

2017 Annual Landfill Inspection Report

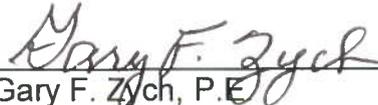
H.W. Pirkey Plant

Landfill

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I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

2017 Annual Landfill Inspection Report

Landfill

H.W. Pirkey Plant
Southwestern Electric Power Company
Hallsville, Texas

September 14, 2017



Prepared for: Southwestern Electric Power Company – H.W. Pirkey Plant

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BOUNDLESS ENERGY

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- Attachment A – Photos
- Attachment B – Site Map

1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.84 and to provide the H.W. Pirkey Plant an evaluation of the facility.

Mr. Dan Murphy, P.E. performed the 2017 inspection of the Landfill at the H.W. Pirkey Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Mr. W. Greg Carter and Mr. Ron Franklin were the facility contacts. Also in attendance for the landfill inspection was Mr. Lane Roberts, P.E. with Akron Consulting LLC. The inspection was performed on September 14, 2017. Weather conditions were sunny and the temperature was in the upper 80's (°F). There was no rainfall over the seven days prior to the inspection. Portions of the landfill had been recently mowed.

2.0 DESCRIPTION OF LANDFILL

The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Closed Landfill Area (1984, 1987, 1995, 1997, 1999, and 2005 Cells)
- Inactive Landfill Areas (2012, 1985 Pond Cell and 1993 Cell)
- Active Landfill Disposal Areas (2015 and 2012 Cell)
- Landfill Construction Area for 2018 Cell
- Storm Water Drainage Ditches

These features, including the approximate limits of each area, are shown on the site map included as Attachment B. Selected photographs taken during the inspection and used to illustrate the visual observations presented in the report are presented in Attachment A. Additional inspection photos can be made available to the Plant upon request.

In general, the southwestern quarter of the landfill is active. The remainder of the landfill area is considered closed and has a grass cover present or is considered inactive. The landfill was developed around an existing oil/gas well known as the Mohon well and is located near the eastern edge of the landfill. Perimeter ditches carry non-contact water to the surrounding natural drainage courses. Multiple catch basins collect and convey non-contact water via "let-down" piping systems. All contact water is directed towards the Landfill Run-off Pond. The four leachate collection discharge pipes outlet on the southern end of the landfill and all leachate water is conveyed to the Landfill Runoff Pond. There are two parallel ditches on the western boundary of the landfill area, one ditch for contact water and one ditch for non-contact water.

Material to be placed in the active portions of the landfill is hauled via dump trucks on a haul road which runs along the north and western edge of the landfill area. The active portion of landfill area has vertical chimney drains which connect to the leachate collection system. Surface water runoff from the active landfill areas is collected and routed to the Landfill Runoff Pond via the chimney drains.

3.0 REVIEW OF AVAILABLE INFORMATION (257.84(b)(1)(i))

A review of available information regarding the status and condition of the Landfill which include files available in the operating record, such as design and construction information, previous periodic structural stability assessments, previous 7 day inspection reports, and previous annual inspections has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

4.0 INSPECTION (257.84(b)(1)(ii))

4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.84(b)(2)(i))

No modifications have been made to the geometry of the Landfill since the 2016 annual inspection. The geometry of the landfill has remained essential unchanged.

4.2 VOLUME (257.84(b)(2)(ii))

The total volume of ash disposed at the landfill as of September 2017 was estimated by Lane Roberts with Akron Consulting LLC as 14.0 million cubic yards.

4.3 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is as follows:

- Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.
- Fair/Satisfactory: A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.
- Poor: A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.
- Minor: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.
- Significant: A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually conditions that have been identified in the previous inspections, but have not been corrected.
- Excessive: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure safety or stability point of view.

This document also uses the definition of a “deficiency” as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, “Qualifications for Impoundment Inspection” CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined by deficiency are considered maintenance or items to be monitored.

A “deficiency” is some evidence that a landfill has developed a problem that could impact the structural integrity of the landfill. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage (Leachate Outbreak)
Leachate outbreak is the uncontrolled release of leachate from the landfill.
2. Displacement of the Embankment
Displacement of the embankment is large scale movement of part of the landfill. Common signs of displacement are cracks, scraps, bulges, depressions, sinkholes and slides.
3. Blockage of Control Features
Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.
4. Erosion
Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

4.4 VISUAL INSPECTION (257.84(b)(1)(ii))

A visual inspection of the landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, temporary and final covers, drainage features, open cells, and appurtenances such as chimney drains etc.

