

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY

SOLID AND HAZARDOUS WASTE DIVISION

SOLID WASTE GUIDELINE #16

CLOSURE AND POST-CLOSURE CERTIFICATION

Introduction

The purpose of this document is to describe the closure and post-closure certification process for solid waste landfills and to define the minimum level of documentation which is necessary to demonstrate completion of closure and post-closure activities.

Closure is the *process* which a landfill goes through once it stops receiving wastes. The goal of this process is to minimize the amount of infiltration of moisture, promote run-off and inhibit erosion. This is accomplished by placing a low-permeability, erosion-resistant cover over the wastes, diverting surface water and reclaiming the surface.

Post-closure is the *period of time* which is used to allow a landfill to stabilize to the point where it no longer presents a significant threat to human health or the environment. During this period, the closed landfill must be monitored to insure that erosion and settlement do not compromise the final cover system. In addition, the landfill is monitored to detect ground water contamination and the migration of landfill gases. In Wyoming, the post-closure period for sanitary landfills is a minimum of thirty years, although in certain cases landfill owners may petition DEQ to shorten that period. The post-closure period for industrial and construction-demolition landfills is a minimum of five years.

Closure Process and Certification

Closure applications must be submitted between 270 and 180 days prior to the anticipated facility closure. Most operating permit applications contain a detailed description of closure and post-closure activities. If this is the case and the operator wants to implement the pre-approved closure and post-closure plan as written, the operator can simply submit a letter indicating that operations are scheduled to be terminated and that the pre-approved closure and post-closure plan will be implemented. The department will then terminate the operating permit and replace it with a closure permit. If the operator would like to modify the pre-approved closure or post-closure plan, a revised closure permit application must be submitted for review and approval. Once the closure permit application is approved, the department will issue a closure permit. It should be noted that "closure permits" are valid throughout the "closure" and "post-closure" period, and therefore do not have to be

renewed.

Typical closure activities may include, but are not limited to notifying the landfill users of the closure, constructing a final cover, placing topsoil, seeding, constructing surface water diversion systems, fencing, surveying and placing a notice on the deed. The specific closure activities and associated specifications should be well-defined in the closure permit application and the closure permit.

For sanitary landfills, the closure process must begin within 30 days of the date on which a facility ceases to receive wastes, and must be completed within an additional 180 days. For industrial and construction/demolition landfills, the closure process must begin within 9 months of the date on which a facility ceases to receive wastes and must be completed within an additional 12 months.

Once all specified closure activities are completed, the operator is required to provide certification from a registered professional engineer confirming that the provisions of the closure plan have been carried out and that the facility has been closed in compliance with the closure standards specified in the applicable rules and regulations. At a minimum, the department recommends that this certification should include the following documentation:

- **Deed Notice**

The operator should provide a copy of the notice or deed instrument that has been filed with the county clerk's office, and the date of filing. The deed notice should contain a metes and bounds description of the facility boundaries, and descriptions of the wastes disposed, the environmental monitoring system, the surface water diversion system, and the final cover system, as applicable. It is also recommended that the deed notice contain a recommendation to notify the DEQ if disturbance of the site is anticipated. "Exhibit A" contains an example of wording which can be used on a deed notice.

If the facility is located on land leased from the BLM, there is no deed to place a notice on. In this case, the BLM should be asked to place an appropriate notation on the Master Title Plat. For additional details on this process, please contact the Bureau of Land Management.

- **Posted Notification**

For facilities which were open to the public, the operator should provide a publisher's affidavit verifying that the closure notice has been published in an area newspaper.

- **Final Cover (Compacted Soil)**

The operator should provide verification from soil borings, test pits, etc. that the compacted soil layer and the topsoil layer have been placed at the required thicknesses. If required, the results

of field moisture and density testing should be provided to verify that the required construction specifications have been met (see SW Guideline #13). The locations of soil borings, test pits and field density tests should be identified on a facility plot plan.

- **Final Cover (Engineered Containment System)**

If the facility has an engineered containment system, the operator should provide a copy of the construction quality assurance and quality control reports.

- **Final Contour Map**

If the final elevations or contours of the site vary significantly from those defined in the approved closure permit application, an as-built final contour map should be provided. It may be useful to survey the location and elevation of several points on the final cover system to allow for monitoring of settlement during the post-closure period.

- **Seeding**

The operator should provide a full description of reclamation activities, including the dates on which activities were completed. This description may include, but should not be limited to the methods and rates at which soil amendments, fertilizer, seed and mulch have been applied. Seed mixtures should be verified with copies of seed bag tags.

