# RESPONSE ACTION PLAN

## LEAK DETECTION SYSTEM

## TRENCH 13

**US Ecology Nevada, Inc.**
**Hazardous Waste Management Facility**
**Beatty, Nevada**

USEPA ID #NVT330010000
Nevada Hazardous Waste Treatment, Storage and Disposal
Permit NEV HW0025

**Prepared for**

**Prepared by**

**with Assistance from**

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# CERTIFICATION

## RESPONSE ACTION PLAN – TRENCH 13
## REVISION 1

**US Ecology Nevada, Inc.**
**Hazardous Waste Management Facility**
**Beatty, Nevada**

I certify under penalty of law that this document and all appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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# RESPONSE ACTION PLAN

## 1. INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) promulgated rules on January 29, 1992, requiring Response Action Plans (RAP) for new hazardous waste landfill units that commence construction after January 29, 1992, or which expand existing units after July 29, 1992 (57 FR 3462). At the US Ecology Nevada, Inc. (USEN) Facility, Trench 13 is a new hazardous waste landfill unit that is regulated under this rule. This RAP meets the requirements of 40 CFR §264.304 and identifies actions to be taken if an action leakage rate is exceeded.

## 2. LEACHATE COLLECTION AND REMOVAL SYSTEM

The Leachate Collection and Removal System (LCRS) has been designed in accordance with 40 CFR §264.301(c)(2) requirements to enable collection and removal of leachate from the landfill during the active life and post-closure care period. The LCRS minimizes the possibility of leachate migrating through the primary liner into the underlying Leak Detection System (LDS) or secondary liner system. The LCRS and primary liner for Trench 13 sideslopes is an 8-ounce/yd$^2$ geotextile and a geonet (200-mil) underlain by an 80-mil HDPE flexible membrane liner (FML), as shown on **Figure 1**. The LCRS and primary liner for the Trench 13 floor is a double-sided geocomposite (300-mil geonet sandwiched between two 8-ounce/yd$^2$ geotextiles) underlain by an 80-mil HDPE FML, as shown on **Figure 2**. Trench 13 is composed of five separate disposal cells (Phases), each with an independent LCRS to collect liquids entering the LCRS over discrete areas of the Trench 13 Floor and Sidewalls.

**Figure 1 Sideslope Liner System**

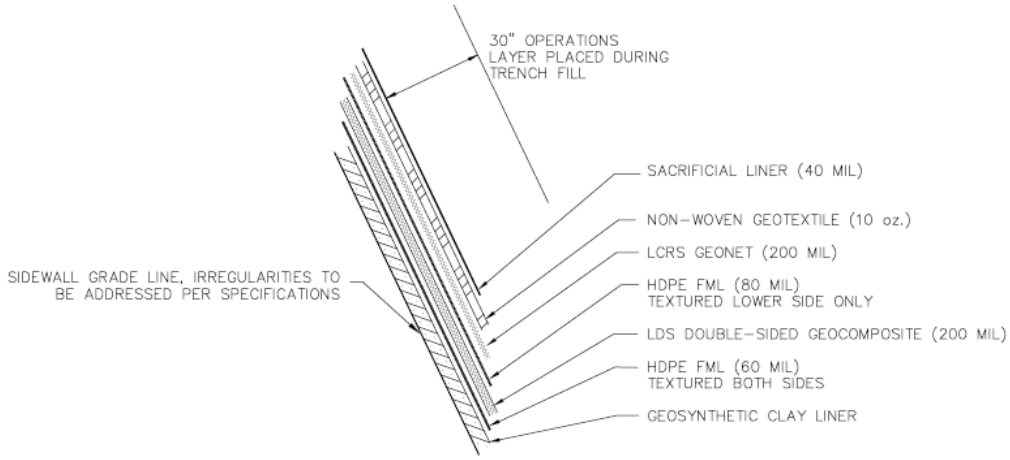
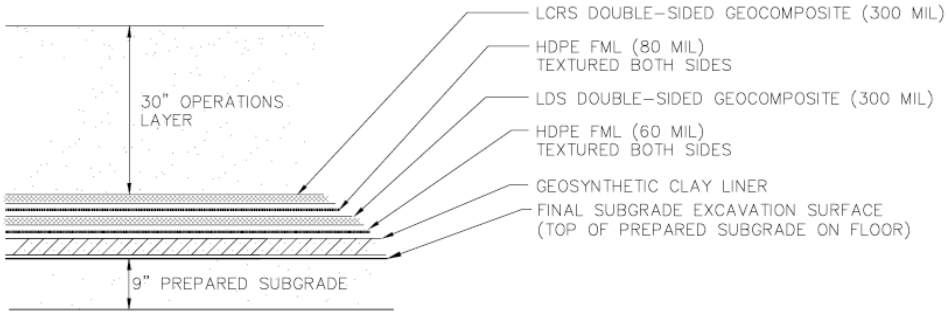


**Figure 2 Floor Liner System**




The LCRS Sump provides a point for leachate monitoring and removal. Pumps placed within perforated riser pipes in each LCRS Sump are used to remove liquids (i.e., leachate). The LCRS pump capacity and fluid level observation frequency, as established in this RAP, are intended to prevent fluid levels from exceeding one foot of head on the LCRS Floor and in the LCRS Sump. During operation, the active cell shall include a secondary pump (or pumps) capable of extracting at least 23 gallons per minute (gpm) at 114 feet of dynamic head for each LCRS, during the early portion of Trench operations. The basic configuration of Trench 13 LDS/LCRS Sumps is shown on **Figure 3**.

The vertical distance from the bottom of the LCRS Sumps to the "Lowest Point of the Trench Floor" is approximately four feet as shown on **Figure 4**. A pump is positioned in each LCRS Sump such that the base of the pump is approximately 4.0 feet below the Lowest Point of the Trench Floor. The sump depth and capacity facilitates efficient leachate removal in the event of large precipitation events during the early stages of waste placement.

## 3. LEAK DETECTION SYSTEM

The LDS also has been designed in accordance with 40 CFR §264.301(c)(4) requirements to enable identification of leakage through the LCRS and collection and removal of liquids found in the LDS to minimize the head on the secondary liner. The LDS and secondary liner for the Trench 13 sideslope is a double-sided geocomposite (200-mil geonet sandwiched between two 6 ounce/yd$^2$ geotextiles), underlain by a 60-mil HDPE FML, as shown on **Figure 1**. The LDS and secondary liner for the Trench 13 Floor is a double-sided geocomposite (300-mil geonet sandwiched between two 8 ounce/yd$^2$ geotextiles), underlain by a 60-mil HDPE FML and a geosynthetic clay liner, as shown on **Figure 2**. The five Phases of Trench 13 each have an independent LDS to collect any release (i.e., leakage) from the primary liner that enters the LDS in the Trench 13 cell floor and sidewalls.

The LDS Sump provides a point for leak detection monitoring and leakage removal. An LDS pump positioned within a perforated riser pipe in each LDS is used to remove pumpable liquids at each LDS Sump. The LDS pump capacity and fluid level observation frequency, as established in this RAP, are intended to prevent fluid levels from exceeding 1.0 foot of head on the LDS Floor or within the LDS Sump.

The vertical distance from the bottom of the LDS Sumps to the "Lowest Point of the Trench Floor" is approximately 5.5 feet, as shown on **Figure 4**. A pump is positioned in each LDS Sump such that the base of the pump is approximately 5.5 feet below the Trench Floor.

**Figure 3 Plan View of Trench 13 Sump**

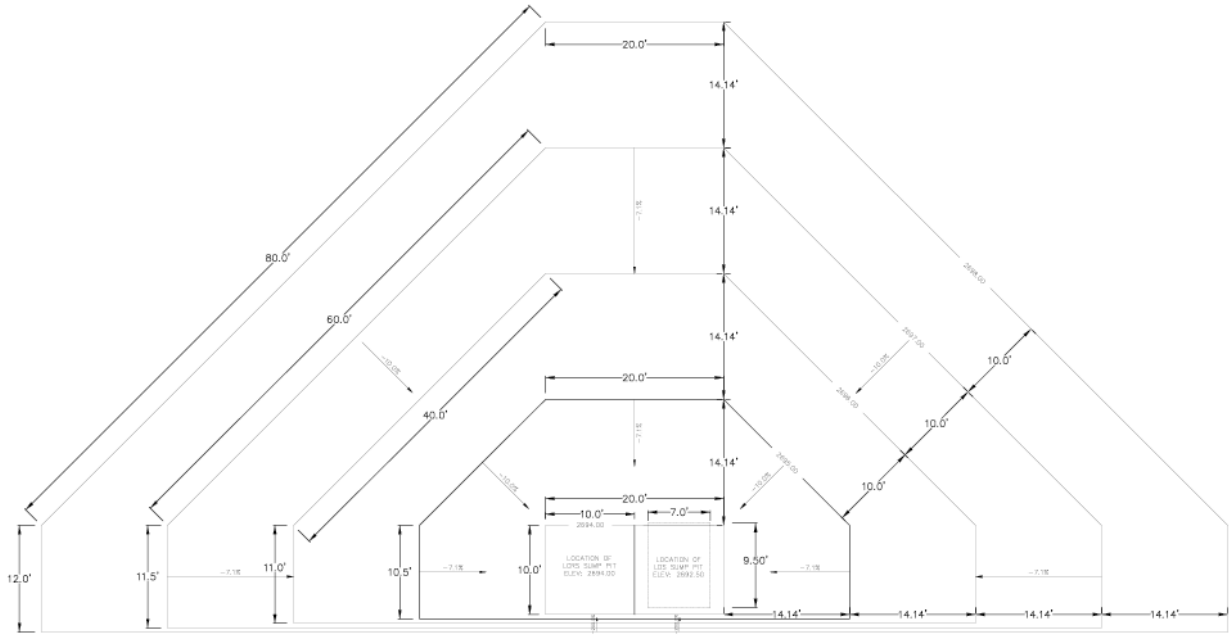
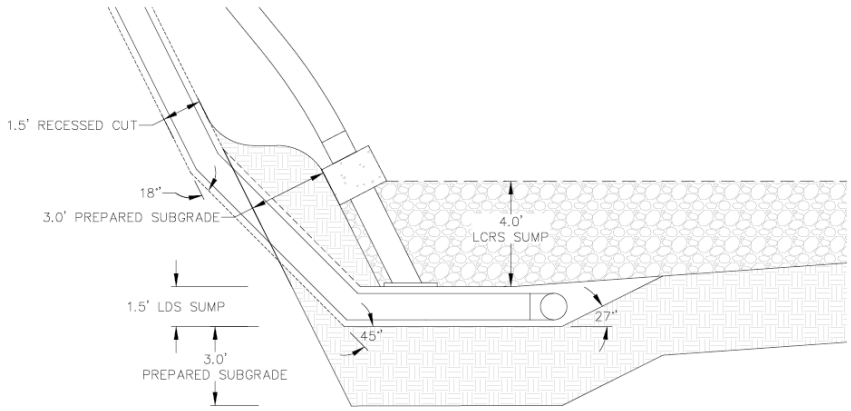



**Figure 4 Sump Cross Section**




## 4. ACTION LEAKAGE RATE

The Action Leakage Rate (ALR) is a flow rate value to be observed in the LDS that might indicate a problem with the primary liner and is selected to prompt action (e.g., notification and/or primary liner repair). That value must not be greater than the maximum design flow rate that the LDS can remove to prevent fluid levels on the bottom liner exceeding 1.0 foot of head. The ALR is established at: 1) a rate that is greater than the amount expected for small leaks through the primary liner, and 2) a rate that is less than the capacity of the LDS Floor

(geocomposite liner) and LDS Sump to transmit liquids without backups on the secondary liner exceeding one foot. This Response Action Plan establishes an ALR that is applicable to each of the five LDS Sumps in Trench 13. (See **Calculation C.08** in **Appendix A**). The ALR for each of the Phases of Trench 13 is **150 gallons per acre day**, as shown in **Table 1**.

**Table 1 ALR Application**

| Sump | Phase Area (acres) | ALR (gal/acre/day) | Flow into Sump at ALR (gal/day) | Minimum Pump Capacity (gal/min) |
|---|---|---|---|---|
| Phases 13 A and E | 9.88 | 150 | 1,480 | 1.04 |
| Phases 13 B, C, and D | 9.16 | 150 | 1,370 | 0.95 |

A pump with a minimum capacity of 1.1 gpm and 114 feet of dynamic head (lift capacity) is required. Leachate levels will be maintained so that no greater than 1.0 foot of head is present on the LDS Floor or within the LDS Sump.

## 5. SUMP MONITORING

All leachate Sumps (LCRS and LDS) in Trench 13 will be monitored at a frequency to prevent fluid levels from exceeding 1.0 foot of head within the Sumps. Based on USEN experience at the Beatty facility, weekly inspections are appropriate. However, inspections on an increased frequency, such as daily, will be necessary during the initial time period of waste disposal[1]. Once a history has been established and after the initial time period of waste disposal, inspections can be relaxed to weekly, assuming monitored liquid levels remain predictable.

Following precipitation events exceeding 0.25 inches in 24 hours during the initial time period of waste disposal, the leachate Sumps should be monitored at least daily for a period of one week. Once a history has been established, and after the initial time period of waste disposal, the monitoring frequency should be relaxed, as appropriate.

The results of monitoring (depth of leachate in the Sump) and the volume of leachate removed, if pumping is required, will be recorded in the LCRS and LDS Sump Monitoring Logs maintained for each sump.

During the post-closure period, after the final cover is installed, LCRS Sumps and LDS Sumps will be monitored monthly in the first year following closure, assuming a long history of dry or minimal leachate has been established. In the second year following closure, monitoring will be done quarterly and in years three through 30, monitoring will be done semi-annually, assuming monitored levels and pumping volumes support the schedule.

## 6. DETERMINING WHEN THE ALR IS EXCEEDED AND RESPONSE ACTIONS

If the volume of liquid pumped from any LDS Sump equals or exceeds 1,480 gal/day in Phases 13A and E or 1,370 gal/day in Phases 13B, C, or D, facility personnel will report this information to the Facility Manager.[2]

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[1] Initial time period assumed when less than 5 feet of waste is present in the Phase above the operations layer.

[2] All references to the Facility Manager will include his/her designee and are herein-after referred to collectively as the "Facility Manager."

The Facility Manager will institute daily monitoring for five working days to determine whether average removal volumes indicate that maximum daily total flow limits (i.e., the ALR) are being exceeded for an individual Sump. Five-day average flow rates will then be used to determine whether ALR values in **Table 1** are being exceeded.

If the Facility Manager determines that the flow rate into the LDS exceeds the ALR for an individual Sump, the Facility Manager will follow the steps outlined below:

1. Notify NDEP in writing within seven (7) days of determining that the ALR has been exceeded.

2. Submit a preliminary written assessment to NDEP within 14 days of the determination. This report will document the volume of liquids removed from the LDS Sump; likely sources of the liquids; possible explanation for apparent leaks; and short-term actions taken and planned.

3. Visually assess the cell for possible damage to the liner system and conduct interviews with personnel about recent practices that might have resulted in a breach in the primary liner.