Overall the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the landfill. Inspection photos are included in Attachment A. Additional pictures taken during the inspection can be made available upon request. A site map presenting locations of the inspection observations is included in Attachment B.

Closed Landfill Areas (1984, 1987, 1995, 1997, 1999, and 2005 Cells)

1. In general, surface water runoff from the cap was draining as designed. One of the concrete slabs around a catch basin for the “let down” pipe was observed to be undermined and the soil of the cap just upslope of the catch basin is eroded. This erosion/undermining appear to be the result of concentrated water flowing down the landfill slope from a surface water drainage pipe near the top of the landfill.
2. The closed landfill area was observed to have a thick stand of grass cover over the majority of the capped area. Minor bare areas were observed on the benches on the northern face of the landfill, on the 1999 and 2005 Cells. Bare areas were noted on the lower bench of the eastern face of the 1993 and 1987 Cell. Tire ruts/dozer tracks were observed on the landfill cover of the 1987 Cell, just north of the Mohon Well. In addition, erosion rills about 2-feet deep were observed on the soil cover near the northern drainage ditch adjacent to the Mohon well, also on the 1987 Cell.
3. There were no signs of settlement, signs of movement or distress of the landfill area. Access roads on top and adjacent to the landfill area were in good condition.
4. Minor brush was observed to be growing around the energy dissipater structures for the “let down” piping on the eastern edge of the landfill area.

Inactive Landfill Disposal Areas (2012, 1985 Pond Cell and 1993 Cell)

5. An 18-inch-diameter leachate collection discharge pipe was about 75% silted in near the southern edge of the 1985 Pond Cell.
6. A temporary soil cover consisting of a red clay material has been placed for an erosion protection measure. Erosion rills were noted on the temporary soil cover placed on top of the ash material, although the slope appeared stable. The maximum depth of the erosion rills was estimated to be about 9 inches.

Active Landfill Disposal Areas (1993, 1985 Pond Cell, 2012, and 2015 Cell)

7. During the inspection the active disposal areas were being used for waste placement. The chimney drains were functioning as designed and there was no evidence of pooling water around the drains. Waste was being compacted as it was placed. In general, the chimney drain consists of bottom ash placed in a 10-foot-diameter circle centered on a perforated drain pipe wrapped in filter fabric and connected to the leachate discharge pipes.
8. The ash was placed and graded such a manner that any runoff from the active landfill area is collected, contained and drained through the chimney drain system.
9. An erosion scarp of about 2 to 7 feet in height and 50 feet in length was observed at the toe of the southern slope of the 2015 Cell. This erosion scarp appears to be occurring due to water flowing through the ditch on the southern edge of the landfill.

2018 Landfill Cell Construction

10. Clearing and grubbing activities were underway at the site of the 2018 Landfill Cell.

Storm Water Drainage Ditches

11. A corrugated metal pipe culvert, estimated to be about 30 to 36 inches in diameter, was observed to be about 80% silted-in on the northern side of the Mohon Well area. This appears to create poor drainage conditions in the ditch along the toe of the landfill slope in the area to the north of the Mohon Well.
12. Concrete slope protection installed on the inlet area of two, 36-inch-diameter culverts which discharge leachate and contact water into the Landfill Runoff Pond was observed to be broken and distressed. The geomembrane landfill liner extends underneath the entire length of the culverts. An access road runs over top of the culverts.
13. A non-contact water storm water ditch runs along the eastern edge of the landfill area. The vegetation along this ditch was too tall to facilitate a detailed inspection but there was no evidence of erosion, obstructions or otherwise poor drainage conditions.
14. A contact storm water ditch runs along the western edge of the landfill area and is lined with a geomembrane. The ditch was observed to be clear of sediment accumulation and was in good condition. Water flowing through this ditch eventually ends up in the Landfill Runoff Pond.
15. A non-contact storm water ditch runs along the western edge of the landfill is lined with a geomembrane material. Runoff from the 2005 Cell is collected into a 36-inch-diameter conduit and this conduit discharges into the non-contact water ditch. An earthen berm armored with riprap material has been placed at the end of the non-contact water ditch to divert flows away

from the toe area of the Landfill Runoff Storm Water Pond Dam. Small holes about 2 inches in diameter have been cut into the geomembrane to allow any trapped groundwater under the geomembrane to drain and prevent floating of the geomembrane liner.

4.5 CHANGES THAT EFFECT STABILITY OR OPERATION (257.84(b)(2)(iv))

Based on interviews with plant personnel and field observations there were no changes to the landfill since the last annual inspection that would affect the stability of the landfill.

