



THE STATE OF WYOMING

JIM GERINGER
GOVERNOR



Department of Environmental Quality

250 Lincoln Street • Lander, Wyoming 82520-2848 • Fax (307) 332-7726

ABANDONED MINES (307) 332-5085	AIR QUALITY (307) 332-6755	LAND QUALITY (307) 332-3047	SOLID & HAZARDOUS WASTE (307) 332-6924	WATER QUALITY (307) 332-3144
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April 12, 2000

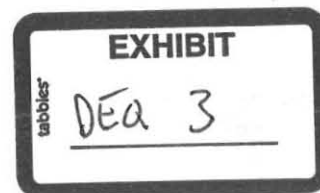
Don Connell-Superintendent of Operations
Fremont County Solid Waste Disposal District
P.O. Box 1400
Lander, WY 82520

RE: Sand Draw Landfill

Dear Mr. Connell:

As we discussed during our telephone conversation earlier today, the Department of Environmental Quality has some concerns and issues relating to the groundwater at the Sand Draw landfill. These issues were identified during a file review for a permit modification, which may affect monitoring wells R-8 and R-9. The following is a brief discussion of those concerns/issues:

- R-8 - From September 1999 to December 1999 the groundwater level in monitoring well R-8 increased approximately 10 feet, and has dropped less than 2 feet since December 1999. Historically this well has very little groundwater elevation fluctuation. I have spoken with Erik Grainey of Inberg-Miller Engineers (IME) regarding this issue and they are uncertain of the cause for the increase.
- R-9 - Monitoring well R-9 has been included in the sampling plan under the "Draft" permit modification due to its proximity to existing buried waste. Historically monitoring well R-9 has fluctuated from trace amounts to less than 2 feet of groundwater. It is unclear if the monitoring well will produce enough water at it highest groundwater level to be sampled. Again, after speaking with Erik Grainey of IME, it was unclear if this monitoring well could be utilized as sampling point.



Based on these concerns/issues and conversations with Erik Grainey of IME, the Department is requesting the following information be collected during your April 2000 sampling event:

- R-8 - Monitoring well R-8 should be developed, following standard EPA sampling procedures, in order to determine if the groundwater will recharge to its original groundwater level (measured prior to development), and how long the recharge takes.
- R-9 - Monitoring well R-9 should be developed, following standard EPA sampling procedures, in order to determine if sufficient groundwater is present for sample collection.

Please submit the requested information within 4 weeks of the April 2000 sampling event. Should you have any questions or require further clarification regarding this request, please contact me at (307) 332-6924.

Sincerely,



Patrick J Troxel
Senior Environmental Analyst
Solid and Hazardous Waste Division

cc: Cheyenne File # 10.195
Lander File # 10.195



JIM GERINGER
GOVERNOR

Department of Environmental Quality

Herschler Building • 122 West 25th Street • Cheyenne, Wyoming 82002

ADMINISTRATION (307) 777-7758 FAX 777-7682	ABANDONED MINES (307) 777-6145 FAX 634-0799	AIR QUALITY (307) 777-7391 FAX 777-5616	INDUSTRIAL SITING (307) 777-7368 FAX 777-6937	LAND QUALITY (307) 777-7756 FAX 634-0799	SOLID & HAZARDOUS WASTE (307) 777-7752 FAX 777-5973	WATER QUALITY (307) 777-7781 FAX 777-5973
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WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY SOLID AND HAZARDOUS WASTE DIVISION

SWM CHAPTER 2 - SANITARY LANDFILL REGULATIONS

PERMIT APPLICATION REVIEW

FACILITY NAME : Sand Draw SAN #1 Landfill

SHWD FILE NUMBER : 10.195

TYPE OF APPLICATION : Renewal / Expansion

APPLICATION RECEIVED :
 1st Submittal - October 6, 1993
 2nd Submittal - April 15, 1994
 3rd Submittal - September 13, 1994
 4th Submittal - April 6, 1995

REVIEWER :
 1st Submittal - A. Boyle
 2nd Submittal - A. Boyle
 3rd Submittal - A. Boyle
 4th Submittal - A. Boyle

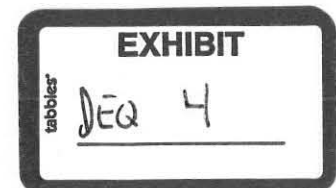
REVIEW COMPLETED :
 1st Submittal - October 22, 1993
 2nd Submittal - July 14, 1994
 3rd Submittal - December 12, 1994
 4th Submittal - June 28, 1995

STATEMENT OF PURPOSE

The purpose of this document is to provide a written record of the department's completeness and technical evaluation of the permit application identified above.

