
**PHASE II PHYSICAL
CHARACTERISTICS ASSESSMENT
FORMER HAWTHORNE LANDFILL
HAWTHORNE, NEVADA**



**US Army Corps
of Engineers ®**

Sacramento District
Environmental Design Section

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1.0 SUMMARY

The Phase II Physical Characteristics Assessment (PCA), conducted for the Hawthorne Landfill in Hawthorne, Nevada, showed no indication of Hazardous, Toxic, or Radioactive Waste (HTRW) contamination existing within landfill trenches, as confirmed during field activities. The landfill contained mostly household or municipal waste placed into a series of trenches and burned. During the investigation, four areas were found to contain large metal debris (car parts, appliances, etc.), both buried and on the surface. These areas do not represent any additional contamination hazard but could be of concern for compaction design issues. The landfill appeared to have been well managed in that waste was separated out based on type and size.

2.0 INTRODUCTION

2.1 Scope of Report and Objectives

This report summarizes the activities performed during the week of 1-5 October 2001 at the Hawthorne Landfill. This site is a part of the USEPA Brownfields program and has anticipated re-use opportunities for housing with yards, a golf course, and a mineral bath. The landfill, which covers approximately 240 acres, is located approximately one quarter mile west of the town of Hawthorne. A Targeted Brownfields Assessment (TBA) was performed in July 2001 by Luster National. Fourteen cells were easily recognized and documented during this TBA. Based on the TBA, it was recommended that a Phase II PCA be conducted prior to any further activities. The purpose of the Phase II PCA was to determine the characteristics of the landfill and to assess the probability for contamination and/or any health and safety concerns. The objective was to pothole or trench each of the landfill cells and document the contents found within to determine if surface features were indicative of the subsurface, and to determine whether the contents of the landfill were homogeneous or heterogeneous. This report presents the characteristics (i.e., location, depth, contents) of each landfill trench. During the PCA investigation and field activities, seven additional cells were identified and located using aerial photographs and visual indicators.

3.0 SITE BACKGROUND

3.1 Site Location and Description

The former Hawthorne Landfill property is located on the west side of the town of Hawthorne in Mineral County, Nevada. Hawthorne's western residential area is within ¼ mile of the former landfill. The Hawthorne Landfill has been in existence since the early 1920s. The site was closed to

municipal waste disposal in 1972. Very few records exist on the solid waste disposal activities of the landfill. Testimonials from former Hawthorne utilities workers confirmed that municipal waste was buried in trenches and burned. The location of the landfill is shown on Figure 1.

