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February 16, 2000

Mr. James P. Bearzi
State of New Mexico Environment Department
Hazardous and Radioactive Materials Bureau
P.O. Box 26110
2044 Galisteo
Santa Fe, NM 87502

Reference: Work Assignment Y513; State of New Mexico Environment Department, Santa Fe, NM; General Permit Support Contract; Triassic Park Engineering Design Review; Review of Facility's January 2000 Submittals; Draft Deliverable

Dear Mr. Bearzi:

We have reviewed the engineering design portions of the revised Triassic Park Part B Permit Application, assigned to TechLaw by the HRMB. This design review was performed primarily to verify that the updated documents incorporate the previously agreed resolutions of comments on the May 1999 draft application in the July 1999 Responses to the Request for Additional Information, and several meetings between Mr. Pat Corser and Mr. Jorge Troncoso of Montgomery Watson and Mr. Greg Starkebaum of TechLaw.

The pieces of the application provided by Montgomery Watson on January 15, 2000 included only Chapters 1-2 and 4-11 of the text, the Engineering Report and Drawings, Construction Quality Assurance Plan and Construction Specifications (Appendices A, B and C of the Report), and a "DRAFT" Operations and Maintenance Plan.

Several portions of the application addressed in previous review comments were not provided, including the Laboratory Test Results, Engineering Calculations, Surface Water Control Plan, Action Leakage Rate and Response Action Plan, and details on pumps, tanks, and the impoundment and landfill synthetic liners. Therefore, many of the proposed comment resolutions in the Montgomery Watson "Response to Request for Supplemental Information" dated July, 1999, could not be verified. Each instance of this problem is cited in the enclosed comments.

Many examples of inadequate incorporation of the agreed comment resolutions were identified. Unfortunately, most of these are substantive problems that cannot be addressed by special permit conditions. For example, the drawings and several other documents were not certified as required by the hazardous waste and New Mexico Professional Engineer regulations. This can be remedied only by the engineering contractor(s) providing certified drawings and documents. Many of the other inadequacies are focused in the very low quality Draft Operations and Maintenance Plan.

Some other issues could possibly be addressed by special non-typical permit conditions. One or two special permit conditions may be appropriate for managing potential waste releases into the concrete vault below the proposed stabilization basins. These suggested special conditions are discussed in comments under heading D-2d(1).

The four Closure and Post-Closure comments and July, 1999 responses, and the updated Closure Plan, were not addressed in our review, because the comments were either HRMB-policy oriented, or design concerns were of minor importance. However, we did notice two major current deficiencies: the closure and post-closure plans in Chapter 8 provide only blank tables for estimated Phase 1A closure waste and backfill volumes and costs, and post-closure maintenance and monitoring costs.

Enclosed is a hard copy and a file of the deliverable on a 3.5-inch diskette in WordPerfect 6.1 format. In addition, the file was e-mailed to Ms. Stephanie Kruse in your office.

Please call me or Mr. Greg Starkebaum at (303) 763-7188, you have any further questions.

Sincerely,

June K Dreith

June K. Dreith
Project Manager

enclosure

cc. S. Kruse
C. Amindye
R. Dinwiddie
W. Jordan
G. Starkebaum
D. Romero (file)

TRIASSIC PARK WASTE DISPOSAL FACILITY

PART B APPLICATION
ENGINEERING REPORT, DRAWINGS, SPECIFICATIONS, CONSTRUCTION QUALITY ASSURANCE PLAN, AND OPERATIONS AND MAINTENANCE PLAN
Submitted January 2000

REVIEW COMMENTS

The following comments are based mainly on the March 11, 1999 NMED Request for Supplemental Information, the Montgomery Watson Response dated July, 1999, and the "Updated" documents (noted above) submitted with the Transmittal dated January 15, 2000. The updated documents were reviewed to verify that the proposed comment resolutions were actually incorporated in the updated application. Several of the pertinent documents were not provided for review, such as the Laboratory Test Results, Engineering Calculations, Surface Water Control Plan, Action Leakage Rate and Response Action Plan, and details on pumps, tanks, and the impoundment and landfill synthetic liners. The comment resolutions that could not be verified are noted.