- **Surveyed Corners**

If not previously submitted, the operator must provide a plat and legal description, signed in accordance with W.S. 33-29-111 and by a Wyoming licensed professional land surveyor, which identifies all corners with permanent survey caps.

- **Surface Water Diversion**

If the location, design or construction of the surface water diversion system has been altered significantly from the system defined in the approved closure permit application, as-built maps, cross-sections and construction details should be provided.

- **Other Activities**

The operator should provide a detailed description of any other activities related to closure such as fencing, posting, etc.

- **Closure Certification**

The operator must provide a closure certification statement which is signed, dated and stamped by a professional engineer. See "Exhibit B" for an example.

Within sixty days of receipt of this documentation, the department will conduct a review to determine if the information provided is complete and adequate. If the documentation is incomplete or inadequate, the department will notify the operator. When all of the required documentation is provided and approved, the department may schedule a closure inspection to evaluate and verify the completion of closure activities. Once the department is satisfied that the site has been properly closed and closure activities documented, the department will notify the operator in writing that closure has been approved and that the post-closure period specified in the closure permit can begin. At this point, the department will also notify the operator that there is no longer a requirement to maintain financial assurance for closure of the facility. Any financial assurance mechanisms which are in place for this purpose will be promptly released.

The operator should be advised that any environmental monitoring program specified in the closure permit must be continued during the closure process.

Post-Closure Period and Certification

The post-closure period begins once the department notifies an operator that facility closure has been deemed adequate. For industrial and construction/demolition landfills, the post-closure period is at least five years. For sanitary landfills, the post-closure period is at least thirty years, although owners can petition the DEQ to terminate the post-closure period earlier if they can demonstrate that the landfill has been stabilized. In all cases, the minimum post-closure period for these facilities is automatically extended until such time that the operator provides a successful petition to terminate the post-closure period. This petition must be accompanied by relevant information and demonstrate that the facility has been stabilized in a manner protective of human health and the environment.

At a minimum, the department recommends that the petition to terminate the post-closure period should include the following documentation:

- **Ground Water Monitoring Data**

The operator should provide a detailed analysis of all available ground water monitoring data collected during the active life, closure process and post-closure period. This should include a graphical trend analysis and may include a statistical analysis.

The purpose of this analysis is to demonstrate that ground water is not being impacted by the closed landfill. If impacts to ground water are detected, additional monitoring or corrective action may be necessary.

- **Methane Monitoring Data**

The operator should provide a detailed analysis of all available methane monitoring data. This should include a graphical trend analysis of at least 12 consecutive months of recent methane monitoring data. If available, historical data should also be evaluated to determine if methane levels are increasing or decreasing with time.

The purpose of this analysis is two-fold. The first purpose is to demonstrate that methane is not migrating beyond the facility boundary at concentrations greater than 25% of the LEL for methane. The second purpose is to demonstrate that methane generation rates have stabilized or begun to decline. If methane continues to be a problem or a potential problem at the facility boundary, additional monitoring or corrective action may be necessary.

- **Post-Closure Inspection Reports**

Copies of all post-closure inspection reports should be provided to demonstrate that the site has been inspected on a regular basis to evaluate the integrity and stability of the final cover and surface water diversion system. If post-closure inspection of this facility identified problems which required maintenance or repair, these problems and associated remedies should be discussed in detail.

The purpose of these reports is to demonstrate that the surface and subsurface of the landfill has stabilized and will not require further maintenance or repairs. If the subsurface of the landfill has not stabilized (i.e., waste decomposition is still causing settlement), additional monitoring of the final cover system may be necessary. Likewise, if the final cover system or surface water diversion system demonstrates an ongoing need for repairs, additional efforts or time may be necessary to stabilize these features.

- **Periodic Settlement Measurements**

The operator should be able to demonstrate that settlement has not created irregularities in the final cover surface which allow infiltration or ponding, or increase the potential for erosion. The operator should also be able to demonstrate that additional settlement will not occur or that it will not be significant enough to create problems.

As with post-closure inspection reports, periodic surveying of the final cover system can be used to help demonstrate that the subsurface of the landfill has stabilized. If this approach is used, the elevations and grades of the entire site can be surveyed. As an alternative, temporary elevation points can be established and surveyed. In either case, periodic surveying is necessary to demonstrate trends in settlement. Surveying of just initial and final conditions (i.e., measurements at closure and at the end of the post-closure period) only provides a indication of the total amount of settlement which has occurred.