5.0 SUMMARY OF FINDINGS

5.1 GENERAL OBSERVATIONS

The following general observations were identified during the visual inspection:

- 1) In general, the landfill is functioning as intended and the active cells, inactive cells, closed areas, and storm water ditches are in good condition. The Plant is performing regular maintenance and inspections as required. Several maintenance items have been noted and are described in Section 5.2.

5.2 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection, see site map for locations. Contact GES for specific recommendations regarding repairs:

- 1) Remove the soil/ash accumulation in front of the outlet of the 18-inch-diameter leachate collection discharge pipe on the south side of the 1985 Pond Cell so that the outlet has free draining conditions.
- 2) Repair the cap erosion and the undermined concrete slab around the catch basin on the north side of the 1999 Cell. Install erosion control features or relocate the outlet of the drainage pipe to prevent future erosion.
- 3) Repair the erosion at the toe of the south face of the 2015 cell.
- 4) Remove the broken and distressed concrete slab slope protection at the inlet of the two, 36-inch-diameter culverts. After removing the concrete slab, monitor this area for erosion. If it is deemed necessary, additional erosion protection can be re-installed.
- 5) Remove the silt accumulation at the corrugated metal pipe culvert to the north of the Mohon Well area to improve the drainage conditions along the toe of the landfill slope.
- 6) Repair the tire ruts on the landfill cap north of the Mohon Well area. Establish grass cover on any disturbed areas.
- 7) Repair the erosion rills on the cap to the north of the Mohon Well area. Establish grass cover on any disturbed areas.
- 8) Remove the brush growing around the outlets of the “let down” piping on the east side of the landfill. Establish grass cover on any disturbed areas.
- 9) Establish grass cover on the bare areas noted on the east and north sides of the landfill area.

5.3 ITEMS TO MONITOR

The following items were identified during the visual inspection as items to be monitored, see inspection map for locations:

- 1) After removing the broken and distressed concrete slope protection around the two, monitor the 36-inch-diameter culverts underneath the access road along the southern edge of the landfill for erosion. If excessive erosion is observed, install additional erosion protection.
- 2) Monitor the riprap armored earthen berm at the outlet of the non-contact water ditch near the southwestern corner of the landfill area after heavy rain events for erosion or overtopping of the berm.

5.4 DEFICIENCIES (257.84(b)(2)(iii))

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection or during any of the periodic 7-day inspections. A deficiency is defined as either:

- 1) Uncontrolled seepage (leachate outbreak),
- 2) Displacement of the embankment,
- 3) Blockage of control features, or
- 4) Erosion, more than minor maintenance.

If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

ATTACHMENT A

Photos

Photo # 1
View of the active material placement inside the 2015 Cell. Notice the chimney drain, indicated by the white arrow.



Photo # 2
Close-up view of the chimney drain.



Photo # 3
View of the silted-in 18-inch-diameter leachate collection discharge pipe on the south side of the 1985 Pond Cell.



Photo # 4

View of the erosion along the southern toe of the slope of the 2015 Cell.



Photo # 5

View of the distressed concrete slope protection in the area of two 36-inch-diameter culverts conveying contact water to the Landfill Runoff Pond.



Photo # 6

View of one of the bare areas on the lower bench of the 1987 Cell.



Photo # 7
View of the tire ruts on the toe of the landfill, just north of the Mohon Well Area.



Photo # 8
View of the 2-foot-deep erosion rills near the northeastern corner of the 1987 Cell.



Photo # 9
View of the silted-in corrugated metal pipe near northeastern corner of the 1987 Cell.



Photo # 10

View of some minor brush growing around the energy dissipater structure for the “let-down” pipe on the 1984 Cell.



Photo # 11

View of the undermined concrete slab around a catch basin for the “let-down” pipe near the top of the 1999 Cell. A gap measuring about 8 inches was noticed at the time of the inspection.



Photo # 12

View of erosion occurring just upslope of the undermined concrete slab shown in Photo #11. The surface drainage pipe outlet is circled in black.



Photo # 13
Typical view of the western slope of the 2005 Cell.



Photo # 14
View of the two, parallel ditches on the western perimeter of the landfill area. The black arrow indicates the contact water ditch, and the white arrow indicates the non-contact water ditch.



Photo # 15
View looking south at the contact water ditch along the western perimeter of the landfill area.



Photo # 16

View looking south at the non-contact water ditch along the western perimeter of the landfill area.



Photo # 17

View looking north at the non-contact water ditch downstream of the two 36-inch-diameter culverts near the southeastern corner of the landfill area.



Photo # 18

View of a leachate collection system discharge pipe on the southern end of the landfill.



ATTACHMENT B

Site Map