Numerous multi-part comment Responses were handled by indicating only the inadequate parts of the updated plans, i.e., the review of a five-part comment/Response with only one inadequacy in the updated plans focuses on the one inadequate part. The other four parts of the Response, that were adequately incorporated in the updated plans, are not specifically acknowledged. It should be noted that the overall results of this review are therefore not as negative as might be supposed by reading only the following comments.

One new general comment is included before the listing of previous comments. In addition, several followup comments on the updated plans are provided under the appropriate headings, based on or directly related to the original comments.

GENERAL COMMENT

20 NMAC 4.1.900, incorporating 40 CFR 270.14(a), requires that design drawings, specifications and engineering studies shall be certified by a registered professional engineer. Although a professional engineer's stamp is provided on most of the design drawings for the proposed facility, the cover sheet is stamped "DRAFT", and the drawings are not signed or dated at the certification statement. The specifications, engineering report and CQA plan are not stamped, signed or dated. (The certification statement on every stamped drawing also states that "...this **map** was prepared under my supervision..." even though the majority of the drawings are not "maps".) Section 12.1 of Title 16 NMAC Chapter 39, Part 3 requires in part that "Adjacent to the seal/stamp shall appear the original signature of the registrant along with the date the signature was applied." Provide drawings, and cover pages for the other documents that are certified in accordance with New Mexico regulations.

D. PROCESS INFORMATION

Although General Note 1 for the drawings (on drawing No. 2) states that the "drawings represent final designs for the RCRA permitted facilities" as proposed in the July, 1999 Response, a number of RCRA components and design details are not provided. For example, Note 11 states that the "actual size, location and orientation of stabilization facility and ancillary structures and equipment to be determined during final design." Since the stabilization units are RCRA-regulated units, these statements are inconsistent.

Notes 4 and 13 similarly indicate that additional drawings and design work for piping and other details will be prepared by the contractor and "approved by engineer." Piping for hazardous waste service is also a "RCRA component." However, only "non-RCRA components of the design" will be submitted to NMED for review and approval prior to construction (Note 1). The submittal of final design information is not clarified in the text of the application. (Also refer to comments D-2 and D-2c(1).)

Please clarify the intent of these statements, define "non-RCRA components" of the facility, and explain whether the final designs for waste piping, stabilization and liquid waste storage tanks, and other RCRA components are intended to be submitted to NMED for review prior to construction (after permit issuance).

The Draft Operations and Maintenance Plan does not address the Truck Wash, although it was included in the outline of the plan in the July, 1999 Response. Although the Truck Wash will not be addressed as a permitted unit or units, it will be used to manage large volumes of water and soil mixed with hazardous wastes, and these wastes will be transferred to other units at the facility. Therefore it is recommended that the Truck Wash should be included in the O&M Plan.

The updated documents submitted for review did not include the "crosswalk" reference guide to the application that was promised in the July, 1999 Response.

D-1 Containers: 270.15, 264.170 through 264.178

The Response is adequately incorporated in the updated plans.

D-1a(3) Secondary Containment System Design and Operation: 270.15(a)(1), 264.175(a), 264.175(d)

The Response is adequately incorporated in the updated drum handling building plans. However, additional issues were identified in the Roll-Off Storage Area plans.

The limits of the 25-year runoff containment zones shown on drawing 42, where roll-off containers will not be placed, are not supported by runoff volume calculations. Appendix E of the Engineering Report was not provided for review. It is not clear that the runoff containment area is, or will be, actually addressed in the engineering design calculations. (The only roll-off area calculations, in Appendix E-32, apparently address only "sump capacity.") Provide calculations supporting the indicated limits for placement of roll-off containers.

The application text (section 2.2.2) and Draft Operations and Maintenance Plan do not mention restriction of placement of roll-off containers in the Roll-Off Storage Area above the 25-year runoff control zone. Since the two storage areas may become crowded with dozens of containers, the actual limits for placement should be marked with signs or other methods. In addition, the application states two different container spacings in section 2.2.2 (1 foot) and section 2.2.13 (4 feet). The O & M Plan does not mention spacing of roll-offs. Revise the application to provide marking of placement limits in the roll-off storage areas, and consistent container spacing requirements in the application text and O&M Plan.

