Residuals Guidance Document No. 90 - 2,

Residuals Landfill Plan Submittal Checklist

I. Landfill Plan Submittal Checklist

A. Plan Approval Application.

The purpose of this section of the guidance document is to establish plan approval application submittal requirements. A checklist of the types of information and the format required for a complete residuals landfill plan approval application submittal has been included to provide guidance to applicants. Applicants should ensure that a submittal contains all the necessary maps, data, descriptions and other information in order to avoid delays in the review process. The Department will not proceed with the review of an incomplete application.

B. Site Plan.

The purpose of a site plan is to describe the general site surrounding a proposed residuals landfill facility. The following information should be included on suitably scaled maps of 1:200 or 1:400:

- ☐ 1. locus map of the site on a copy of a USGS topographical map (8½ x 11 inches);
- ☐ 2. the boundaries and acreage of the site and the boundaries of the waste disposal area on the site;
- ☐ 3. the location and identification of adjoining residential, commercial and industrial property;
- ☐ 4. the location of all public drinking water supply wells and surface water bodies within one mile of the boundaries of the landfill, including the limits of Zone II areas;
- ☐ 5. the location of all private drinking water wells within one-half mile of the boundaries of the landfill;
- ☐ 6. the location and elevations of all existing monitoring devices and surface water monitoring locations. This would include groundwater monitoring wells, piezometers, lysimeters, or other monitoring devices.
- ☐ 7. the location of all soil borings, excavations and test pits;
- ☐ 8. the location of all on-site borrow sources;
- ☐ 9. the locations of all existing and proposed utilities (including power lines), structures, (including fences and gates), and roads;
- ☐ 10. land use map of zoning for a one-half mile radius around the landfill.

C. Design Plan.

1. The purpose of the design plan is to describe the hydrogeological characteristics of the site, the design of the landfill, including groundwater protection systems, liner installation procedures and to provide a construction quality assurance/quality control plan. The following information should be included as a part of the design plan:

   ☐ (a) An updated and complete hydrogeological evaluation of the landfill site. The components of a complete hydrogeological evaluation are outlined in **Residuals Guidance Document No. 90-1, Guidelines for Hydrogeologic Evaluations.**

2. Additional design details on a scale of 1:40 which delineate, in cross-sectional view each of the following:

   ☐ (a) The initial elevations of the proposed landfill showing all grades of the liner and the subgrade;
   ☐ (b) The final elevations of any excavations showing all grades of the excavation and all grades of the subgrade;
   ☐ (c) The final elevations of the landfill after closure;
   ☐ (d) The leachate collection system showing all grades of the collection pipes, drainage layer(s), and manhole/ clean-out risers and sumps;
   ☐ (e) All berms, dikes, ditches, swales or other protection devices needed to divert or collect surface water run-on or run-off;
   ☐ (f) The system to be utilized for venting and monitoring the gases generated within the landfill and, if applicable, from beneath the liner;
   ☐ (g) The final elevations and grades of the final cover including the subgrade for the low permeability cap, the drainage layer and vegetative layer;
   ☐ (h) All grades of the leachate treatment and disposal systems including the leachate removal pipes, and treatment or pretreatment systems;
   ☐ (i) All proposed landscaping and screening techniques to be utilized to minimize the visual impact of the landfill.

3. Additional drawings or detailed diagrams on a scale of 1:40 showing the construction specifications of:

   ☐ (a) the subgrade;
   ☐ (b) the liner and/or any cut-off wall;
   ☐ (c) the drainage layer;
   ☐ (d) the collection pipes;

☐ (e) the inlet/outlet structures;
☐ (f) manholes, sumps, pumps, and pump stations;
☐ (g) the leachate collection and treatment systems;
☐ (h) the leachate disposal systems, if applicable;
☐ (i) gas vents, manifolds, and pump stations;
☐ (j) monitoring wells/devices;
☐ (k) surface drainage and erosion controls; and
☐ (l) the landfill cap and final cover.