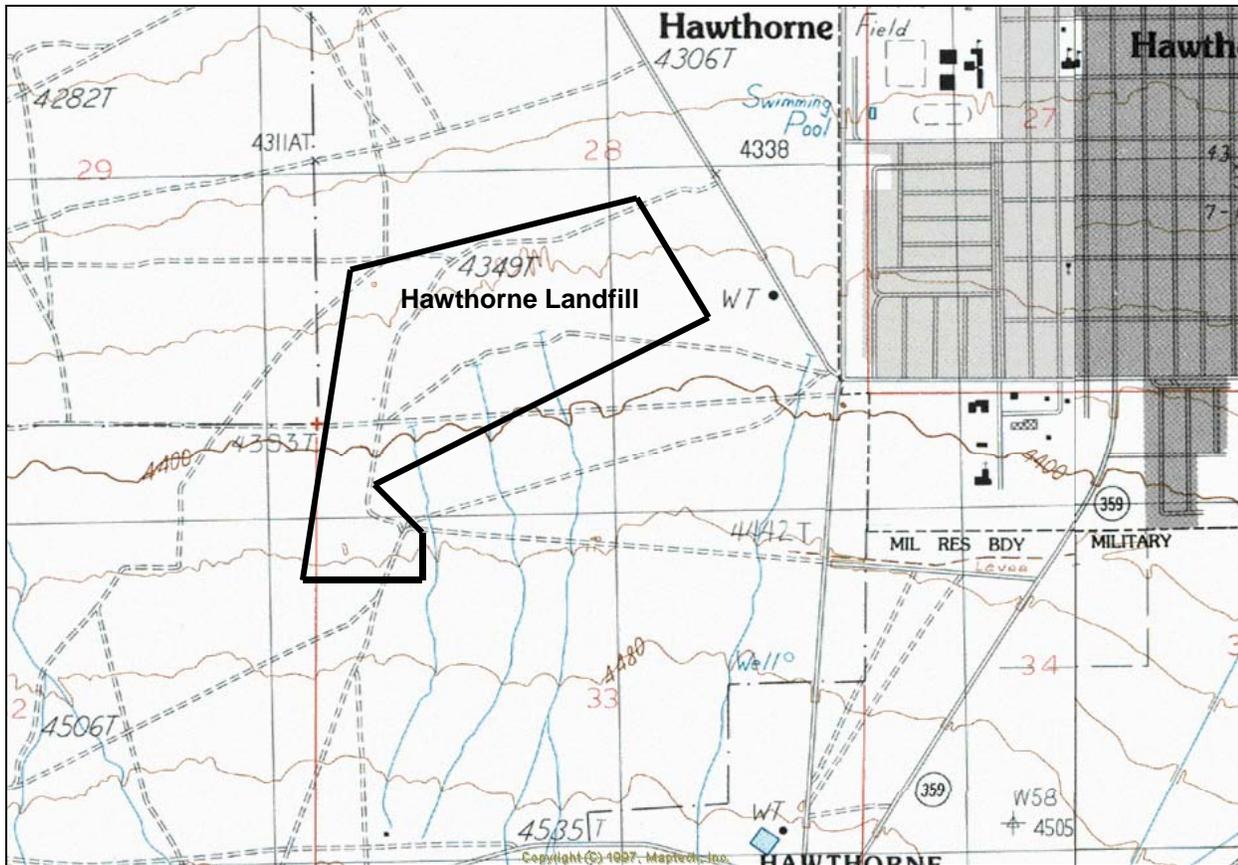


Figure 1. General area of former Hawthorne Landfill.

3.2 Areas of Concern

3.2.1 Cell No. 1 - 21

According to Luster National's TBA report, 14 areas of interest or cells were identified based on surface features of trench depressions or soil piles. Using an aerial photo received from Scott Smale, Department of Environmental Protection, and noticeable surface features, 7 additional areas of concern or cells were identified. The locations of individual cells and trenching locations are shown on Figure 2.



Figure 2. General location of landfill cells (No. 1-21) and the trenches within each cell.

4.0 FIELD ACTIVITIES

Field work conducted 1-5 Oct 01 for the Phase II PCA investigation was supervised by the U.S. Army Corps of Engineers (USACE), Sacramento District, Environmental Design Section. All trenching and potholing work was performed by BLT Ready Mix using a Case 580 backhoe with a 24-inch bucket. The owner/operator of BLT Ready Mix is Mr. Brad Amussen. All soil excavations were located perpendicular to trench depressions when visible. In open areas when no depressions were visible, locations of soil excavations were randomly selected. All excavations continued vertically

until native soil was encountered or until the excavation caved in. When excavation of landfill cells was completed, the holes were refilled with their original contents and compacted.

5.0 PROJECT STAFFING

This Report was prepared by the Environmental Design Section, Sacramento District, USACE, and Project Management Division (PPMD). The technical team for the consists of:

<u>Name</u>	<u>Title</u>
Daniel McMIndes	Project Manager
Bruce Van Etten	Engineer Technician
Melissa Kieffer	Senior Environmental Engineer
Donna Maxey	Industrial Hygienist

6.0 RESULTS OF INVESTIGATION

A total of 33 potholes were excavated for this project. Landfill trench dimensions ranged from 6-12 ft. wide by 50-200 ft. long, with depths ranging from 8-14 ft. below ground surface (bgs). With the exception of Cell No. 5, 13, 15 and 19, the contents of all excavations consisted primarily of household or municipal waste. All excavations indicated that waste was placed in the trenches and then burned. Most of the trenches contained several years worth of waste, with some containing 5-10 years of waste from bottom to top. The majority of the trenches contained mostly glass (i.e., bottles), metal (i.e., cans), and some wood and paper mixed with ash. Landfill trenches were covered with fill material when full or no longer in use. Fill material was placed in trenches with little or no compaction and varied in depth from 1½ ft. to 6 ft. Due to problems with equipment becoming stuck in uncompacted soils, all potholing was conducted from the edge of landfill cells or trenches. There appeared to be no indication that waste was placed in landfill trenches any later than 1972 (when the facility was shut down). However, surface material was dated to as early as 1994.

Cell No. 5, 13, 15, and 19 were the only areas that contained materials other than municipal waste. These cells contained predominantly large metal debris (car parts, appliance parts, cable, etc.). There was no indication that any construction material found on the surface was buried in the landfill. Also, a large portion of the surface debris (car bodies, appliances, etc.) could be dated later than 1972.

In general, the landfill appeared to be homogenous in nature. There was no indication of hazardous waste or unexploded ordnance either on the surface or buried.

PHOTO SUMMARY

Cell No. 1

This cell was located in the northern corner of the site. There were approximately twelve trench depressions located in this cell. The average surface dimensions of the trenches were approximately 12 ft. wide by 100 ft. long. Because of the size of this cell, two potholes were done here. Generally, the trench depressions were somewhat deeper on the south side of the cell with less fill cover on the trench. Cover soil was only about 1-½ ft. on the south end, to about 3 ½ ft. on the north end. Both trenches were excavated to approximately 14 ft. before encountering native soil. Mostly late 1960s municipal waste was encountered.



Cell No. 1, southwest corner, looking west.

Cell No. 2

No potholing was conducted at Cell No. 2. The Luster report observed piles of construction debris (concrete and asphalt) predominantly covering the area. This observation was confirmed during this investigation.



Cell No. 2 looking east, just piles dumped on the surface

Cell No. 3

A set of five 2-ft. deep trench depressions approximately 12 ft. wide and 100 ft. long were observed at Cell No. 3. One foot of soil covered the trenches before encountering waste. Mostly burned municipal waste covered with soil was encountered. The layer of waste was approximately 11 ft. before encountering native material.



North end of Cell No. 3, looking west.

Cell No. 4

Several soil piles that appeared to have been dumped on the surface were observed in this area just south of the road. According to the Luster report, an area west of the soil piles appeared to have been disturbed. Potholing was conducted here, but only native material was encountered. This area may have been used as a borrow source for fill material used to cover the trenches.



Cell No. 4, looking southwest.

Cell No. 5

This area contained a lot of large metal debris on the surface, but little indication of soil disturbance. Two potholes were excavated in Cell No. 5. The first area where potholing was conducted appeared to be a trench depression of 8 ft. wide by 80 ft. long. The excavation continued to 5 ft. bgs and waste was not encountered. All soil from this area appeared to be native material. This area could be a natural drainage canal or run-off ditch.



Possible drainage ditch in Cell No. 5.

Cell No. 5 (continued)

The second disturbed area in Cell No. 5 was an open trench, which contained a large amount of auto gas tanks along with car bodies, several crushed drums, and other metal debris. Only native material was encountered during potholing. Based on the surface debris and contents of the open ditch, it appeared that metal was separated and disposed of here. It also appeared as though gas tanks were removed from automobiles and placed in the ditch for safety.



Open ditch with gas tanks and auto bodies in Cell No. 5.

Cell No. 6

This cell was one of the largest cells in the landfill with several north-south trenches approximately 1,000 ft. long by 8 ft. wide. Trenches in Cell No. 6 were surrounded by soil ridges that opened on the north end. Three potholes were excavated here to gather adequate information. Surface debris was found mostly in the southern portion of the cell (i.e., car bodies, large metal debris).



Southern end of Cell No. 6. Soil cover was approximately 1 ft. thick. Subsurface waste was 4 ft. deep here. All buried waste was municipal waste that was burned.



Middle of Cell No. 6. Trench depression here was approximately 3 ft. deep and 12 ft. wide. There was 2 ft. of soil cover prior to encountering waste. Mostly burned municipal waste covered by soil was encountered. Excavated to 18 ft. without reaching the trench bottom, before the sides of the trench caved-in.

The third pothole in Cell No. 6 was located approximately 200 ft. south of the north end of the cell. Soil cover here was 3 ft. thick over 4 ft. of waste. Burned municipal waste was encountered.