The application explains (Section 2.2.2) that free liquids might occasionally be found in the roll-offs, although efforts will be made to keep roll-offs with free liquids out. The text further states that incoming waste roll-offs will be inspected for free liquids before placement in the storage area (at the untarping station), and additional steps will be taken to remove free liquids or reject the load, if necessary. However, no mention of the prohibition of acceptance of free liquids in incoming roll-off containers was found in the descriptions of "eligible waste" and the waste acceptance criteria in the Waste Analysis Plan (Chapter 4). In addition, the Draft O & M Plan does not mention any restriction or prohibition on free liquids, instead stating, without qualification, that "The roll-off storage area is designed to store any non-stabilized waste that may contain free liquids." Revise the application to consistently implement procedures for acceptance, inspection and management of roll-off containers.

D-1a(3)(a) Requirement for the Base or Liner to Contain Liquids: 264.175(b)(1)

The Response is adequately incorporated in the updated plans.

D-1a(3)(c) Containment System Capacity and Control of Run-on: 270.15(a)(3) and (4), 264.175(b)(3) and (4)

The Response is not adequately incorporated in the updated plans. As noted in D-1a(3), roll-off containers with free liquids must be consistently accounted for in the application.

The requirements for the application to demonstrate that the incoming roll-off container storage area containment system will have sufficient capacity to contain 10% of the total volume of containers (66 roll-offs, revised from 44 in the previous design) that may contain "any non-stabilized waste that may contain free liquids", in addition to the 25-year, 24-hour run-on (in 264.175(b)(3) and (4)) are applicable. Provide calculations based on the roll-off storage unit design that demonstrate compliance with these requirements.

D-1a(3)(e) Removal of Liquids from Containment System: 270.15(a)(5), 264.175(b)(5)

The Response is not adequately incorporated in the updated plans. Although inspection frequencies are listed in Table 5-1, and inspection of containment areas is addressed in sections 2.2.7 and 5.2.4, the application does not provide the required commitment to remove spilled or leaked waste and accumulated precipitation as necessary to prevent overflow of the collection

systems. The application must be revised to include such a commitment, to demonstrate compliance with 264.175(b)(5).

D-1b Containers Without Free Liquids: 270.15(b)

The Response is adequately incorporated in the updated plans.

D-1b(1) Test for Free Liquids: 270.15(b)(1)

The Response is adequately incorporated in the updated plans.

D-1b(2) Description of Containers: 264.171, 264.172

The Response is adequately incorporated in the updated plans.

D-1b(3) Container Management Practices: 264.173

The Response is adequately incorporated in the updated plans.

D-1b(4) Container Storage Area Drainage: 270.15(b)(2), 264.175(c)

The Response is adequately incorporated in the updated plans.

The restricted roll-off placement area is indicated on drawing 41. However, as noted in comments D-1a(3) and D-1a(3)(e), the updated plans do not provide adequate design information and plans for operating the roll-off unit(s).

D-2 Tank Systems: 270.16, 264.19 through 264.194, 262.10

The Response is not adequately incorporated in the updated plans. The Response suggested that "final design" information would be included in the permit application, and only minor details for the "non-RCRA components" would be submitted after permit issuance. This language is included in drawing No. 2, Note 1.

However, the final design for the stabilization bins (tanks) are apparently not quite "final", as indicated in Note 11: "Actual size, location and orientation of stabilization facility and ancillary structures and equipment to be determined during final design." Section 6.1.1 of the Engineering Report states that "...certain components of the stabilization building,... and steel bins will be completed under future design/build contracts." Similarly, section 6.2.1 of the Engineering Report summarizes "**initial** calculations" and "**preliminary** dynamic analyses" for the stabilization bins (emphasis added) that are referenced in Appendix E (not provided for review). Section 2.4.7 of the application text states that "The **preliminary** structural steel design of the bins is presented in the engineering report..." The implication strongly conveyed is that the design for these "RCRA components" is still preliminary, and is expected to be revised before it

is "final." This impression is apparently confirmed by the absence of the tank assessments required by 40 CFR 264.192 (see comment D-2c(1)). Please clarify whether the bin design information provided in the application is considered "final" and if so, why the emphasis on "preliminary" information is retained in the application.