Chapter 2 of the Wyoming solid waste rules and regulations (August 23, 1994) outlines standards for sanitary landfills. These standards include:

- Section 2 "Sanitary Landfill Application Requirements"
- Section 3 "Location Standards"



- Section 4 "Design and Construction Standards"
- Section 5 "Operating Standards"
- Section 6 "Monitoring Standards"
- Section 7 "Closure/Post-Closure Standards"
- Section 8 "Corrective Action Standards"

The Department's evaluation of the completeness and technical adequacy of the submitted application materials are documented as follows using the attached *APPLICATION REVIEW CHECKLIST*:

The application is initially reviewed relative to the permit application requirements of SWM Chapter 2, Section 2. A checklist conclusion of "Complete" means the application has adequately addressed the specific requirement and contains sufficient information to allow a technical review of the associated standards found in SWM Chapter 2, Sections 3 through 7. Section 8 "Corrective Action Standards" are not typically evaluated during the permit application process unless the facility is actively involved in corrective action. A checklist conclusion of "Incomplete" means that insufficient information has been submitted. Where appropriate, comments are provided below in the section entitled "REVIEW COMMENTS" to clarify the department's determination.

Once an application is deemed "Complete", the application is reviewed relative to the technical standards found in SWM Chapter 2, Sections 3 through 8, as applicable. A checklist conclusion of "Technically Adequate" indicates that the facility, as proposed, is capable of complying with the particular standard. A checklist conclusion of "Technically Inadequate" indicates that the application has failed to demonstrate that the facility is capable of complying with the particular standard. Where appropriate, comments are provided below in the section entitled "REVIEW COMMENTS" to clarify the department's determination.

Completeness and technical adequacy determinations are identified by a check (✓ - if complete/technically adequate) or by a "Y" (yes), "N" (no), "N/R" (not required) or "N/A" (not applicable).

APPLICATION SUMMARY

The Little Sand Draw SAN#1 landfill is located in Section 26, Township 34 North, Range 96 West, Fremont County, Wyoming. The landowner for this site is the Fremont County Solid Waste Disposal District. The existing site consists of 80 acres, and the District is annexing an expansion area of 137 acres giving the Sand Draw Landfill a total of 217 acres. The entire 217 acres was addressed as one site through most of the permit application, however location standards were addressed separately for the expansion area.

The landfill accepts municipal solid waste, and asbestos from a service area consisting of Riverton and a ten mile radius, and potentially two roll-off facilities from the Wind River Indian Reservation. The annual tonnage of waste disposed is estimated to be 15,483 tons. Based on this disposal rate, the life of the facility, including the expansion area, has been estimated at over 64 years. The facility utilizes a trench fill method, which will be compacted and covered on a daily basis. In addition, a separate trench has been dedicated to asbestos waste under the requirements of Chapter 8.

Groundwater conditions at the site were determined by a subsurface investigation and the installation of 13 monitoring wells. The investigation of the existing landfill did not identify any groundwater, yet monitoring wells R-6, R-7, R-10, R-11, and R-12 encountered a shallow aquifer in the expansion area. The aquifer identified is believed to be less than four (4) feet thick, has a westward gradient, and appears to have a very low yield.

REVIEW COMMENTS

The following numbered comments are referenced by the corresponding number in the "Review Comment No." column (far right) of the attached *APPLICATION REVIEW CHECKLIST*.

Please note that these comments are provided to explain why a particular section of the application has been deemed "Incomplete" or "Technically Inadequate". Additionally, some comments are applicable to more than one section of the application. When addressing these comments, the applicant should review the *APPLICATION REVIEW CHECKLIST* to make sure that responses to these comments fully and consistently address all applicable sections of the application.

COMMENT #1

Signatures and seals are required on the application form.

COMMENT #2

The Engineered Containment demonstration form will need to be revised at the time the permit is issued to show that all three criteria are in compliance. Permit Condition #1 will be imposed to address this requirement.

COMMENT #3

This facility is required to meet the Chapter 7 Financial Assurance requirements by the EPA specified date. Permit Condition # 2 will be imposed to address this requirement.

COMMENT #4

The facility plot plans and Final Contour Plans (1982) do not correlate with the asbestos disposal plan presented in Appendix J. It is suggested that rather than re-draft the plan sheets, that all copies of the plan sheets simply have the area designated as the asbestos disposal area, marked-off in red ink and a reference made to the drawing in Appendix J. These changes must be made prior to the permit being issued.

CONCLUSIONS

Monitoring

The groundwater monitoring requirement for the current permit area has been deferred since no ground water has been identified at depths of up to 62 feet below ground surface (wells

R-1 through R-4). A water supply well is located at the shop and produces from a confined sandstone layer which begins at approximately 160 feet below ground surface. There is however, groundwater present under the expansion area at a depth of approximately 48 feet below ground surface (wells R-5 through R-13). Saturated conditions were not encountered during drilling, but ground water accumulated in wells R-6, R-7, R-10, R-11, and R-12 after the wells were installed. The department has concluded that the District does not have to begin monitoring these wells until such time that the landfilling operations move into the expansion area. At least one (1) year prior to the initiation of landfilling activities in the expansion area, the District will have to collect the required baseline ground water quality for the shallow aquifer. The application contains a general commitment to do this, but Permit Condition #3 is proposed to highlight and clarify this issue.

