivers. Hazardous waste haulers are also required by federal law to participate in their company's own health and safety plans, including HAZWOPER training and knowledge of waste materials being hauled. Section 5.4.1 of the Part B permit application text and Attachment B, Procedures to Prevent Hazards, have been revised to discuss these safety requirements.

Facility controls will be used to protect waste haulers while on-site. Landfill staff will direct all truck traffic on-site, including riding with drivers if needed. At the base of the landfill cell, a designated compacted, flat unloading area will be used that will be completely separate from waste disposal areas. Trucks will not come into contact with placed hazardous waste, daily cover, or sprayed and recirculated leachate. Section 5.4.1 of the Part B permit application text and Attachment B, Procedures to Prevent Hazards, have been revised to include these additional facility controls.

If an accident were to occur on the ramp, waste would likely be contained within the lined landfill area. In addition, heavy equipment would be on-site to clean up spilled waste containers and to assist overturned vehicles.

35. Procedures to Prevent Hazards, Section 5.4.3, Wind Dispersal Control System, page 5-6: The section must include a discussion on the application of leachate and contaminated water to the landfill and the measures that would be taken to prevent wind dispersion of sprayed contaminated materials (e.g, not spraying in high winds). This comment also applies to section 2.5.1.7. Revise the section to include a discussion on preventive measures that will be used to control the possible spread of contamination.

Leachate and contaminated stormwater recirculation will only occur from lined landfill areas. Spraying will only be in the direction of the lined landfill areas. There will be no spraying from the ramp or in an active work area. The ditch liner will be extended across the road. Additionally, if sustained wind speed is over 15 mph, no leachate sprayback will occur until wind speed has dropped below 15 mph. Text in Section 5.4.3 has been updated accordingly.

36. Procedures to Prevent Hazards, Section 5.5.3, Incompatible Waste Handling, page 5-10: Permittee Statement: Wastes will be solidified and stabilized prior to their placement into the landfill. These processes are performed to bind liquids and prevent leaching of any of the wastes' constituents. Therefore, any leachate generated within the landfill is not expected to contain significant levels of hazardous constituents.

NMED Comment: The above statement indicates that wastes will be treated prior to placement in the landfill. The Permittee has eliminated these operations from the Renewal Application. Liquid wastes will not be accepted in the facility according to the renewal application. Revise the text to clarify that wastes will be treated prior to disposal, but not at the Facility.

This sentence in Section 5.5.3 of the Part B permit application text regarding incompatible waste handling has been modified to state that “Prior to acceptance at the facility, wastes will be solidified and stabilized . . .”

37. Closure and Post-Closure of Permitted Units, Section 8.1.6, Landfill, page 8-1: Permittee Statement: This Part B Permit Application only includes the Phase 1A portion of the landfill. Therefore, this Closure Plan only addresses Phase 1 A. If future expansions are required, they will be addressed in future permit modifications and will include revised closure plans.

NMED Comment: The Renewal Application does not discuss what would happen in the event that the landfill is closed after Phase 1A. Explain how the entire cell would be lined. This closure discussion refers to the landfill cover, but not the remaining liner. Describe how the remaining air space between the top of waste (Drawing 1 0) and the final cover (Drawings 21 and 22) would be managed.

Drawing 4 and several other drawings refer to Phase 1B, but no description of Phase IB is provided. Attachment L, Engineering Report, Section 3.1.5 mentions Phase 1B but provides no description. Describe Phase IB or revise the text and figures to remove the references to Phase 1B.

Drawing 11 includes a reference to “vegetative cover” shown just above the original land surface. This is intended to represent final cover in the event that the landfill is closed after Phase 1A. A liner would be placed on top of the waste as it existed at closure, then the remaining “open air space” would be backfilled to grade, and the final cover would be installed as shown. Specifications and a slope stability analysis for this liner will be provided in a revised closure plan in the event that the facility is closed during Phase 1A operations.

Language has been added to Section 8.1.6 of both the Part B permit application text and Attachment O, Closure Plan, to clarify this interim closure.

It is common to show build-out for future cells but not discuss specifics regarding construction due to changes in technology and/or future permit modifications.

38. Closure and Post-Closure of Permitted Units, Section 8.2.5.1, Sampling and Analysis, page 8-5: Permittee Statement: Vadose zone monitoring will be conducted semiannually to test for the presence of contaminants in the unsaturated sediments hosting the landfill. Sampling procedures and analytical parameters will be defined according to the Vadose Zone Monitoring System Work Plan (Permit Attachment I) and will follow the same guidelines used during the active life of the Facility.

NMED Comment: Revise the statement to provide more flexibility in the proposed post-closure monitoring frequency. For example, if evidence of leachate discharge to groundwater is noted during any sampling event, vadose zone monitoring frequency will be increased as appropriate to reflect the apparent increased rate of leachate discharge to groundwater.

Language has been added to Section 8.2.5.1 of the Part B permit application text to state that if contaminants are detected in the vadose zone monitoring system (VZMS), vadose zone monitoring frequency will be increased as appropriate to reflect the apparent increased rate of leachate discharge to groundwater.

39. Attachment C4, Evacuation Plans: Figures provided with Attachment C4 have not been updated. The figures depict locations of the drum handling area, stabilization unit, and liquid waste receiving and storage area. According to the Renewal Application, these processes have been eliminated because the Permittee does not intend to treat or store waste at the Facility. Revise the figures accordingly.

The drum handling area, stabilization unit, and the liquid waste receiving and storage area have been redlined on Figure L-1 in Attachment C4 of the Contingency Plan.

40. Attachment D, Procedures to Prevent Hazards, page D1-18: The inspection list for the landfill indicates that leachate storage tanks, and the secondary containment for the leachate storage tanks would be inspected daily. However, the Renewal Application indicates that leachate will be re-circulated and applied to the landfill soil cover for enhanced evaporation, and not stored in the tanks. It is not clear if it is a reference to temporary leachate storage tanks or to the leachate storage tanks and secondary containment system proposed in the 2002 Permit, which has been removed from the Renewal Application.

Leachate tanks have been retained to provide operational flexibility. The leachate tanks will remain on the inspection list. Additionally, Part B Section 5.2.5 was revised to include discussion of leachate tanks.

41. Attachment F, Waste Analysis Plan, Section 4.6.1, Sampling Methods, page F-24: Permittee Statement: The methods and equipment used for sampling wastes will vary with the form and consistency of the material to be sampled. Also, these matrices will be sampled using a variety of sampling tools (see Table F-5), including the Coliwasa (containerized liquid/viscuus liquid), dipper (containerized liquid/viscous liquid), thief (containerized liquid/viscous liquid), weighted bottle (containerized liquid), scoop (sludge, powdered material, rock/soil material, fly-ash material), shovel (powdered material, rock/soil material), auger (soil/fly-ash-like material) and tube sampler (fly-ash like material and liquids).

NMED Comment: The text refers to the use of equipment to sample containerized liquids and viscous liquids; however, liquids will not be accepted at the Landfill. Revise the text accordingly.

The list of methods and equipment used for sampling wastes has been revised in Section 4.6.1 and Table 4-5 of the Part B permit application and Section 4.6.1 and Table F-5 of Attachment F, Waste Analysis Plan, to exclude sampling methods and equipment used for liquid waste sampling.