D-2a Tank Systems Description: 270.14(b)(1), 264.194(a)

The Response is not adequately incorporated in the updated plans. A north arrow was added to drawing No.33, but the text of the application in section 6.1.2 still states that "The control room is positioned centrally along the **west** wall of the stabilization building." Please revise the text to clarify the position of the control room on the east side of the building, if that is to be the final orientation.

D-2a(1) Dimensions and Capacity of Each Tank: 270.16 (b)

The Response is adequately incorporated in the updated plans.

An apparently incorrect statement of the processing capacity of the stabilization process is included in section 2.4 of the updated text (6th paragraph), which states the waste processing capacity of the 4 bins as "150,000 cubic yards" per day. Assuming the maximum rate of 15 batches of waste per day total, at 2,500 cubic feet each, the total capacity would be about 1,200 cubic yards. Please revise the text to correct this miscalculation.

D-2a(2) Description of Feed Systems, Safety Cutoff, Bypass Systems and Pressure Controls: 270.16(c), 264.194(b)

The Response is not adequately incorporated in the updated plans.

The Operations and Maintenance Plan was proposed to incorporate the information in the application and "...expand on general operations procedures." The Draft O&M Plan provided for review does not fully incorporate the application information (it is briefly summarized in a checklist format), and few additional operations procedures are provided. In particular, the safety cutoff and bypass systems (if any) for transfers to and from the four permitted liquid waste storage tanks are not mentioned. Waste transfers to and from the leachate and truck washwater accumulation tanks are not mentioned at all. The format in section 3.6.3 of the O&M Plan is scrambled, i.e., subheadings B1 and B2, and C1 and C2 are under headings C and D, respectively. Revise the application and/or the O&M Plan to identify the safety cutoff, bypass and/or pressure controls to be used during waste transfers to and from the permitted tank systems. Inclusion of procedures to be followed and safety cutoff or bypass systems for waste transfers to and from the leachate and truck washwater tanks is recommended.

D-2a(3) Diagram of Piping, Instrumentation and Process Flow: 270.16(d)

The Response is adequately incorporated in the updated plans.

D-2a(4) **Ignitable, Reactive and Incompatible Wastes: 270.16(j), 264.17(b), 264.198, 264.199**

The Response is not adequately incorporated in the updated plans.

The Response stated that a reference to the WAP would be provided, apparently to explain when some wastes will be transferred directly to the landfill after stabilization treatment, while other treated wastes will be sent to the roll-off storage area for temporary holding. Both the updated application (section 2.4) and Draft O&M Plan (3.7.3 G) indicate that all treated waste will be sent to the roll-off area for temporary storage before transfer to the landfill, and refer to section 4.0 of the WAP. Unfortunately, section 4.0 of the WAP incorrectly refers to section 4.5 for details on analyses of off-site wastes accepted for treatment, storage or disposal. The discussion of analyses of treated waste is actually located in section 4.4.4.3, under the heading "Analysis to Ensure Compliance with Permit Requirements for Land Disposal". That section states without further qualification that "Wastes that are treated on site in the solidification unit will be tested after treatment and before disposal to verify that LDR standards have been met." This is a straightforward statement that could easily be included in the stabilization discussion and O&M Plan, and much confusion would be avoided. Please revise the application and O&M Plan to include the statement from the WAP or provide the correct citation of the location of the statement in the WAP.

D-2c(1) **Assessment of New Tank System's Integrity: 270.16, 264.192**

The Response is not adequately incorporated in the updated plans.

40 CFR 264.192 requires the certified assessment of new tank system integrity to be submitted "at time of submittal of Part B information." Although most of the necessary supporting information appears to be provided in the application (engineering calculations and other tank information Appendices were not provided for review- it is not clear if the Appendices have been updated), the application states (sections 2.3.8 and 2.4.8) that the required assessments will be provided, "based on the final tank drawings," at some future date, "prior to construction." The tank assessments are obviously not "non-RCRA component" information that NMED previously agreed can be submitted before construction (see comments D and D-2). Revise the application to provide the required tank assessments.

D-2d(1) **Plans and Description of the Design, Construction, and Operation of the Secondary Containment System:**

The Response is not adequately incorporated in the updated plans.

NMED is willing to wait for submittal of the stabilization bin concrete vault details, "before construction" begins. However, the updated application raises new questions about the function of the concrete vault, and the procedures that will be followed in case of a leak or release of waste into the vault. Section 6.2.2 of the Engineering Report states that "The Stabilization Facility concrete vault is not a secondary containment feature, therefore regulations pertaining to

secondary containment do not apply." The application apparently assumes that there will never be a leak in a secondary bin, or entry of wastes into the vault from the concrete floor, under the steel cover plate attached to the rim of the double bin structure. (The cover plate is not attached to the floor, according to drawings 33-36.) Therefore, any leak or release of wastes into the vault will be considered a "Release to the Environment" and the requirements of that portion of the Contingency Plan, section 6.3.5.2 will be specified as a permit condition.

The Response suggested that the O&M Plan would provide details for pumping liquids from a stabilization unit leak detection sump and the concrete vault. The Draft O&M Plan provides (section 3.7.3 I) only a general outline of a procedure for pumping out the "LDRS", apparently meaning the containment space between the upper and lower steel tanks. There is no procedure for inspecting the vaults (in the O&M Plan, Chapter 5, or elsewhere), or for detecting or responding to a release of waste into a concrete vault. Periodic inspection of the vaults may also be required as a permit condition.

The Response suggested that manufacturer's specification sheets with compatibility and structural detail information for the poly tanks would be submitted, but they were not included in the updated application or engineering report. Appendix H-3, manufacturers compatibility information, was not provided for review. Specification Section 13205 does not address compatibility or structural requirements. Revise the application to provide compatibility information and structural (e.g., tie-down) details.

D-4 Surface Impoundments

The Response is not adequately incorporated in the updated plans.

The Response suggested that diversion ditches are planned around the surface impoundments, that the diversion channels would be shown on the drawings, and that they would be presented and discussed in the engineering report and surface water section of the calculations. Drawing 25 shows diversion ditches 9 and 10 around the evaporation ponds, and these ditches are briefly mentioned in section 2.1.4 of the Report, but the ditch design information and calculations (Appendix E) were not provided for review. Provide the design information and calculations for these ditches.

D-4e(2) Soil Liners: 270.17(b)(1), 264.221(a), and 264.221(c)(1)

The Response is not adequately incorporated in the updated plans.

The Response stated that the on-site soil permeability test data in the original application, as well as additional laboratory permeability data, would be provided in the revised application. The test data (Engineering Report Appendix D) was not provided for review, and the expected difficulties in using on-site clay to meet the low permeability liner requirements (discussed in the original comment) are not addressed. Section 2.6.1.1 of the text states that "unprocessed" material has "intact" permeability "close to 10^{-7} cm/sec", but no explanation is provided as to how the on-site

material will be processed to improve the test results. The application does not provide the minimum information required to support a conclusion that the proposed soil liners will meet the requirements in 40 CFR 264.221(c)(1). Revise the application to provide the permeability test data and other information and justification necessary to support a conclusion that the constructed soil liner hydraulic conductivity will be no greater than 1 x 10^{-7} cm/sec.

D-4e(2)(a) Material Testing Data: 270.17(b)(1), and 264.221(c)

The Response is not adequately incorporated in the updated plans.

The Response stated that previous soil sample depth information and soil testing information would be provided, to complement the limited soil test data in the application. Instead, the previous soil testing is only briefly mentioned in the updated application, and the (updated?) test results in Appendices D and E were not provided for review. Section 2.6 of the application does not discuss the actual soil sample depths, test results or their representative character, and sections 4.1.3 and 4.2.4 of the Engineering Report do not mention soil testing at all. Revise the application to provide the requested material testing data.