Cell No. 7

Cell No. 7 covered as large of an area as Cell No. 6. The southern end of the cell was covered with soil and debris piles that appeared to have been dumped. Excavation was conducted within one trench located in the middle of the cell. Approximately 3 ft. of soil covered waste in this area. The excavation continued to 14 ft. before caving in. It appeared that 14 ft. was the bottom of the trench. The trench contained mostly burned municipal waste covered with soil.



Cell No. 7 at the north end looking south.

Cell No. 8

A large soil berm was encountered in Cell No. 8. Separate piles of concrete and asphalt were located around the soil berm. The berm was approximately 6 ft. high. Waste was encountered approximately 2 ft. below the surface. Waste continued for approximately 6 ft. bgs until native material was encountered. The cell contained mostly burned municipal waste covered with soil. Significantly more ash was encountered within this cell.



Soil berm in Cell No. 8 looking west.

Cell No. 9

Cell No. 9 contained a series of north-south trench depressions. Scattered concrete rubble was encountered east of the trench depressions. The trenches measured 12 ft. wide by 150 ft. long, with a 3 ft. depression. Approximately 2 ft. of fill material covered the waste. The excavation continued to 13 ft. before caving in. The base of the waste was not encountered. The trench contained mostly burned municipal waste covered with soil.



Cell No. 9 looking west.

Cell No. 10

Cell No. 10 contained a series of trench depressions 2-3 ft. deep. Two potholes were excavated, one in the northwest corner and one in the southeast corner. Approximately 4 ft. of fill material covered the waste. The excavation continued to 10 ft. before caving in. The trenches contained mostly burned municipal waste covered with soil. There were several piles of soil and concrete in this area.



Cell No. 10. From the southwest corner looking north. This trench was never covered and the exposed waste can be observed.

Cell No. 11

Cell No. 11 contained larger debris on the surface (car parts, appliances, metal debris). A series of trench depressions were observed just west of Cell No. 10. The trenches were approximately 100 ft. long by 6 ft. wide, with 3-ft. depressions. Approximately 2 ft. of fill material covered the waste. The trench contained mostly burned municipal waste covered with soil. The depth of waste was approximately 8 ft. in most trenches.



Cell No. 11 looking south.

Cell No. 12

Cell No. 12 was an open area containing surface debris, soil mounds, and trench depressions. Soil mounds were mixed with concrete and asphalt and appeared to have been dumped in this area. The cell contained one large open trench with metal debris, including a car body. Six other north-south covered trenches were observed with 1-ft. depressions. The trenches were 50 ft. long and 8 ft. wide. The trenches were composed of 6 ft. of waste and 2 ft. of cover. The trenches contained mostly burned municipal waste covered with soil. No photo was available.

Cell No. 13

Cell No. 3 contained a large open pit on the east side of the cell. The pit was approximately 75 square feet and contained metal debris. Soil mounds and trench depressions were observed on the west side of the cell. The soil mounds appeared to have come from the pit or the trenches. The trenches were approximately 150 ft. long by 12 ft., with a 2 ft. depression. The trenches were composed of 12 ft. of waste and 2 ft. of cover, and contained mostly burned municipal waste covered with soil.



Cell No. 13 trench looking south.



Metal debris pit on the south side of Cell No. 13 looking south.

Cell No. 14

This cell contained a large pile of building material, concrete, asphalt, and soil piles. A pothole was attempted, but only native soil was encountered. A trench depression was located west of the debris pile, approximately 100 ft. away. The depression was approximately 6 ft. wide by 50 ft. long. Potholing revealed the trench was composed of 6 ft. of waste and 2 ft. of cover. The trench contained mostly burned municipal waste covered with soil.



Debris pile in Cell No. 14 looking west.



Cell No. 14, looking south. The debris pile is in the background and trench depression in the foreground.

Cell No. 15

Cell No. 15 was located approximately 200 ft. west of Cell No. 4. Only one trench depression was visible here with dimensions of 8 ft. wide by 100 ft. long, with a 2 ft. depression. The trench was composed of 10 ft. of waste and 3 ft. of cover, and contained mostly burned municipal waste covered with soil. Some metal debris (mostly car parts) were included with the municipal waste.