The routine monitoring of methane in the expansion area has been deferred until waste operations begin in that section of the landfill, and then only if a structure is sited within 1,000 feet of the facility boundary.

The permit application has identified general statistical analysis procedures and performance standards for the monitoring of groundwater. These procedures and performance standards meet the minimum requirements of Chapter 2, Section 6.

Engineered Containment System Requirement

The HELP Model simulation of the proposed facility design projects that there is a potential for moisture to move through the wastes and migrate out of the base of the landfill units. The application disregards these projections due to an annual negative net water balance and the lack of perched water tables.

The statement that this area has an annual negative net water balance is not reasonable scientific grounds for discounting the potential for leachate migration. This simple analysis is not justified to discount the HELP Model predictions in light of the fact that the HELP Model algorithms use water balance relationships to simulate the movement of moisture through the soil profile. Precipitation and evapotranspiration rates are not equal or constant throughout the year. There will be "wetter" months when precipitation rates will exceed evapotranspiration rates, and water recharge to the soil will occur.

The statement that moisture is not moving through the wastes because perched aquifers have not developed is also not scientifically supported. The development of perched aquifers would clearly be grounds for suggesting that significant volumes of moisture are moving through the wastes. However, the lack of perched aquifers does not conclusively prove that moisture is not moving through the wastes. The model results provided suggest that after twenty (20) years of simulation, the intermediate barrier soil and the base of the landfill cell will be experiencing a minimal amount of hydraulic head (0.2 inches or less). In consideration of the fact that the renewal area is only about 15 years old, it is not surprising that perched aquifers have not yet developed at the base of the landfill units. When using this model to simulate and predict moisture movement, the modeler must also keep in mind the basic limitations of the model. This is a quasi-two-dimensional model and it does not account for lateral leakage of moisture in the waste or barrier soil layers. Lateral leakage in these layers could significantly effect the amount of time necessary for head to develop in the lowermost layer.

In consideration of the inconsistencies between the rates of precipitation and evapotranspiration, it is reasonable to expect some moisture to move through a landfill cell.

However, even if a low-permeability synthetic cover system was installed with lateral drainage layers, it is still reasonable to expect some leakage due to manufacturing or installation defects. Historically, the waste management practices at this site have met or exceeded the department's minimum requirements to prevent the generation of leachate. The HELP Model results provided predict relatively little moisture movement through this site during a 20-year simulation. At least twenty (20) feet of competent claystone and siltstone bedrock with permeabilities as low as 5×10^{-8} cm/sec separates the bottom of the landfill cells from any water bearing zones. In addition, the water bearing zones which are present are not laterally continuous and appear to be extremely low yield. In consideration of all of these factors, the department has concluded that the requirement for an engineered containment system is not warranted and should be waived.

The material balance calculations in the application predict an excess of over 890,000 yd³ of cut material. HELP Model simulations of the final cover system design estimate that the performance of the basic design (2 feet compacted soil overlain by 6 inches of uncompacted topsoil) can be improved considerably by placement of uncompacted cut material above the compacted soil layer but below the topsoil layer. This increase in performance is attributed to the increase in soil moisture storage capacity which is available for plant uptake and transpiration. In order to minimize the amount of moisture moving through this landfill, the department strongly encourages the operator to make use of any available excess cut material in this manner.

Asbestos

The landfill has a separate trench designated for the disposal of asbestos waste. The permit application does address the minimum standards of Chapter 8 with regard to the disposal of asbestos.

Financial Assurance

The Sand Draw SAN #1 Landfill is required to meet Financial Assurance requirements by April 9, 1997. Permit Condition #2 is proposed to address this requirement.

General

This review of the Sand Draw permit application has determined that this application is complete as outlined in the above listed comments. It is recommended that the following permit conditions be imposed on any permit which is issued for this facility:

PERMIT CONDITION #1

The Engineered Containment Demonstration Form must be revised within 30 days following the issuance of the permit. The revision will indicate that the facility is in compliance with each of the three conditions.

PERMIT CONDITION #2

The facility is required to be in compliance with the Financial Assurance requirements for Type I facilities as per the schedule specified in Chapter 7, Section 2(d).

PERMIT CONDITION #3

At least one (1) year prior to the initiation of landfilling activities in the "expansion area" the operator shall obtain baseline ground water quality data as outlined in Section 2(b)(iii)(A)(XII)(2) of the permit application. The baseline monitoring data shall include the collection of ground water samples from each well during four consecutive quarters and analysis for the constituents in Exhibit 19 of the permit application document.

PERMIT CONDITION #4

The operator shall allow the administrator or an authorized representative, upon the presentation of credentials and other documents as may be required by law to enter upon the operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit; have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit; inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the appropriate rules and regulations of the department, any substances or parameters at any location.

ATTACHMENT : APPLICATION REVIEW CHECKLIST #4 - 10.195
COPY : SHWD File 10.195 (w/attachment)

END OF PERMIT APPLICATION REVIEW