4. A description of the general installation methods and procedures to be utilized for construction of the facility including materials required, equipment to be used, and scheduling of construction events and phases. To ensure that the construction requirements are properly implemented the description should include a discussion of installation of the following;

☐ (a) the subgrade;
☐ (b) the liner and/or any cut-off wall, including:

(1) the type of equipment to be used for compaction of soil liners;
(2) the weight of the compacting equipment;
(3) the number of passes required to achieve the desired density of each lift;

☐ (c) the drainage layer;
☐ (d) the collection pipes;
☐ (e) the inlet/outlet structures;
☐ (f) manholes, sumps, pumps, and pump stations;
☐ (g) the leachate treatment system;
☐ (h) the leachate disposal systems, if applicable;
☐ (i) gas vents, manifolds, and pump stations;
☐ (j) monitoring wells/devices;
☐ (k) surface drainage and erosion controls; and
☐ (l) the landfill cap and final cover.

5. A quality control/quality assurance (QA/QC) plan shall be included as a part of the design plan. The QA/QC plan should outline the observations and tests to be used to ensure that construction of the landfill meets or exceeds all design criteria, plans and specifications. The QA/QC plan shall include the following:

☐ (a) identity of the person or persons responsible for overseeing the QA/QC program;
☐ (b) discussion of how construction QC inspections will be performed;

☐ (c) location, availability, applicability, and calibration of test facilities and equipment, both field and lab;
☐ (d) procedures for observing and testing the borrow source, soil liner and membrane liner;
☐ (e) procedures for reviewing inspection test results and laboratory and field sampling testing results;
☐ (f) actions to be taken to replace or repair the liner or cap should deficiencies in the liner or cap construction be identified, including who is to be notified and in what manner;
☐ (g) procedures for seaming synthetic liners;
☐ (h) reporting procedures for all inspections and testing data.

D. Operation and Maintenance Plan.

The purpose of the Operation and Maintenance (O&M) Plan is to describe the methods, techniques and equipment that will be necessary to properly operate the landfill in compliance with the regulations. The O&M plan consists, in part, of a narrative of the method and schedule of landfilling activities, and the proposed engineering techniques and major types of equipment to be used in landfilling activities.

1. The narrative should include a description of the method and schedule for operation, use, and maintenance of the following components of the residuals landfill;

☐ (a) dams, embankments, ditches and other impoundments;
☐ (b) borrow pits, soil storage and handling areas, and structures;
☐ (c) scales and weigh station, if required;
☐ (d) water and air pollution control facilities;
☐ (e) erosion control facilities;
☐ (f) equipment storage and maintenance buildings, and other buildings;
☐ (g) access roads;
☐ (h) facility security;
☐ (i) groundwater, surface water and gas monitoring systems.

2. The narrative shall include procedures to be used by the operator to address:

☐ (a) waste handling and covering, which shall include:

(1) Unloading, spreading, compacting and covering operations;
(2) The frequencies of placement of immediate, daily, intermediate, and final cover;

(3) Cover materials to be utilized, including the estimated volumes required (show immediate, daily, intermediate, and final cover calculations) and their sources and availability.

☐ (b) stormwater, soil erosion, and sedimentation control;
☐ (c) leachate collection, transportation and treatment;
☐ (d) cleanout and maintenance of the leachate collection, transportation, treatment and disposal systems;
☐ (e) gas monitoring and control of the migration of explosive gases;
☐ (f) control of vectors;
☐ (g) the structures and procedures to be used in controlling and collecting blowing ash, dust, or other residuals disposed in the landfill;
☐ (h) dust control measures to be taken and when they would be implemented;
☐ (i) bird hazard control measures.

3. A facility safety plan shall be included which explains the emergency procedures to be followed, hazard prevention procedures, emergency equipment to be available, and from where such aid and equipment will come from in the event of a fire, explosion, or release of materials to the air, water, or soil of the Commonwealth that could threaten public health, safety, or the environment. The facility safety plan for a landfill should address how the operator will prevent the following emergency situations from occurring and how to handle them should they occur:

☐ (a) fire prevention and control;
☐ (b) accident prevention and safety;
☐ (c) explosions;
☐ (d) odor control measures.