42. Attachment H, Ground Water Monitoring Waiver Request, Appendix B, Section B-2, Modeling Methodology: Several equations are presented in this section. Some of the symbols used in the equations (EQ.l) to (EQ.8) are not defined. Provide definitions of all symbols used in the equations. In addition, the paragraph below the equation (EQ.5) incorrectly uses the symbol η in referring to the "n" exponent.

Appendix B of Attachment H is a static MWH report that cannot be changed. Symbol definitions for equations listed in Section B-2 of this appendix are included on an errata page provided before Appendix B and attached to this response to comments.

43. Attachment H, Ground Water Monitoring Waiver Request, Appendix B, Table B-3: Table B-3 includes "b =assumed values" in the table key but none of the table entries has the superscript "b". Make appropriate corrections.

Appendix B of Attachment H is a static MWH report that cannot be changed. The footnote for "assumed values" has been redlined in Table B-3 of Attachment H, Ground Water Monitoring Waiver Request.

44. Attachment H, Ground Water Monitoring Waiver Request, Appendix C, Table C-1: Table C-1 states that the leachate infiltration rate of 0. 84 in/yr is equal to the unsaturated hydraulic conductivity. However, Section 5.2.2 (Alternative Modeling Approach), first bullet below Table H-1, states that this infiltration rate is equal to the saturated hydraulic conductivity. Resolve the discrepancy and revise accordingly.

Appendix C of Attachment H is a static MWH report that cannot be changed. Table C-1 has been redlined to clarify that the leachate infiltration rate of 0.84 inches per year (in/yr) is equal to the "saturated hydraulic conductivity."

45. Attachment I, Vadose Zone Monitoring System Work Plan, Section 1.4.3, Site Model, page 1-6: The second paragraph states that monitoring wells located downgradient of the facility will be screened across the Upper Dockum/Lower Dockum contact. However, on Figure 3, the monitoring well east (downgradient) of the Facility does not reach the Upper Dockum/Lower Dockum contact. Resolve the discrepancy.

Figure 3 has been revised to show the screen of the monitoring well east of the facility extending across the Upper Dockum/Lower Dockum contact.

46. Attachment I, Vadose Zone Monitoring System Work Plan, Section 2.2, Vadose Zone Monitoring Wells, page I-8: The vadose zone monitoring strategy is based on monitoring for the accumulation of liquids in the monitoring wells screened in the unsaturated zone. If liquids are detected, then liquid samples would be collected and analyzed for comparison with characterization results from possible sources of water (such as leachate, soil consolidation water, etc.). Therefore, it is likely that some or all of these wells may never be sampled, unless enough water has accumulated within the well screen to enable sampling. This approach was more appropriate in the earlier design when large volumes of liquids

were to be managed (i.e., in the surface impoundments); however, it now seems less likely that sufficient liquids would accumulate in the vadose zone wells from the landfill, even if a release were to occur. Soil gas sampling would provide a more sensitive indication of a release from the landfill. However, no explanation is provided as to why soil gas sampling was not considered for vadose zone monitoring. Soil gas monitoring at the site could employ the same vadose zone monitoring wells as currently designed. Soil gas volatile organic compound (VOC) plumes have been identified at other New Mexico hazardous waste landfills (e.g., Los Alamos National Laboratory), and vapor migration could adversely impact underlying groundwater, without any accumulation of liquids from the landfill into the vadose zone monitoring wells. Modify the sampling strategy to include soil gas monitoring or provide sufficient justification for not considering it for vadose zone monitoring.

Similarly, sumps (see section 2.1) should be monitored using a soil gas approach (e.g., daily with an organic vapor meter (OVM)) and it could be used to correlate with vadose zone soil gas results outside of the landfill. It is recognized that elevated OVM concentrations would be expected at the sumps due to potential VOCs in the leachate.

Soil gas monitoring for accumulation of volatile organic compounds (VOCs) within the vadose zone monitoring well network is reasonable. Section 4 has been revised to include soil gas monitoring procedures. Soil vapor samples will first be screened using instrumentation such as a photoionization detector (PID). If field screening results in the presence of organic vapor concentrations greater than 100 parts per million by volume (ppmv), additional samples will be collected and submitted for laboratory analysis.

Although the LCRS and LDRS sumps will be monitored daily for the presence of fluids, Section 4 has been revised to include soil gas monitoring of the sumps on a monthly basis through closure of the landfill. Therefore, soil gas monitoring for both sumps and vadose zone monitoring wells will be on the same schedule.

47. Attachment I, Vadose Zone Monitoring System Work Plan, Section 2.2, Vadose Zone Monitoring Wells, page I-8: Clarify if neutron probe monitoring will be conducted monthly. Table I-2 does not include neutron probe monitoring. Also, describe the indicator criteria that will be used to determine if moisture is present based on the neutron probe results.

Neutron probe monitoring will be conducted monthly. This information has been added to Table I-2. The only valid method for assessing soil moisture with depth is qualitatively evaluating changes in neutron counts at a given depth based on sufficient background data. Direct quantitative comparison between depths is not recommended due to variations in density and composition of subsurface materials that are not accounted for when applying the standard calibration to all depths.

48. Attachment I, Vadose Zone Monitoring System Work Plan, Section 2.2.1, Well Locations, page I-8: Section 2.2.2.1, 2nd paragraph and Figure 2 specify the locations of deep monitoring wells. Section 2.2.1 states that the monitoring wells are intended to detect potential migration of fluids from the landfill. However, the deep monitoring wells VZMW-5D and VZMW-6D do not appear to be located downgradient of the Phase lA cell. Based on the contour map of the top of Lower Dockum in Figure 3-6 of Attachment H and Figure 3-14 of Part B, leachate migrating from the Phase 1A cell along the Upper Dockum/Lower Dockum contact would likely flow south of boring PB-47 and not towards the northeast comer of the facility, where VZMW-6D is located. Review the likely pathways of leachate migration from the Phase 1A cell, and either provide justification for the current proposed locations of wells VZMW-5D and VZMW-6D or propose alternate locations.

The proposed deep monitoring well network is sufficient to detect any seepage from the Phase 1A cell that reaches and flows along the Upper Dockum/Lower Dockum contact. Any seepage from the Phase 1A cell that reaches the contact should flow predominantly to the east and be detected at proposed deep monitor wells VZMW-1D, VZMW-2D, VZMW-3D, and VZMW-4D. Figure 1 of this response to comments shows the structural contour elevations of the top of the Lower Dockum overlaid on the proposed facility layout. The top of the Lower Dockum beneath the Phase 1A cell dips primarily toward the east and northeast in the direction of wells VZMW-1D, VZMW-2D, VZMW-3D, and VZMW-4D. The proposed locations of wells VZMW-5D and VZMW-6D are unchanged; the proposed locations appear to be adequate to monitor for potential seepage downgradient of the facility because the Upper Dockum/Lower Dockum contact dips predominantly to the northeast.

49. Attachment I, Vadose Zone Monitoring System Work Plan, Section 2.2.2.1, Deep Monitoring Wells, pages I-11-I-12: Section 2.2.2.1, 3rd paragraph lists two deep monitoring wells as VZMW-1 and VZMW-4, and a very deep monitoring well as VZMW-9. However, the same wells on Figure 2 are named VZMW-1D, VZMW-4D and VZMW-7D. Resolve the discrepancy.

The 4th and 5th paragraphs use confusing terminology ("screened", "well screen", and "screened interval") to describe construction of monitoring wells, and it is unclear which of these terms refers to the filter pack. The Permittee should use the terms "filter pack" and "well screen" consistently throughout the document.

Paragraphs 4 through 7 provide descriptions of monitoring well construction that is inconsistent with the "Typical Vadose Zone Monitoring Well Installation Detail" in Figure 2. Specifically, the 5-foot long well sump mentioned in paragraph 4 is not depicted in Figure 2; the 0.010-inch slotted screen mentioned in paragraph 5 is shown as 0.020-inch slotted screen in Figure 2; the centralizers mentioned as mandatory in paragraph 6 are shown as optional in Figure 2; the 20/40 filter pack sand mentioned in paragraph 7 is shown as 10/20 sand in Figure 2; and the 1 00-mesh transitional sand mentioned in·paragraph 7 is not shown in Figure 2~ In addition, paragraph 7 states that bentonite pellets will not be used in well completion and grout seal will be placed directly on top of the transitional sand, while Figure 2 depicts a bentonite pellet seal. Review the description of monitoring well construction in Section 2.2.2.1 and Figure 2 and resolve the discrepancies. In addition, some of the discrepancies described above also exist between Figure 2 and Section 2.2.2.2 for construction of shallow monitoring wells. Resolve these discrepancies as well.

The 5th paragraph states that the PVC well screen in deep monitoring wells will extend to 20 feet below the top of the alluvium/Upper Dockum contact and that there will be a minimum 20-foot grout seal below the alluvium/Upper Dockum contact. This proposed well construction is technically not feasible because, in accordance with paragraph 7, a filter pack and transitional sand will extend approximately 6 feet above the top of the well screen, thus making the grout seal below the alluvium/Upper Dockum contact only 14 feet long. Revise the proposed well construction details and resolve the discrepancies.

Designations for the deep wells have been revised in Section 2.2.2.1 to be VZMW-1D and VZMW-4D. The very deep well is VZMW-7D.

Discrepancies between the text and figures for vadose zone monitoring well construction have been revised, including details regarding the well screen, surface seal, and filter pack.

Drawing 2, Sheet 2 of 2, has been retained and revised as Figure 2a to reflect current (revised) specifications for the monitoring well network.

50. Attachment I, Vadose Zone Monitoring System Work Plan, Section 2.2,2.2, Shallow Monitoring Wells, page I-12: Section 2.2.2.2 and Figure 2 specify locations of shallow monitoring wells that will be installed across the alluvium/Upper Dockum contact. Section 2.2.1 states that the monitoring wells are intended to detect the potential migration of fluids from the landfill. However, the Permittee did not submit sufficient information on the flow patterns of potential landfill leachate along the alluvium/Upper Dockum contact. Provide a structure contour map of the top of the Upper Dockum in order for NMED to assess the placement of the shallow monitoring wells.

The 3rd and 4th paragraphs state that, for shallow monitoring well installations, the alluvium thickness must be a minimum of four feet, the PVC screen will extend to 3 feet above the alluvium/Upper Dockum contact, and the grout seal length will be minimum 3 feet. Since the filter pack and transitional sand have to extend at least one foot above the well screen (in accordance with the information provided in paragraph 5), the proposed well construction would require at least seven feet of alluvium thickness. Revise the well construction details to resolve the discrepancies.

The fifth paragraph indicates that the surface seal will be installed from the top of the transitional sand. The text further states that the surface seal will be installed from the top of bentonite. Resolve the discrepancy.

A structural contour map of the top of the Upper Dockum has been prepared and is included in the Part B permit application as Figure 3-14a and in Permit Attachment H as Figure 3-6a.

Figure 2 of this response to comments shows the structural contour elevations of the top of the Upper Dockum overlaid on the proposed facility layout.

The shallow monitoring well specifications have been revised to address the two discrepancies noted by the NMED. The revised specifications allow for more flexibility in the length of the well screen so that a proper annular seal can be placed when the depth of the alluvium is shallow (e.g., 4 feet). The revised specifications still include placement of the screen across the alluvium and Upper Dockum contact.

51. Attachment I, Vadose Zone Monitoring System Work Plan, Section 2.2.2.3, Neutron Probe Access Tubes, page I-13: Section 2.2.2.3 specifies the locations of the neutron probe access tubes but does not explain how these locations were selected, why there are no neutron probe access tubes downgradient of the landfill, or whether or not they are purposely located near storm water runoff channels. Provide additional information on the criteria used in the selection of locations of the neutron probe access tubes.

The last paragraph states that laboratory soil moisture data will be collected from soil samples from neutron probe access tube boreholes for neutron probe calibration purposes. Provide a reference to the section of the document that describes the procedure for soil sample collection that preserves soil moisture information or add the necessary description.

The locations for the two neutron probe access tubes are based on the designed configuration of the landfill. Additional text has been added to Permit Attachment I, Section 2.2.2.3 providing rationale for the selected locations. Section 2.2.2.3 has been revised to include a description of and reference for soil sampling and preservation procedures. Soil samples will be preserved and transported in sealed, moisture-proof containers (e.g., plastic bags, glass jars) in accordance with ATSM D4220.

52. Attachment I, Vadose Zone Monitoring System Work Plan, Table I-1, Baseline Chemical Analysis, page I-16: Table I-1 lists analytes for baseline chemical analyses. However, some common anions like fluoride, nitrate/nitrite, and phosphate are not included. Include all major anions in the analyte list.

Table I-1 has been updated to include analysis of major anions (fluoride, chloride, bromide, nitrite, nitrate, phosphate, and sulfate) by EPA method 300.0.

53. Attachment I, Vadose Zone Monitoring System Work Plan, Section 4.1, Monitoring Frequency, page I-17: Section 4 describes monitoring procedures for vadose zone monitoring wells. However, it does not include monitoring procedures for neutron probe access tubes. Provide a reference to the section of the document that describes monitoring procedures for neutron probe access tubes or add this information to Section 4.

Additional monitoring procedures have been added to Permit Attachment I, Section 4 for frequency, calibration, and collection of neutron soil moisture data within the neutron probe access tubes.

54. Attachment I, Vadose Zone Monitoring System Work Plan, Section 4.3, Monitoring Method, page I-19: Provide specifications or cut sheets for the "dedicated transducer with a manual readout" for sumps. This comment also applies to Attachment N, Section 3.4.4, Operation of Leachate Collection and Detection Systems, Item F.

Specifications and cut sheets are not typically provided for electrical or instrumentation components at permit-level design. Following the meeting on May 15, 2013, NMED representatives agreed that provision of transducer specifications or cut sheets was not required.

55. Attachment I, Vadose Zone Monitoring System Work Plan, Section 4.4, Sample Collection, page I-20: The next to last paragraph states that monitoring wells will be purged until field parameters stabilize. However, stabilization criteria are not provided and dissolved oxygen and oxidation/reduction potential (ORP) are not listed as field parameters. Add dissolved oxygen and ORP as field parameters and list all pertinent stabilization criteria.

Section 4.4 of Attachment I, Vadose Zone Monitoring System Work Plan, has been updated to define stabilized field parameters using criteria found in the most recent version of the EPA's *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers* (Yeskis and Zavala, 2002). Dissolved oxygen (DO) and oxidation/reduction potential (ORP) were also added as required field parameters.

56. Attachment I, Vadose Zone Monitoring System Work Plan, Section 6.4, Vadose Zone Monitoring Wells, page I-24: Permittee Statement: Statistical analysis will be used to determine statistically significant changes in the following non-leachate parameters: dissolved and total metals (Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Ti, Zn) and radionuclides (gross alpha, gross beta, gamma emitters, total uranium, radium 226/228, radon).

NMED Comment: Clarify if statistical analysis would be used to compare changes to these parameters over time, or with respect to some background or source data set (such as consolidation water). The text states that statistical analysis will be performed on data for dissolved and total metals. However, Table I-1 does not list total metals as analytes. Resolve the discrepancy.

Section 6.4 of Attachment I, Vadose Zone Monitoring System Work Plan, has been updated to state that parameters will be analyzed with respect to time.

Total metals, as analyzed by EPA analytical methods 6010B and 6020 for groundwater and 200.7 and 6010C for soil, are listed in Table I-1.

57. Attachment I, Vadose Zone Monitoring System Work Plan, Section 6.5, Data Reporting, page I-25: Section 6.5, mentions a biennial sampling event for 40 CFR 264 Appendix IX parameters. However, this sampling event is not listed in Table 1-2 or described anywhere else in monitoring procedures (Section 4). Provide a reference to the section of the document that describes the biennial sampling event or add such information to Section 4.

Table I-2 summarizes monitoring frequency (for the presence or absence of fluids), not sampling frequency. The nature of the vadose zone monitoring well network is such that consistent presence of groundwater is not anticipated. However, the biennial sampling event for 40 CFR 264 Appendix IX groundwater parameters has been added as a response action in Section 4.2 of Attachment I, Vadose Zone Monitoring System Work Plan.

58. Attachment I, Vadose Zone Monitoring System Work Plan, Drawing 2, Sheet 2 of 2, Well Installation Details (deleted): Drawing 2, sheet 2 of 2 was deleted in the Renewal Application. The diagram is helpful for conceptualizing the completion intervals for the vadose zone monitoring wells; therefore, the drawing should be updated, and retained. To update this drawing, portions of the schedule as well as the "pressure-vacuum soil-water sampler installation detail" should be deleted or red-lined, as needed.

Drawing 2, Sheet 2 of 2, has been retained and revised (as Figure 2a of Permit Attachment I) to reflect current specifications for the monitoring well network.

59. Attachment L1, Engineering Drawings, Volume 3: The facilitate the review, the revised drawings should be collated in with the old drawings, in drawing number sequence, to avoid flipping back and forth between new and old drawings.

The drawings revised by DBS&A have been collated with the original and redlined MWH drawings.

60. Attachment L1, Drawing 2 Index, Volume 3, Legend and General Notes: Some general notes should be eliminated or red-lined as not applicable due to the removal of associated features in the renewal permit design, e.g., #10, 11, and 12.

General note numbers 10 and 11 have been redlined, as they describe facilities that have been removed from the design.

General note number 12 will be retained, as it refers to the non-contaminated stormwater basin located within the Phase 1A landfill cell.

61. Attachment L1, Drawing 4 (revised), Facility Layout: The drawing provides "Typical Vadose Zone Monitoring Well Installation Detail", but the vertical distance between the top of the screen and the bottom of the bentonite seal is not defined. Also See comment# 58 on Attachment I (Vadose Zone Monitoring System Work Plan), elimination of Drawing 2 from Attachment I has left the completion depth of these monitoring wells ambiguous in the current design. Note that specifications for the neutron probe access well construction are not shown on the drawings, but are generally described in Section 2.2.2.3 of Attachment I. However, the target depth interval for completion of the neutron probe access wells is not provided. Provide the missing information.

Monitoring well installation details have been clarified on Drawing 4 to match text and figures in Attachment I, Vadose Zone Monitoring Plan. Figure 2a from Attachment I has been included as a second sheet for Drawing 4 to provide further clarification.

62. Attachment L1, Drawing 10, Filling Plan-Phase 1 (revised): The Permittee should provide assurance that slope erosion will not impact unlined portions of the cell (i.e., across the access ramp and along the northern edge). In addition, the operational plan should include timely removal of liquid from the Contaminated Water Basin to ensure that there are no slope stability problems associated with the saturated toe of the slope. With the elimination of the evaporation pond from the design, it is possible that removal of this liquid could be delayed by constraints on the proposed leachate recirculation system.

When combined with net evaporation rates at the site, slopes are sufficiently shallow such that slope erosion will not impact facility operations.

Liquids will not be allowed to pond in the contaminated water basin at the base of the landfill, as this would interfere with active unloading areas. Accumulated liquids will be removed within 48 hours, or more frequently as needed based on active landfill operations.

63. Attachment L1, Drawing 11, Phase 1A Cross Sections: On the cross sections of Phase IA during filling, check and clarify what the "vegetative cover" is attempting to show, it appears to coincide with the "original surface". It also does not show enough relief for the final cover; there should be about 40 feet of relief west of the crest, and 15 feet of relief east of the crest, per Drawing 22. Also, laying the liner along only half of the access ramp does not allow positive drainage towards the waste, so waste could erode from the edge of the waste prism and spread beyond the liner across the access road. It is not clear on cross section D-D', how the unlined areas will be protected from contaminated runoff from within the waste near Station 200, where runoff apparently would flow toward the north. In addition, some form of interim cover will be required at the top of the Phase IA waste fill (Drawing 10).

The reference to “vegetative cover” on Drawing 11 is intended to represent interim final cover in the event that the landfill is closed after Phase 1A. A liner would be placed on top of the waste as it existed at closure, then the remaining “open air space” would be backfilled to grade, and the final cover would be installed as shown. This is not the final landfill cover that is shown on Drawing 7. Additional details are provided in the text for Attachment O, Closure Plan.

Drawing 14 has been modified to extend the 60-mil HDPE ditch liner to the center of the road with a 2-foot overlap. This combined with the compacted road base and subbase will minimize potential for migration of contamination outside the boundary of the lined landfill cell.

Waste would be placed completely within lined areas of the landfill cell. The north end of the cell is more accurately depicted on Detail 17 of Drawing 23. Additional details and engineering drawings will be provided in a revised closure plan should the facility be closed during Phase 1A landfill cell operations.

64. Attachment L1, Drawing 12, Liner Details: Explain why is there a 0.5 ft thick clay layer between the geocomposite and the primary geomembrane in the anchor trench in the detail 2 and 6. Also, call out the geotextile around the lower (LDRS) drainage gravel on Detail 5. Explain how the expansion after Phase IA will tie into this liner system.

The 0.5-foot-thick clay layer is used to provide space above the geocomposite for the LDRS. Clay material is used to limit migration of fluids across the anchor trench. A clay liner product will be used to mitigate potential damage to the secondary liner system by compacting in the anchor trench.

The callouts on Detail 5 of Drawing 12 are correct. The geocomposite will be run along the bottom of the LDRS leachate collection trench, and the primary liner will be run along the top of this trench. An additional geotextile is not needed around the LDRS, as the drainage gravel is completely surrounded by geosynthetic materials. A geotextile is only needed around the LCRS to separate drainage gravel from protective soil.

For Phase 1B build-out, liners for the LCRS and LDRS will be excavated and cleaned, and new liner materials will be overlapped and welded to the existing liner. New piping will be connected and gravel will be placed. Liner and piping will be extended to the southern extent of the bottom of Cell 1B. Engineering drawings depicting these connections from Phase 1A to Phase 1B will be provided in a future permit modification for the Phase 1B landfill cell. Cells II and III will have separate leachate collection systems as shown on Drawing 6.

65. Attachment L1, Drawing 13, Collection Basin Plan and Details: It appears that Ditch 7 water will discharge into the pond after flowing over the ground surface for about 30 to 40 feet. Similarly, Ditch 8 flow terminates in what appears to be a culvert. Neither the end of Ditch 7 nor the Ditch 8 discharge culvert appear to be sized. Discuss if additional engineering measures are required for the Ditch 7 and 8 discharge into the pond.

Details for the Ditch 8 culvert are provided on Drawing 25 (Sheet 2 of 2), including diameter, design flow, and total capacity. Existing details provided for Ditch 7 conveyance into the water collection basin and the Ditch 8 culvert are considered sufficient for permitting purposes. Additional engineering measures, including channel reinforcement and aprons to mitigate erosion, will be evaluated when the facility is designed for construction.

66. Attachment L1, Drawing 14, Typical Landfill Access Ramp Details: Describe the requirements for unearthing, cleaning, overlapping, and welding more recent lineronto older liner when transitioning between "interim fill stage" and "final fill stage". It is not clear whether the Permittee intends to build the ramp per the top section, and then after Phase 1A is complete, remove half the access road, install the remaining liner, and re-build the access road as shown. The better option would be to line the entire width of the access road at the beginning and then weld onto the liner outside of the access road for the post-Phase IA construction. Lining only half of the access road is unconventional, and may not be protective of the unlined portion from migration of contamination.

Unearthing, cleaning, overlapping, and welding the landfill cell liner for future build-out will be more difficult on a slope than on a flat surface. Completing this work on a flat surface will likely result in fewer imperfections and a higher quality liner seam. Engineering drawings depicting the seaming requirements for the Phase 1A to Phase 1B geosynthetic liner will be provided in a future permit modification for the Phase 1B landfill cell.

Drawing 14 has been modified to extend the 60-mil HDPE ditch liner to the center of the road with a 2-foot overlap. This combined with the compacted road base and subbase will minimize potential for migration of contamination outside the boundary of the lined landfill cell.

67. Attachment L1, Drawings 21 and 22, Final Grading Plans: The drawings do not depict locations of the crest riser pad (Drawing 19) and vertical riser (Drawing 20). Also, depict the daylight and discharge points for the final cover anchor trench perforated piping (Drawing 23, Detail 19).

The location of the crest riser pad for Phase 1A is depicted on Drawing 10, on the north side of the landfill cell. The vertical riser is shown in plan on Drawing 15 and in profile on Drawing 17.

The perforated anchor trench piping will daylight at the crest riser pad and leachate storage tank on the north side of the Phase 1A landfill cell. Details for these connections and the crest and vertical risers will be refined in the construction drawings.

68. Attachment L1, Drawing 23, Final Cover Details: In Drawing 23, Detail 17, a clay liner is shown extending from the top of the Upper Dockum Formation to the top of alluvium; however, the thickness of this clay liner is not called out leaving the design ambiguous. This clay liner seems to function as the clay berm shown in Figure 3-21, and Attachment H, Appendix B, Figure B-1, which extends in elevation from the top of the Upper Dockum bedrock to the ground surface, thereby sealing off any discharge into the cell from the sandy Quaternary Alluvium. Clarify to ensure that this clay berm or liner is constructed as intended in the unsaturated flow modeling. The comment also applies to Attachment L Engineering Report, Pg. L-12 to L-13, Section 3 .1.3, 2nd bullet that describes the compacted clay liner as extending 16 feet laterally (as shown on Drawing 23); however, the thickness of the clay liner underlying the geosynthetic liner system is not indicated.

Drawing 23, Detail 17 indicates that the cover geomembrane is not connected to the primary liner geomembrane, which is unconventional. Either revise or provide justification for not welding the primary liner to the cover geomembrane.

There is sufficient geometry indicated on Detail 17 of Drawing 23 to define the thickness of the clay liner. Given a 3:1 landfill cell side slope and a surface length of 16 feet, the clay liner will be approximately 5 feet thick. Field determination of the side slope and surface distance will be sufficient construction quality assurance. The thickness of the compacted clay liner (CCL) has been clarified in Section 3.1.3.2 of Attachment L, Engineering Report.

An overlap of 20 feet will be sufficient to promote drainage on the cover away from the waste, if drainage exists. The net evaporation rate combined with site soils and a 2.5-foot-thick vegetation layer will limit water content in near-surface soils. The GCL, clay liner, and compacted subgrade will be sufficient to limit drainage of leachate away from the landfill.

69. Attachment LI, Drawing 44, Truck Wash Layout and Details (deleted): There is not sufficient justification for eliminating the truck wash from the facility design. Since the waste storage and treatment facilities have been eliminated, it appears that all trucks will be traveling into the landfill cell to discharge their loads. In addition, with the use of leachate and storm water recirculation, the moisture content of cover soil within the landfill cell will likely be greater than in the previous design, resulting in greater adhesion of leachate-contaminated soil to vehicles. Therefore, the potential spreading of hazardous constituents from trucks leaving the landfill cell is greatly increased, and some methods of decontamination should be in place.

The Attachment N (Operations and Maintenance Plan), Section 3.4.3, Item J states "[L]andfill operational staff will visually observe trucks leaving the area for excessive accumulation of waste on the tires and/or truck body. If excessive accumulation is noted, physical cleaning of the trucks will be performed within the lined landfill on an area with soil cover daily waste disposal working face," this may not be an adequate procedure to provide protection from spreading the contamination. Retain the truck wash facility in the Permit Application and as part of the proposed facility.

The truck wash has been removed from the design, as it would represent a source for possible contamination located outside the boundary of the lined landfill cell. Until it was pumped out for disposal or recirculation, truck wash water would be stored in pits or tanks that could present a potential threat to human health or the environment.

Facility controls would be used to mitigate trafficking of hazardous waste. Landfill staff will direct all truck traffic on-site, including riding with drivers if needed. At the base of the landfill cell, a designated compacted, flat unloading area would be used that would be completely separate from waste disposal areas. Trucks will not come into contact with placed hazardous waste, daily cover, or sprayed and recirculated leachate. If needed, a portable pressure washer system or other physical removal devices can be implemented in the bottom of the lined landfill cell. Section 3.4.3 of Attachment N, Operations and Maintenance Plan, has been revised to include these additional facility controls.

70. Attachment L4 New Landfill Engineering Calculations: For Calculation ES11.0141-002 "Calculate precipitation file ... ", Sheets 1 through 6 are entitled "Surface water runoff and channel sizing", which does not appear correct since the subject on the Cover Sheet is entitled "Calculate precipitation file for use in UN SATH model." Revise the sheet accordingly.

On pg. 5 of 6 there is a typographical error in the first line of text, "0.024 acre-feet" should be "0.0024 acre-feet," however the calculation is not affected. Also, on the same page, 5th line, the date should be 9 AM on October 10 instead of October 9, revise accordingly.

The title for calculation ES11.0141-002 has been revised to say “Calculate precipitation file for use in UNSAT-H model.” Typographical errors on page 5 of the same calculation have been corrected.

71. Attachment L5 Landfill Stormwater and Leachate Recirculation Modeling: Provide additional description as to how accumulated "clean" storm water will be managed. With the elimination of the evaporation pond, stabilization unit, and storage tanks, the available measures for handling storm water have been significantly reduced in the Renewal Application. In Attachment L5, the recirculation modeling

was limited to the management of contaminated storm water and leachate (pg. LS-1, second paragraph, first sentence). Attachment N (Operations and Management Plan), page N-2 indicates that the uncontaminated landfill storm water will be pumped into the storm water control system for the site (i.e. the ground surface ditches and storm water detention basin). Clarify the planned disposition of water within·the storm water detention basin. Additional mechanisms such as a storm water pollution prevention plan (SWPPP) would be required during operations and post-closure. The Part B application, pg. 2-5, Section 2.5.1.6, 3rd full paragraph, last sentence states that the storm water detention basin will be lined to prevent infiltration into groundwater. Clarify if there are any other performance goals or operational considerations for this pond. There should be an operations plan on management of the accumulated uncontaminated storm water after a large precipitation event, such as the design maximum 25-year, 24-hour storm event. In Attachment O (Closure Plan), pg. 0-10, Section 8.1.7, indicates that the storm water detention basin will be sampled during closure; explain how any accumulated storm water will be managed during closure. Clarify, if the pond will be backfilled and ditches graded to drain during closure.

Water in the non-contact stormwater collection basin within the landfill excavation will be sampled prior to discharging outside the lined landfill area. If not tested or if impacted above NMWQCC standards, non-contact stormwater will be handled in the same manner as contact stormwater. If not impacted, the stormwater will be pumped to site ditches or the detention basin as stated. Stormwater in the contact stormwater basin will be recirculated over non-active waste areas and covered with a daily cover in the same manner as leachate.

During operations and post-closure, the facility will have a stormwater pollution prevention plan. There are no additional performance goals for the stormwater pond beyond containing and evaporating stormwater from storms up to the 25-year, 24-hour storm. Maintenance of the stormwater detention basin may include removal and disposal of accumulated sediments, if required. Section 2.5.1.6 of the Part B permit application text has been updated to discuss these operational considerations. After a large storm event, the non-contact stormwater pond within the landfill will be tested. For potential water occurring in the detention basin at closure, similar to water that occurs in the pond during operations, the water in the pond will be allowed to evaporate. The pond and ditches will not be graded during closure. The language in Attachment O, Section 8.1.7 has been modified to ensure clarity that the pond and ditches are not backfilled.

72. Attachment M, Construction Quality Assurance Plan, Section II, page M-11: Remove all references to the excavation of the surface impoundment in the text. The Permittee does not intend to construct the surface impoundment according to the Renewal Application. Review the entire section to delete references to the surface impoundment.

Nine instances of the phrase “or surface impoundment” have been removed from Section II of Attachment M, Construction Quality Assurance Plan.

73. Attachment N, Operations and Maintenance Plan, Section 2.1, page N-2: In the first full paragraph at the top of the page, 3rd sentence, the plan for the contaminated storm water to be pumped out and removed from the designated collection basin "within 24 hours" has been removed, and instead the water is proposed to be managed by spraying and recirculation over the daily soil cover. Discuss if there are any slope stability concerns associated with more prolonged storage of this accumulated water at the toe of the hazardous waste slope (potentially at 4:1). Also, clarify that this leachate management technique is only for use on daily cover, and not on the final cover.

Given a shallow waste slope (4H:1V) and compaction of waste and daily cover, stormwater is not anticipated to impact soil stability. The net evaporation rate at the site, combined with slope of the base of the landfill cell to the north (opposite the slope of the Cell 1A waste cover) will limit accumulated water at the toe of the slope. Section 2.1 of Attachment N has been updated to specify that leachate recirculation will only be applied over daily cover, not final cover.

74. Attachment N, Operations and Maintenance Plan, Section 3.1.2.B, page N-6: The text indicates that Table 4.4 lists the tests to be performed on incoming waste. Table 4.4 does not provide this information, instead Table 4-2 lists tests and analytical methods for fingerprint samples. Similarly, the reference to Table 4.5 is incorrect, the correct reference is Table 4-3.

Paragraph 3.1.2.B of Permit Attachment N has been revised to reference Part B permit application Tables 4-2 and 4-3 regarding fingerprint analysis methods. The text has been further revised to state that these tables are found in the Part B permit application.

75. Attachment N, Operations and Maintenance Plan, Section 3.1.3.A, page N-6: The text indicates that confirmatory sampling would be performed according to section 4.4. However, section 4.4 of the Attachment N has been deleted. If the Permittee is referring to section 4.4 of the Waste Analysis Plan, then it needs to be specified. Similarly, section 3.3 refers to section 4.5.6 for discussion of waste generated at the site, but does not specify that it is the section 4.5.6 of the Waste Analysis Plan, and not Attachment N. Provide the correct references to clarify the text.

Paragraphs 3.1.3.A and 3.3.A of Attachment N, Operations and Maintenance Plan, have been revised to reference Sections 4.4 and 4.5.6, respectively, of the Part B permit application text.

76. Attachment N, Operations and Maintenance Plan, Section 3.4.3, Waste Placement pages N-9 and N-10: The Renewal Application proposes elimination of the stabilization facility which would result in substantially more traffic within the landfill cell and more potential for haul trucks to contact contaminants. The truck wash was also eliminated from the design. Item J (page N-10) does not provide an adequate description of the operations of trucks within the landfill. Revise the text to discuss the process for unloading the trucks and discuss the measures that will be taken to keep trucks from trafficking through hazardous waste. "Physical cleaning" based on visual observations of "excessive accumulations" is subjective and not protective. Additional safeguards for protection of human health and the environment need to be established within the landfill cell during operations. The Permittee must include construction of the truck wash in the design.

The truck wash has been removed from the design, as it would represent a source for possible contamination located outside the boundary of the lined landfill cell. Until it was pumped out for disposal or recirculation, truck wash water would be stored in pits or tanks that could present a potential threat to human health or the environment.

Facility controls will be used to mitigate trafficking of hazardous waste. Landfill staff will direct all truck traffic on-site, including riding with drivers if needed. At the base of the landfill cell, a

designated compacted, flat unloading area would be used that would be completely separate from waste disposal areas. Trucks will not come into contact with placed hazardous waste, daily cover, or sprayed and recirculated leachate. Section 3.4.3 of Attachment N, Operations and Maintenance Plan, has been revised to include these additional facility controls.

77. Attachment N, Operations and Maintenance Plan, Section 3.4.4, page N-10: Revise Item E since there will be no "main liquid waste storage tanks" to receive the liquids.

Paragraph 3.4.4.E of Attachment N, Operations and Maintenance Plan, has been revised to state that the leachate will be removed and recirculated within the landfill.

78. Attachment N, Operations and Maintenance Plan, Section 3.4.5.E, page N-11: The text refers to section 5.2.5. No such section was found in the part B application or Attachment N. Revise the text to provide correct reference.

Paragraph 3.4.5.E of Attachment N has been modified to refer to Section 5.2.5 of the Part B permit application. This section has been retained with edits, as the leachate collection storage tanks will be used at the facility.

79. Attachment O, Closure Plan, Section 8.1.6, Landfill, page O-8: In the third paragraph, it is stated that only the Phase 1A portion of the landfill is going to be permitted. Consequently, additional details of the closure configuration are needed in light of this phased construction, since only Phase IA will be permitted. Provide additional discussion of how the liner system will be brought up to grade (i.e., the portions of the excavation that are unlined on Drawing 10) to match Detail 17 on Drawing 23 (or some interim version of this detail). Also, a drawing showing the final cover for only Phase IA should be included in the event that future phases are not built.

Drawing 11 includes a reference to “vegetative cover” shown just above the original land surface. This is intended to represent interim final cover in the event the landfill is closed after Phase 1A. A liner would be placed on top of the waste as it existed at closure, then the remaining “open air space” would be backfilled to grade, and the final cover would be installed as shown.

Language has been added to Section 8.1.6 of both the Part B permit application text and Attachment O, Closure Plan, to clarify this interim closure. Existing language within Section 8.1.6 discusses filling of the contaminated stormwater basin. These details will be diagramed in an updated closure plan in the event that the facility is closed during Phase 1A operations.

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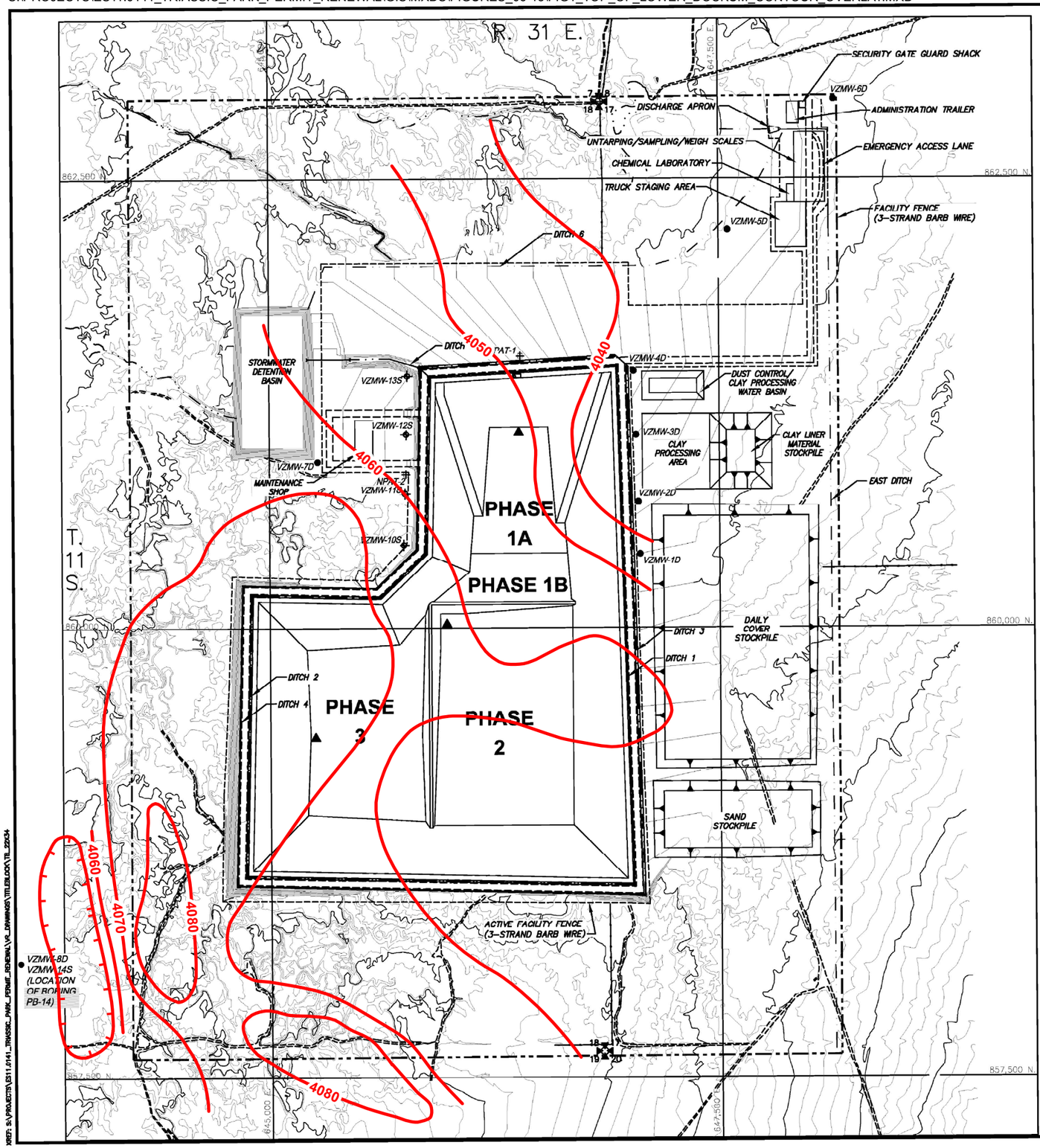

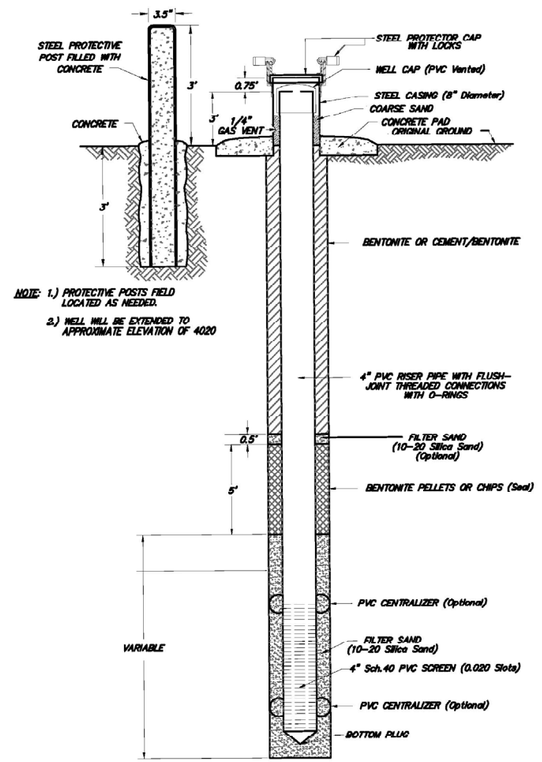

NOTE: 1.) PROTECTIVE POSTS FIELD LOCATED AS NEEDED.
2.) WELL WILL BE EXTENDED TO APPROXIMATE ELEVATION OF 4020

TYPICAL VADOSE ZONE MONITORING WELL INSTALLATION DETAIL

SCALE
300' 0 300' 600'

LEGEND
- Existing contour
- Regraded contour
- Deep monitoring well
- Shallow monitoring well
- Vadose zone sump
- Neutron probe access tube
- Facility and active facility fences (3-strand barb wire)

NOTES:
1. VADOS ZONE MONITOR WELLS VZMW-9D AND VZMW-15S ARE LOCATED APPROXIMATELY 3,300 FEET NORTHWEST OF THE FACILITY BOUNDARY WITHIN 15 FEET OF THE LOCATION OF BORING WW-1.

PRELIMINARY - NOT FOR CONSTRUCTION

NO	DATE	BY	REVISION MADE
0	10/18/11	GDP	PART B PERMIT APPLICATION RENEWAL

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CHECKED BY: GDP
DATE: 10/4/2011

TRIASSIC PARK WASTE DISPOSAL FACILITY
CHAVEZ COUNTY, NEW MEXICO
FACILITY LAYOUT AND
TOP OF LOWER DOCKUM
STRUCTURAL CONTOUR ELEVATIONS

JOB NO. ES11.0141

SHEET 1 of 1
DWG NO. 4

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6/25/2013

Figure 1

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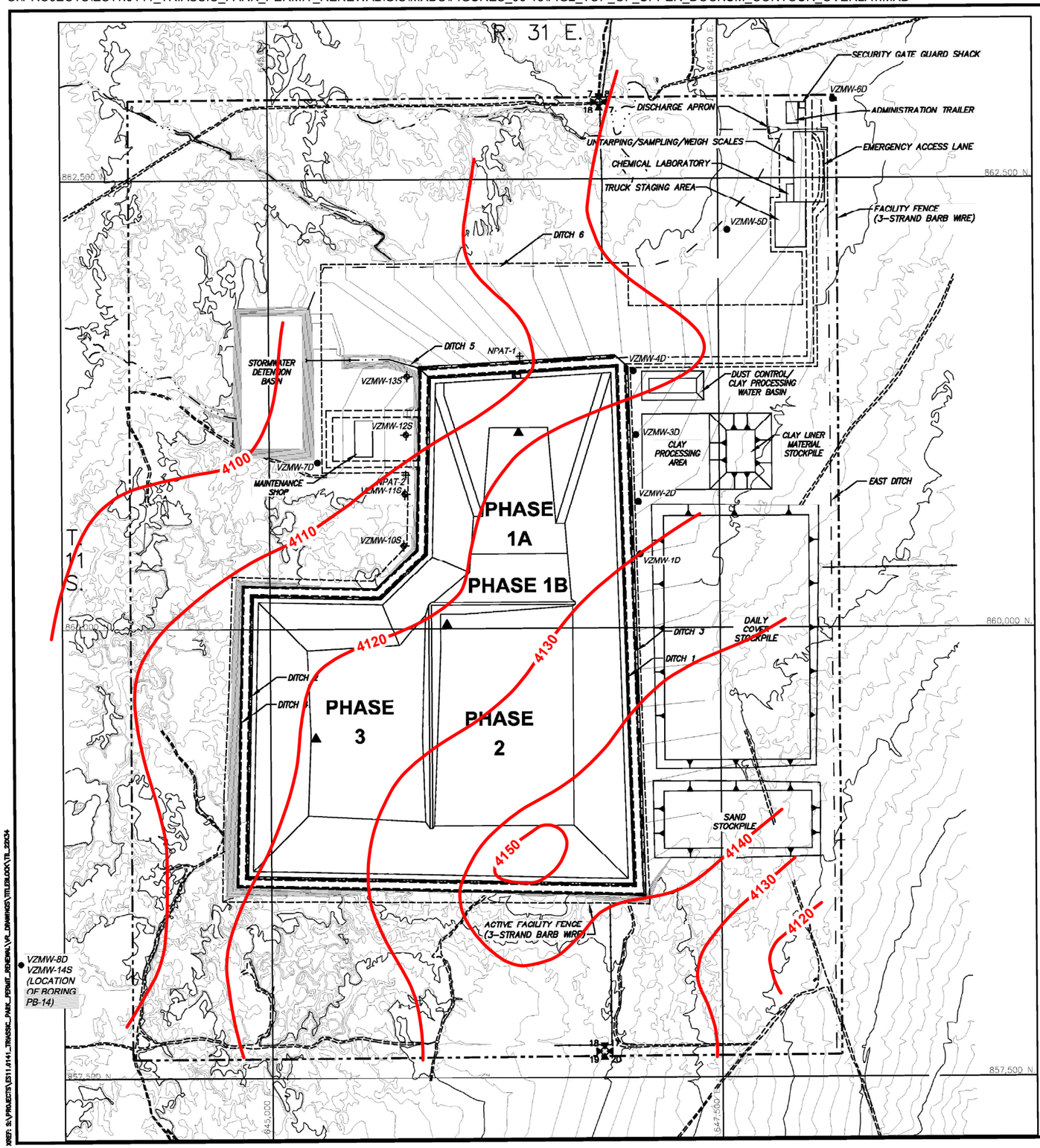

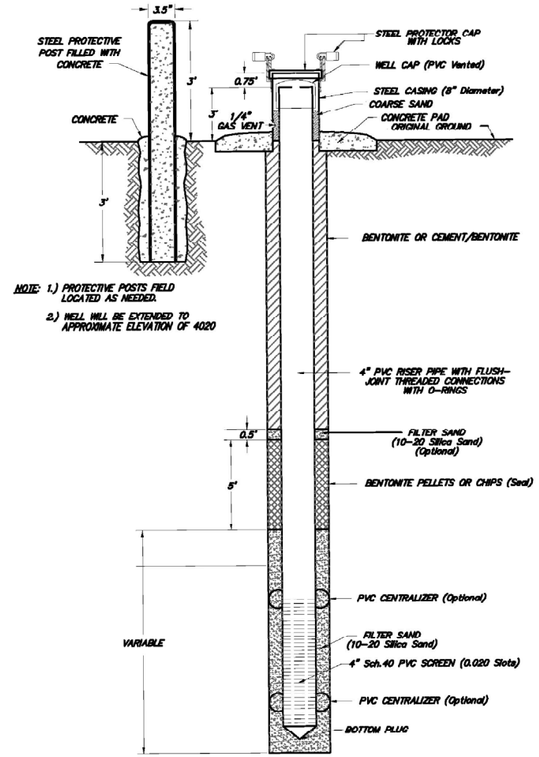

NOTE: 1.) PROTECTIVE POSTS FIELD LOCATED AS NEEDED.
2.) WELL WILL BE EXTENDED TO APPROXIMATE ELEVATION OF 4020

TYPICAL VADOSE ZONE MONITORING WELL INSTALLATION DETAIL

N

SCALE
300' 0 300' 600'

LEGEND
- Existing contour
- Regraded contour
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NO	DATE	BY	REVISION MADE
0	10/18/11	GDP	PART B PERMIT APPLICATION RENEWAL

FILE NAME: S:\Projects\ES11.0141_Triassic_Park_Permit_Renewal\GIS\MXDS\FIGURES_06-13\FIG2_TOP_OF_UPPER_DOCKUM_CONTOUR_OVERLAY.mxd

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SHEET 1 of 1
DWG NO. 4

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6/26/2013

Figure 2

Errata
Attachment H, Appendix B

This errata page was prepared July 2013 by Daniel B. Stephens & Associates, Inc.

When reviewing the equations presented in Appendix B (Section B-2) of Attachment H two errors were found, as follows:

1. Equation 7 is incorrect. The correct equation is

$$Q = q(\theta) \times A$$

   This equation is consistent with the Appendix B text describing Equations 6 and 7.

2. The symbol 'a' in Equation 4 should be 'α'.

$\Delta\eta_{\infty}$ = hydraulic potential
Q = flow rate
$\alpha = n/\beta$
n = power in the power-law relationship for K as a function of soil saturation, generally accepted value is 3
β = curve fitting parameter
x', y', z' = location of point source
x, y, z = Cartesian coordinates, z defined postitive downward
S = saturation of the soil
S_r = residual saturation
S_m = maximum saturation
K_o = saturated hydrualic conductivity
η = dependent variable defined by Kirchhoff transformation
q = Darcy flux
A = horizonatal cross sectional area
v = velocity of fluid
θ = moisture content of the soil