Site of east-west ditch in Cell No. 15 looking west.

Cell No. 16

This area consisted of a 1-ft. depression in the shape of a large pit. The depression covered an area of approximately 150 square feet. The cell was composed of 5 ft. of waste and 1 ft. of cover. The cell contained mostly burned municipal waste covered with soil. No photo was available.

Cell No. 17

Cell No. 17 contained two east-west trenches with surface waste. The trenches were depressed approximately 1-½ ft. There was little to no soil cover and waste was approximately 2 ft. deep. Waste consisted of mostly landscape materials and brush with some concrete on the surface. This area appeared to have had an old wash run through it that was filled in.



Trench in Cell No. 17 looking south.

Cell No. 18

Cell No. 18 was located in the far northwest corner of the landfill. This area was fairly flat with no visible trench depressions or pits. The cell was composed of 2 ft. of landscape-type material under 1 ft. of soil cover. No photo was available.

Cell No. 19

This area was fairly flat with several unnatural ground swells. Potholing began in the lowest area of the cell where a large metal debris pit was found. The pit had 3 ft. of soil cover and contained car parts, appliances, bedsprings, and construction waste. Unlike other areas, this waste did not appear to be burned. The excavation continued to a depth of 18 ft. without encountering native material. Three other areas were potholed around the perimeter of the pit within 150 ft., and no waste was encountered.



Cell No. 19, looking east.

Cell No. 20

Cell No. 20 contained an east-west trench depression that was approximately 200 ft. long by 5 ft. wide, with a 2 ft. depression. The trench was composed of 6 ft. of waste and 2 ft. of cover. It contained mostly burned municipal waste covered with soil. No photo was available.

Cell No. 21

Cell No. 21 was the largest cell within the landfill, and was located the furthest south. Four potholes were excavated here. The northern-most trench area appeared flat and slightly lower than the surrounding area, however, potholing in this area resulted in no waste. This area may have been a borrow source for fill material. The other three potholes all revealed waste at depths of 10 to 14 ft. Waste in this area appeared to have been from the 1970s (aluminum cans, pull tabs, 12 oz. bottles) and may have been the last area within the landfill to be used for disposal of municipal waste.



Cell No. 21, southern end looking west.

TABLE 1
Summary of Cell Potholing

Cell No.	Depth of Cover	Type of Fill	Depth of Fill
1	1 ½ to 3 ½ ft.	Mostly late 1960's municipal waste	14 ft.
2	NA	Only surface piles of concrete, asphalt, misc. trash	NA
3	1 ft.	Mid 50's to late 60's burned municipal waste	11 ft.
4	NA	Piles of soil on te surface, area appeared scalped	NA
5	None	Mostly auto gas tanks, car bodies, drums, other metal	5 ft.
6	1 to 3 ft.	Mostly late 50's early 60's burned municipal waste	4 to 18 ft. *
7	3 ft.	Mostly late 1950's burned municipal waste	14 ft.
8	2 ft.	Mostly late 1960's burned municipal waste	10 ft.
9	2 ft.	Mostly late 50's early 60's burned municipal waste	11 ft.
10	4 ft.	Mostly late 50's early 60's burned municipal waste	10 ft.
11	2 ft.	Mostly late 1960's burned municipal waste	8 ft.
12	2 ft.	Mostly late 1960's burned municipal waste	6 ft.
13	2 ft.	Mostly early 1960's burned municipal waste	12 ft.
14	2 ft.	Mostly early 1960's burned municipal waste	6 ft.
15	3 ft.	Mostly late 60's early 70's burned municipal waste	10 ft.
16	1 ft.	Mostly late 1960's burned municipal waste	5 ft.
17	½ ft.	Mostly landscape waste and brush	2 ft
18	1 ft.	Mostly landscape waste	2 ft.
19	3 ft.	All metal (car parts, appliances, bed parts, etc.)	18 ft.
20	2 ft.	Mostly late 1960's burned municipal waste	6 ft.
21	2 ft.	Mostly late 60's early 70's burned municipal waste	10 to 14 ft.

* Waste was 4 ft. deep at each end of the cell and 18 ft. deep in the middle of the cell.