4. An inspection and maintenance plan shall be developed which shall include, at a minimum, a written schedule for regular inspections of:

☐ (a) landfill operations;
☐ (b) environmental monitoring systems;
☐ (c) environmental control systems including operational and structural equipment such as scales, dikes, berms, pumps, leachate collection systems and on-site treatment and disposal systems; and

☐ (d) all slopes, required evaluations and an evaluation of remaining capacity.

5. A staffing plan shall be included which indicates the number of personnel required to operate the facility, taking into consideration:

☐ (a) the type of facility;
☐ (b) the size of the facility;
☐ (c) the safety requirements of the facility;
☐ (d) the past history and present operation of the facility (if applicable);
☐ (e) the scope of the proposed operation;
☐ (f) the number of operational days per week;
☐ (g) the number of operational hours per day;
☐ (h) the number of shifts per day, if applicable;
☐ (i) the required number of personnel per day or shift;
☐ (j) emergency personnel coverage of operations;
☐ (k) activities which would require specially trained personnel.

E. Closure and Post-Closure Plan.

The purpose of the closure and post-closure plan is to indicate how the landfill, or phases of the landfill, will be closed, when each phase will close, and the schedule for post-closure maintenance and monitoring activities. The plan should also indicate any post-closure uses planned for the facility.

1. Information concerning closure activities should include:

☐ (a) a schedule for completion and closure of each phase of the landfill where landfill development is to proceed by a phased development, or for completion and closure of the entire landfill;
☐ (b) the closure elevation of each phase of the landfill;
☐ (c) an estimate of the final closure date for the entire facility;
☐ (d) a description of how the cap on adjoining phases will be tied together.

2. Information concerning post-closure activities should include:

☐ (a) identity of the persons responsible for carrying out post-closure monitoring and maintenance activities;
☐ (b) a description of the methods to be used to maintain the landfill and the final cover, including:

1. erosion control and repair of the final cover system;

2. maintenance and cleanout of the leachate collection system;
3. collection and disposal of leachate;
4. maintenance of groundwater, surface water and gas monitoring systems.

☐ (c) a description of the proposed leachate, groundwater, surface water, and gas monitoring activities to be conducted following closure, including:

1. locations of sampling points for groundwater, surface water, and air quality monitoring (if required);
2. frequency of sampling activities;
3. parameters to be analyzed and the schedule for analysis;
4. schedule for submission of results of the sampling and analysis program.

3. Information concerning the post-closure use of the landfill should include:

☐ (a) the relationship of the post-closure land use to existing land use and zoning surrounding the site;
☐ (b) how the proposed land use is to be achieved.

4. A closure cost estimate which should indicate projected closure costs at the projected closure date of the landfill. The closure cost estimate should include costs for:

☐ (a) grading the landfill;
☐ (b) materials used in the final cover;
☐ (c) placement of each component of the final cover;
☐ (d) drainage structures, retention basins and other run-on, run-off controls;
☐ (e) QA/QC activities for placement of the final cover;
☐ (f) placement and development of additional groundwater or gas monitoring wells.

5. A post-closure cost estimate which should indicate projected post-closure landfill maintenance and monitoring costs for the entire post-closure period. The post-closure cost estimate should include the costs for the following activities:

☐ (a) leachate, groundwater, surface water, and air quality monitoring activities (if required);

☐ (b) final cover maintenance, including seeding and repair of the final cover system due to erosion;
☐ (c) maintenance and repair of all drainage structures, run-on and run-off controls, and retention basins;
☐ (d) leachate collection and disposal.

F. Other Plan Submittal Requirements.

☐ (a) Professional Engineer registration stamp.
☐ (b) north arrow on all maps;
☐ (c) benchmarks clearly marked on all maps;
☐ (d) datum plane upon which all topographical measurements are based.