D-4e(2)(b) Soil Liner Compatibility Data: 270.17(b)(1), 264.221(a)(1)

The Response is not adequately incorporated in the updated plans.

The Response stated that additional reference literature would be provided in the application, and suggested that soil-waste compatibility will be addressed by performing two stage permeability testing. This approach would be acceptable. Instead, section 4.1.3 of the updated Engineering Report states that "Soil under leachate compatibility tests (EPA 9090) will be conducted prior to construction," and section 2.6.1.1 of the text simply asserts that the soil "will be chemically resistant to the waste..." The EPA 9090 test method is intended for use on synthetic liner, geonet and pipe. There is no procedure in the 9090 test for soil. Revise the application to provide for two stage permeability testing, using ASTM D5084, as proposed in the Response. Provide additional reference literature as indicated in the Response.

D-4f(1) System Operation and Design: 270.17(b)(1), 264.221(c)(2) and (3)

The Response is not adequately incorporated in the updated plans.

The Response suggested that the types of pumping systems and instrumentation that will be installed in the sumps, such as cumulating flowmeters and pressure transducers, would be included in the O&M Plan. The O&M Plan does mention cumulating flowmeters, but does not describe the types of pumps or level detection instrumentation in the sumps or tanks. The description of the flowmeters (section 3.4.4 C) states that the "Total liquids pumped will be recorded after each pumping event," which cannot be correct unless some sort of automated data collection and recording system is attached to the flowmeter. Cumulating flowmeters typically register the accumulated volume passing the meter continuously during pump operation, but do not provide any record except the current total. Revise the application to provide the details of

proposed methods for controlling the pumps, and measuring and recording the flow of liquids present in the sump and removed.

D-4g Liner System, Construction and Maintenance

D-4g(1)(c) Leak Detection System: 270.7(b)(1), and 264.221(a)

Not applicable. (The original comment addressed piping specifications which were already provided, and the truck wash, which will not be a permitted unit.)

D-4g(3) Construction Quality Assurance Program: 270.17(b)(1), 270.17(b)(4), 270.30(k)(2), 264.19, and 264.229 (a)

The Response is not adequately incorporated in the updated plans.

The Response stated that Lower Dockum lab soil permeability test data would be provided in the revised application. The data (Engineering Report Appendices D and E) is referenced in section 2.6.1.1 but was not provided with the updated plans. Provide the revised Appendices D and E.

The Response states that a CQA certification statement similar to the one already provided in Chapter 2 of the application will be added to the CQA Plan. The statement could not be located in the updated CQA Plan. As noted in the comment, the statement in the previous Response 53k (now in section 2.5.2.3 of the text) does not contain the specific language required by 40 CFR 264.19(d). Revise the application text and CQA Plan (section XVIII 1.5) to include a commitment to provide the certification with the actual required items from 264.19(d).

D-4i Leakage Response Action Plan: 270.17(b)(5), 264.223(b) and (c)

The review could not determine if the Response is adequately incorporated in the updated plans. An updated Appendix G of the Engineering Report was not provided for review. Provide the updated Leakage Response Action Plan.

D-4j(3) Prevention of Overtopping: 270.17 (b)(2), and 264.221(g)

The Response is not adequately incorporated in the updated plans.

The Response stated that the O&M Plan will provide details on visual observations of the evaporation ponds, and the staff gauge that will be installed to measure the operating level. The Draft O&M Plan (section 3.5.5) provides no information as to how inspections will detect evidence of "improper operation of overtopping control systems or sudden drops in liquid levels," and there is no mention of a staff gauge. Revise the O&M Plan to include the details of how inspections will be performed, the criteria for determining when a problem exists, and the design, installation and maintenance of staff gauges in the ponds.

D-6 Landfills: 270.14(a), 270.21 and 264.300 through 264.317

D-6c(3) Loads on Liner System: 270.21(b)(1), 264.301(a)(1)(I)

The Response is adequately incorporated in the updated plans. (Engineering Report, section 3.1.3)

D-6c(4) Liner System Coverage: 270.21(b)(1), 264.301(a)(1)(iii)

No Response required to be incorporated.

D-6c(5) Liner System Exposure Prevention: 270.21(b)(1), 264.301(a)(1)

No Response required to be incorporated.

D-6d Liner System Foundation: 270.21(b)(1), 264.301(a)(1)(ii)

The review could not determine if the Response is adequately incorporated in the updated plans. An updated Appendix E of the Engineering Report was not provided for review. Provide the updated slope stability calculations indicated in the Response.

D-6d(4)(b) Bearing Capacity: 270.21(b)(1), 264.301(a)(1)(ii)

The review could not determine if the Response is adequately incorporated in the updated plans. An updated Appendix E of the Engineering Report was not provided for review. Provide the updated foundation bearing capacity calculations indicated in the Response.

D-6e(1)(a) Synthetic Liner Compatibility Data: 270.21(b)(1), 264.301(a)(1)

The review could not determine if the Response is adequately incorporated in the updated plans. A new Appendix H-4 of the Engineering Report was not provided for review. Provide the manufacturers' HDPE leachate compatibility information indicated in the Response.

D-6e(1)(c) Synthetic Liner Bedding: 270.21(b)(1), 264.301(a)(1)(ii)

The Response is adequately incorporated in the updated Specifications, section 02119, Part 2.01B.

D-6e(2)(b) Soil Liner Compatibility Data: 270.21(b)(1), 264.301(a)(1)(i), 264.301(c)(1)(ii)

The review could not determine if the Response is adequately incorporated in the updated plans. A new Appendix H-5 of the Engineering Report was not provided for review. Provide the geosynthetic clay liner leachate compatibility information referenced in the Response (and listed in the Table of Contents of the Engineering Report).

D-6f(1) **<u>System Operation and Design</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)**

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will address procedures to maintain head on the liner less than 1 foot. The Draft O&M Plan (section 3.4.4 A) states that liquid will be removed to maintain head less than 12 inches, but provides no information as to how this difficult task will be performed. Revise the O&M Plan to include details of the instrumentation, sensors and pump controls that will be used to perform this task, procedures to confirm that the system is operating properly, and corrective measures that will be implemented when the system malfunctions.

D-6f(2) **<u>Drainage Material</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(3)(ii)**

The Response is adequately incorporated in the updated Specification, section 02710, Table 02710-1, Note 5.

D-6f(3) **<u>Grading and Drainage</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)**

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will describe how the piezometers will measure the head above the tip of the piezometer in the sumps, how the data will be used to determine if pumping is required, and how the volume of liquids pumped will be recorded and used to determine if the Action Leakage Rates are being exceeded. The Draft O&M Plan provides none of this information. Revise the O&M Plan to provide the information indicated in the Response.

D-6f(4) **<u>Maximum Leachate Head</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2)**

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will describe the general procedures and documentation associated with monitoring and pumping the sumps. The Draft O&M Plan (section 3.4.4) provides only the most general procedure ("Pumpable liquid ... will be removed in a timely manner...) that does not address any of the issues noted in the comment. Documentation is not mentioned. Revise the O&M Plan to provide details of the equipment and procedures for monitoring and maintenance to ensure that the one foot head limit is not exceeded, and documentation of these activities. Include procedures that will be followed to manage large volumes of precipitation that will collect in the LCRS after rainstorms. Explain whether the facility will provide for overtime personnel (e.g., overnight or during weekends and holidays) to operate pumps and tanker trucks as necessary to minimize head on the liner(s) during and after rainstorms.

D-6f(5) **Systems Compatibility: 270.21(b)(1), 264.301(a)(2)(I)(A), 264.301(c)(3)(iii)**

No Response incorporation required. LCRS compatibility testing is addressed in section 3.2.4.

D-6f(7) **Prevention of Clogging: 270.21(b)(1), 264.301(a)(2)(ii), 264.301(c)(3)(iv)**

No Response incorporation required. Geotextile filtration is addressed in section 3.2.3.3.

D-6g Liner System Construction and Maintenance: 270.21(b)(1), 264.301(a)(1)

The Response is adequately incorporated in the updated plans. Only Phase 1A of the landfill is included in the application.

D-6g(1)(b) **Soil Liners: 270.21(b)(1), 264.301(a)(1)**

The Response regarding the EPA 9090 test is not incorporated into the plans. However, the comment suggesting this test for GCL material was probably in error. A standard compatibility test method may not be available for GCLs.

D-6g(2) **Construction Specifications: 270.14(a), 270.21(b)(1), 264.301(a)(1)**

The Response is not adequately incorporated in the updated plans.

See the General Comment.

D-6g(2)(b) **Soil Liner: 270.21(b)(1), 264.301(a)(1), 264.303(c)(2)**

The Response is adequately incorporated in the updated plans.

D-6g(2)(d) **Leachate Collection and Leak Detection Systems: 270.21(b)(1), 264.301(a) and (c)**

The Response is adequately incorporated in the updated plans.

D-6g(3) **Construction Quality Assurance Program: 270.21(b)(1), 270.30(k)(2), 264.19, 264.303(a)**

The Response is not adequately incorporated in the updated plans.

See General Comment.

The Response states that the CQA Plan will be modified to address manufacturers procedures for checking and/or calibration of instrumentation, pump controls and data recorders. The updated

CQA Plan does not include these items. Revise the CQA Plan to include the requested information.

D-6g(4) **Maintenance Procedures for Leachate Collection & Leak Detection Systems: 270.21(b)(1), 264.301(a) and (c)**

The Response is not adequately incorporated in the updated plans.

Although the Response is not explicit, it indicates that the comment will be addressed in the O&M Plan. The Draft O&M Plan does not provide any sort of maintenance procedures, although inspections and documentation of any maintenance performed are included. Revise the O&M Plan to include maintenance procedures.

D-6g(5) **Liner Repairs During Operation: 270.21(b)(1), 264.301(a)**

The Response is adequately incorporated in the Draft O&M Plan, section 4.1 C.

D-6h Action Leakage Rate: 270.21(b)(1)(v), 264.302

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will address specific procedures for tracking volumes of liquids pumped from the sump and comparison to ALR values. The Draft O&M Plan (section 3.4.5 E) only references the Response Action Plan in section 2.5.3.9, which is a very general outline of the required actions. Revise the O&M Plan to provide specific procedures for tracking liquid pumping records, obtaining the actual weekly volumes, converting the weekly volume in gallons to gallons per acre per day, and documenting the required comparison.

D-6h(2) **Monitoring of Leakage: 270.21(b)(1)(v), 264.302(b)**

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will address specific pumping rates and methods for measuring volumes over a particular time period to compare to ALR values. The plan will indicate the area over which the ALR will be calculated. The Draft O&M Plan does not provide this information, instead referring to the general outline in section 2.5.3.9. Revise the O&M Plan to include this information.

D-6i(1) **Response Actions: 270.21(b)(1)(v), 264.304**

No Response incorporation required.

D-6j Run-on and Run-off Control Systems: 270.21(b)(2), 264.301(g)

The degree of Response incorporation in the updated plans could not be determined, since most of the expected updates were to occur in Appendix F of the Engineering Report, which was not provided for review. Provide Appendix F.

D-6j(3) Management of Collection and Holding Units: 270.21(b)(4), 264.301(I)

No Response incorporation required.

D-6j(5) Maintenance: 270.21(b)(2) and (3), 264.301(g) and (h)

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will address drainage ditch maintenance. The Draft O&M Plan mentions the existence of the drainage system (section 2.7) but only acknowledges the landfill run-on/runoff control system as requiring inspection (section 3.4.5 I). The Maintenance section (4) does not include any ditch maintenance. Revise the O&M Plan to include maintenance of all ditches at the facility.

D-6k Control of Wind Dispersion: 270.21(b)(5), 264.301(j)

The Response is not adequately incorporated in the updated plans.

The Response states that the O&M Plan will address wind dispersal. The Draft O&M Plan mentions the requirement to spread cover soil (sections 2.1 and 3.4.3 G) or spray water (3.4.3 H). Inspections to prevent tracking of wastes out of the landfill on vehicle tires or bodies, and requiring a halt in waste placement operations when wind speed exceeds 35 miles per hour are not included. Revise the O&M Plan to include these requirements.