4. Conduct a fingerprint, hazardous constituent, or other analysis to provide possible explanation of the sources of liquids and possible locations of apparent leaks. Comment on mobility of the liquid (and hazardous constituents) in the vadose zone and groundwater and the hazard to the environment and human health represented by the apparent leak.

5. Determine whether waste placement should be modified or curtailed; and whether or not liner inspection, repairs, or controls are feasible.

6. Determine if any other short-term or long-term actions need to be taken to mitigate any apparent leaks.

7. Within 30 days after the initial notification to NDEP that the ALR has been exceeded, submit a report to NDEP containing the information and determinations specified above.

8. Thereafter, submit monthly reports to NDEP as long as the flow rate in the LDS exceeds the ALR summarizing the results of any remedial actions taken and any actions planned.

## 7. LEACHATE MANAGEMENT

Liquid generated by pumping from leachate collection systems (LDS and LCRS) in Trench 13 will be used for dust control within a lined Phase of Trench 13. Leachate that is reapplied for dust suppression purposes will be restricted to the sub-cell (Trench 13 Phase) from which it was generated. If leachate is removed from Trench 13 it will be managed as F039 waste. During early operations in Trench 13, there will be limited opportunity to utilize liquid collected from leachate collection systems for dust control because of the limited portion of Trench 13 actively receiving waste. Excess liquids, not used for dust control and removed from the active Phase, will require analysis to determine appropriate management requirements. The management

(including disposal) of the liquid will need to be accomplished within any applicable regulatory time limitations.

To address the possibility that a storm event (or events) during early operations generates contact run-off (i.e., run-off exposed to waste that must be managed as leachate) in a volume that exceeds the capacity for that leachate to be used within the lined Phase, removal and storage of leachate will be necessary. USEN will make available necessary storage containers. These will include tanks available on-site that have available capacity. If a storm event generates more contact run-off (i.e., leachate) than can be managed using on-site storage tanks, temporary tanks will be brought on-site from an off-site source.

Calculations of LCRS and LDS flow following a design storm event of 2.26 inches (25 year, 24-hour storm event, based on NOAA Atlas 14, Volume 1, Version 5, Amargosa Farms Garey Station ID: 26-0150) suggest the LCRS could have infiltration and require pumping of up to 23 gal/min (approximately 33,000 gal/day) during short periods at the beginning of use of Phases A and E (and up to 17 gal/min during short periods at the beginning of use of Phases B, C, and D). If the LDS, as stated above, produced liquid volume equal to the ALR at the same time, 1,480 gal/day for Phases A and E or 1,370 gal/day in Phases B, C, or D, might be added to the LCRS volumes. Therefore, as much as 35,000 gal/day/Phase of leachate storage might be necessary following a precipitation event equivalent to the design storm.

To provide temporary storage of leachate, USEN makes available the following storage tanks:

- One 5,000-gallon portable tanker;
- One 5,000 gallon water truck; and
- One 8,000-gallon water pull.

Once on-site storage is exceeded, rental and delivery of portable tanks will be necessary. Tanks brought to the site will be placed in temporary containment structures, approved by the agency. As temporary tanks are being filled USEN will make arrangements to begin shipping leachate for disposal offsite. The transfer of liquids off-site will be done within appropriate time limitations (one year for the permitted tank and ninety days for all temporary tanks). Contact information for the supply of portable tanks is provided below.

- B Pac Van – Las Vegas: 4680 Industry Center Drive
  Las Vegas, NV 89115
  Telephone: (800) 587-1784
- Rain For Rent: 5005 E Carey
  Las Vegas, NV 89115
  Telephone: (702) 632-0281
- Water Movers: 311W Utah Avenue
  Las Vegas, NV 89102
  Telephone: (702) 932-8822

# APPENDIX A

**See Landfill Engineering Report, Appendix 2**

**Calculation C.08: LDS Flow Capacity, ALR, and Extraction Rate**