- **Final Disposition of Environmental Monitoring System**

If the operator wishes to plug and abandon any methane or ground water monitoring wells, a written request must be submitted to and approved by the department before plugging and abandonment occurs. Requests should include a justification for plugging and abandonment, specify the wells affected, and describe the procedures to be used. These requests can be submitted separately or as part of the post-closure certification documentation. Plugging and abandonment of monitoring wells must be completed in compliance with the provisions of Chapter XI, Section 70 of the Water Quality Division Rules and Regulations.

If the monitoring wells are not going to be plugged and abandoned, the operator should provide a justification and a discussion of the planned use of the monitoring wells.

- **Post-Closure Certification**

The operator must provide a post-closure certification statement which is signed, dated and stamped by a professional engineer. See "Exhibit C" for an example. This requirement is applicable to sanitary landfills ONLY.

Within sixty days of receipt of this documentation, the department will conduct a review to determine if the information provided is complete and adequate. If the petition is incomplete or inadequate, the department will notify the operator. When all of the required documentation is provided and approved the department may schedule a final inspection to evaluate and verify the completion of post-closure activities. Once the department is satisfied that the site has been properly stabilized and documented, the department will notify the operator in writing that termination of the post-closure period has been approved and that the closure permit has been terminated. At this point, the department will also notify the operator that there is no longer a requirement to maintain financial assurance for post-closure care of the facility. Any financial assurance mechanisms which are in place for this purpose will be promptly released.

The operator should be advised that any environmental monitoring program specified in the closure permit must be continued during the post-closure period.

Liability Beyond the End of the Post-Closure Period

Landfill owners and operators have a duty to prevent future releases from their landfills, including those which occur after the end of the post-closure period, and to correct them if they occur. Closure and post-closure requirements are intended to prevent future releases from closed landfills. However, in the event that a future release does occur, certified compliance with those closure and post-closure requirements does not relieve the owners and operators from the duty to take corrective action as necessary to protect human health and the environment.

Landfill owners and operators should also be aware that closure and post-closure certification under this program does not control potential liability to third parties resulting from releases which occur

during the operating life, closure period, post-closure period, or any time thereafter.

For the reasons cited above, the DEQ recommends that landfill owners maintain a minimal inspection and monitoring program once the facility has complied with the state's closure and post-closure regulatory program.

Further Information

Further information can also be obtained from the following Solid and Hazardous Waste Division offices. Comments and suggestions for improvements are always appreciated.

Casper : (307) 473-3450 / Cheyenne : (307) 777-7752 / Lander : (307) 332-6924

Signed

David A. Finley
Administrator
Solid and Hazardous Waste Division

July 9, 1996

Date

Attachments

- Exhibit A : Sample Deed Notice
- Exhibit B : Sample Closure Certification Statement
- Exhibit C : Sample Post-Closure Certification Statement

Exhibit A

SAMPLE DEED NOTICE

The following property has been used for the disposal of solid waste : [metes and bounds description].

The types of wastes disposed include [describe].

The environmental monitoring system at this site includes [describe].

The surface water control system at this site includes [describe].

The final cover system at this site includes [describe].

Disturbance or excavation of these wastes, the environmental monitoring system, the surface water control system or the final cover system should be avoided. The Wyoming Department of Environmental Quality, Solid And Hazardous Waste Division should be contacted prior to any excavation or other activity which may disturb this site.

Exhibit B

SAMPLE CLOSURE CERTIFICATION STATEMENT

Facility Name : _____

SHWD File Number : _____

I certify that the provisions of the approved closure plan, signed _____, and closure permit, signed _____, for the above referenced facility have been carried out and that the facility has been closed in compliance with the closure standards specified in SWM Chapter _____.

PE Seal, Signature and Date:

Exhibit C

SAMPLE POST-CLOSURE CERTIFICATION STATEMENT

Facility Name : _____

SHWD File Number : _____

I certify that post-closure care of the above referenced facility has been completed in compliance with the approved closure plan, signed _____, and closure permit, signed _____, and that the facility has been stabilized in a manner protective of human health and the environment. This certification is based, in part, on a review of the environmental monitoring data for this facility. This certification is also based, in part, on an inspection of this facility on _____. The inspection of this facility included the vegetative cover, final cover system, surface water diversion system and permanent survey monuments.

PE Seal, Signature and Date: