

15.0 Salt Lake City, Utah, Disposal Site

15.1 Compliance Summary

The Salt Lake City, Utah, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site (site) was inspected on July 14, 2020. No changes were observed on the disposal cell or in associated drainage features. Observations of rock-quality monitoring plots indicated no significant change from the previous year. Inspectors identified one routine maintenance need but found no cause for a follow-up inspection. Maintenance needs that could be addressed during the inspection were completed by inspectors. Groundwater monitoring is not required.

15.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the site-specific Long-Term Surveillance Plan (LTSP) (DOE 1997) in accordance with procedures established to comply with the requirements of the U.S. Nuclear Regulatory Commission (NRC) general license at Title 10 *Code of Federal Regulations* Section 40.27 (10 CFR 40.27). Table 15-1 lists these requirements.

Table 15-1. License Requirements for the Salt Lake City, Utah, Disposal Site

Requirement	LTSP	This Report	10 CFR 40.27
Annual Inspection and Report	Section 3.0	Section 15.4	(b)(3)
Follow-Up Inspections	Section 3.4	Section 15.5	(b)(4)
Maintenance and Repairs	Section 5.0	Section 15.6	(b)(5)
Groundwater Monitoring	Section 4.0	Section 15.7	(b)(2)
Corrective Action	Section 6.0	Section 15.8	--

15.3 Institutional Controls

The 100-acre site, identified by the property boundary shown in Figure 15-1, is owned by the United States and was accepted under the NRC general license in 1997. The U.S. Department of Energy is the licensee and, in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls (ICs) at the site include federal ownership of the property, administrative controls, and the following physical ICs that are inspected annually: the disposal cell and associated drainage features, entrance gates and sign, fences, perimeter (warning) signs, site markers, and boundary monuments.

15.4 Inspection Results

The site, 81 miles west of Salt Lake City, Utah, was inspected on July 14, 2020. The inspection was conducted by J. Lobato and D. Atkinson of the Legacy Management Support contractor. H. Mickelson, C. Bishop, L. Kellum, and J. Olson (Utah Department of Environmental Quality) attended the inspection. S. Gurr, of EnergySolutions (the private operator of a radioactive waste disposal facility that surrounds the site), escorted the inspection group, and S. Stanley (EnergySolutions) provided support as a radiation control technician (RCT). The purposes of the inspection were to confirm the integrity of visible features at the site, identify changes in

conditions that might affect conformance with the LTSP, and evaluate the need, if any, for maintenance or additional inspection and monitoring.

15.4.1 Site Surveillance Features

Figure 15-1 shows the locations of site features in black and gray font, including site surveillance features and inspection areas. Site features that are present but not required to be inspected are shown in italic font. Observations from previous inspections that are currently monitored are shown in blue text, and new observations identified during the 2020 annual inspection are shown in red. Inspection results and recommended maintenance activities associated with site surveillance features are described in the following subsections. Photographs to support specific observations are identified in the text and in Figure 15-1 by photograph location (PL) numbers. The photographs and photograph log are presented in Section 15.10.

15.4.1.1 Site Access, Entrance Gates, and Entrance Sign

The site is completely surrounded by the EnergySolutions facility. A perpetual right-of-way easement ensures that the Office of Legacy Management (LM) and its representatives have continued access across the EnergySolutions property to the site. LM also provides EnergySolutions access to the site to perform periodic maintenance activities, as needed, through a signed access agreement. In accordance with the agreement, EnergySolutions is required to provide a minimum 48-hour notice to LM before accessing or conducting maintenance activities at the site.

All personnel entering the EnergySolutions facility must sign in at the security building. Because of the surrounding radioactive waste disposal facility, posted radiological control areas must be crossed to access the site. Therefore, EnergySolutions requires that inspectors and other site visitors receive a radiological hazard awareness briefing, sign the EnergySolutions Radiological Work Permit, wear a dosimeter, and be escorted to and from the site. Hard hats, safety glasses, high-visibility vests, and steel-toed boots are also required on the EnergySolutions property. Following the inspection and before exiting the radiological control area, personnel and equipment are scanned for radiological contamination using a personal contamination monitor.

A route across the EnergySolutions property provides access to the southwest corner of the site. Six locked gates around the site limit access to the site and disposal cell. Two gates (Gates 61 and 64) are in the southwest corner of the property, and one gate (Gate 87) is in the northwest corner of the property; these property boundary gates are maintained by EnergySolutions. The remaining three gates (Gate 65 in the northwest corner and Gates 60 and 62 in the southwest corner) are along the interior chainlink security fence that surrounds the disposal cell; these interior gates are maintained by LM. Gates 60, 61, and 64 are considered site entrance gates. Gates were locked and functional. The entrance sign is on Gate 61. No maintenance needs were identified.

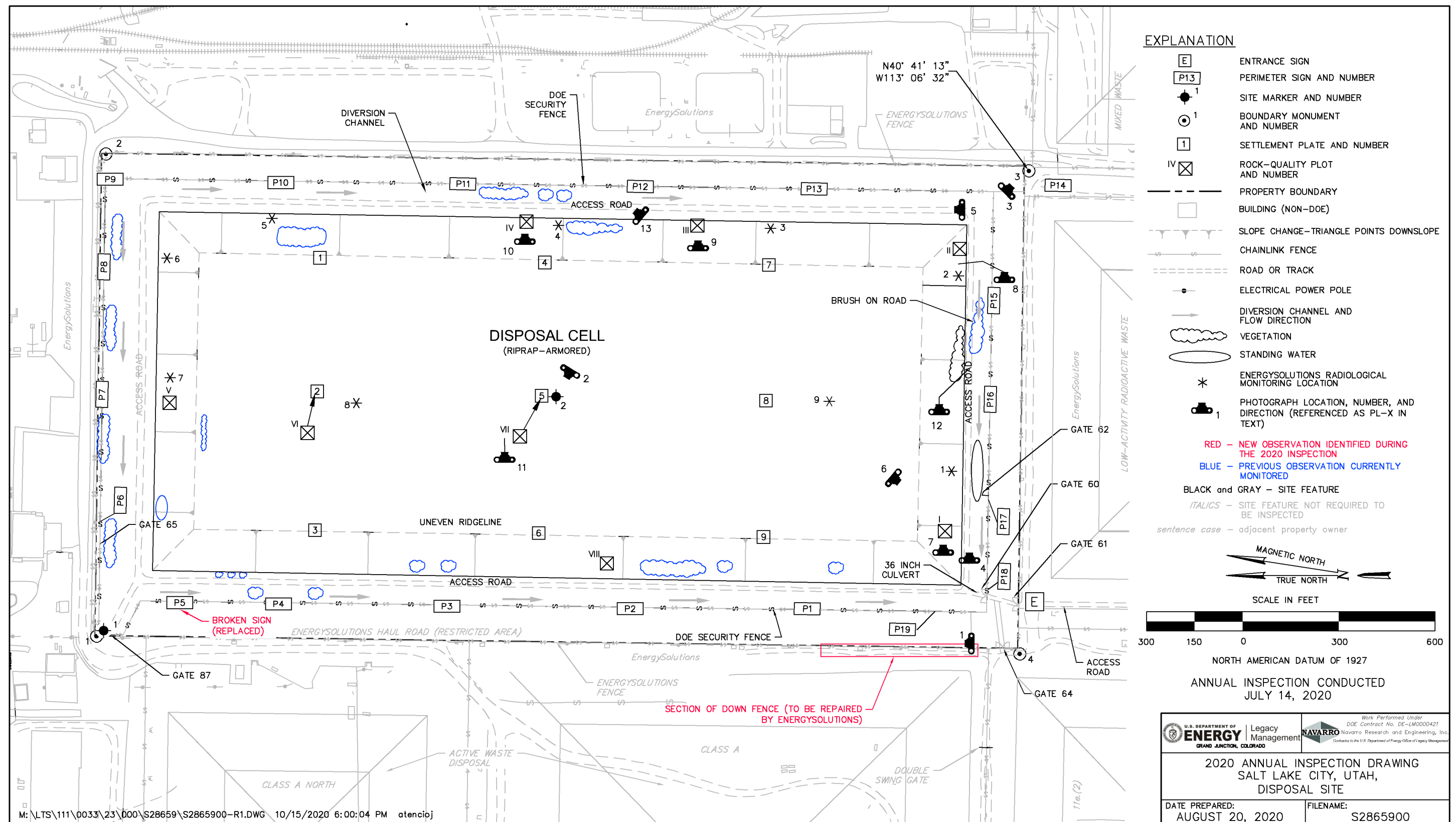


Figure 15-1. 2020 Annual Inspection Drawing for the Salt Lake City, Utah, Disposal Site

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15.4.1.2 Fences and Perimeter Signs

The site has two chainlink fences: the exterior EnergySolutions perimeter fence along the property boundary and the interior LM security fence that encloses the disposal cell and surface water diversion channels. There are 19 perimeter signs attached to the LM security fence. Perimeter sign P5 was observed to be damaged and broken and was replaced during the 2020 annual inspection. A section of the outer chainlink fence just north of Gate 64 was blown down (PL-1). EnergySolutions will repair the down section of fence in before the next inspection.

15.4.1.3 Site Markers

The site has two granite site markers. Site marker SMK-1 is just inside Gate 87 in the northwest corner of the site. Site marker SMK-2 is on the top slope of the disposal cell (PL-2). No maintenance needs were identified.

15.4.1.4 Boundary Monuments

Four boundary monuments delineate the corners of the property boundary (boundary monuments BM-1 to BM-4). Protective casings that EnergySolutions installed over each boundary monument continue to protect the boundary monuments from damage by surrounding earthmoving activities (PL-3). No maintenance needs were identified.

15.4.1.5 Aerial Survey Quality Control Monuments

Aerial survey quality control monuments are scheduled to be installed before the next inspection in 2021.

15.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into three inspection areas to ensure a thorough and efficient inspection. The inspection areas are (1) the disposal cell, (2) the area between the disposal cell and the site perimeter, and (3) the outlying area. Inspectors examined specific site surveillance features within each area and looked for evidence of erosion, settling, slumping, or other modifying processes that might affect the site's conformance with LTSP requirements.

15.4.2.1 Disposal Cell

The disposal cell, completed in 1988, occupies 54 acres (PL-4). The disposal cell is armored with riprap to control erosion (PL-5 and PL-6). There were noticeable vehicle tracks on the east side slope of the disposal cell, but there was no evidence of erosion, settling, slumping, or other modifying processes that might affect the integrity of the disposal cell. No maintenance needs were identified.

One of several types of rock used for the disposal cell erosion-protection riprap layer has exhibited minor degradation since the disposal cell was constructed. As a result, eight rock-quality monitoring plots, each measuring 1 square meter (indicated by Roman numerals I–VIII in Figure 15-1), were established in 2010 to monitor for continued rock degradation.

The rock type exhibiting degradation constitutes approximately 1%–10% of the riprap material; degradation of this less competent rock is thought to result from freeze-thaw weathering. Rock-quality monitoring plots are visually monitored and documented annually with photographs. Approximately 1%–10% of the rock in the plots exhibited signs of weathering during the 2020 annual inspection (PL-7 through PL-11), with no significant changes from the 2019 annual inspection. Comparisons to the initial 2010 rock-quality plot photographs indicate very little (if any) additional rock degradation since monitoring began. The minimal rock degradation observed to date has not reduced the effectiveness of the riprap cover. Rock-quality monitoring plots will continue to be visually monitored and documented annually with photographs to ensure that the riprap continues to protect the integrity of the disposal cell.

Nine settlement plates are on the top slope of the disposal cell; several outer casings associated with the settlement plates were visually inspected. Surveying of the settlement plates is not required unless settlement appears to be occurring. Every year, EnergySolutions performs light detection and ranging (lidar) surveys of the area, including this disposal cell; these lidar survey results are available on request.

Although areas of the disposal cell have continued to have minor perennial grass growth, no deep-rooted plants were growing on the disposal cell. Standing water from stormwater runoff was observed in the apron at the base of the south side slope of the disposal cell toe drainage; no adverse impacts to the disposal cell were noted or expected as a result of this water. No maintenance needs were identified.

15.4.2.2 Area Between Disposal Cell and Site Perimeter

Inspectors examined the area between the toe of the disposal cell and the EnergySolutions security fence on the property boundary. No evidence of erosion was observed. Vegetation continues to encroach along the access road (PL-12), but the road remains functional, and no maintenance is required.

The surface water diversion channels were functioning as designed. Although minor areas of ponded water were observed, vegetation growth in these diversion channels is not impeding stormwater runoff.

Radiological surveys are performed every 2 years on the site by EnergySolutions personnel to confirm the absence of spillover or windblown radioactive contamination from surrounding radioactive waste disposal operations. Survey measurements include taking dose rate measurements at random locations across the site and collecting wipe samples that are analyzed for gross alpha and beta radiation contamination.

Dose rate measurements and wipe samples were collected at various locations around the base of the disposal cell, including on the disposal cell top slope, during the 2019 annual inspection. Nine wipe samples were collected by the EnergySolutions RCT at the specific radiological monitoring locations depicted in Figure 15-1. The RCT also collected dose rate measurements at random locations throughout the duration of the inspection using a handheld meter capable of detecting radiation doses greater than 20 microrem per hour.

Results from radiological surveys conducted at the site to date have been below applicable exposure limits established in LM's *Radiological Control Manual* (LMS/POL/S04322). Therefore, both spillover and windblown radiological contamination from the surrounding

radioactive waste disposal operation are not evident. All results from the 2019 wipe samples collected by EnergySolutions were below the minimum detectable activities (i.e., nondetect) for removable alpha and beta radiation contamination. The next radiological survey will occur during the 2021 annual site inspection.

EnergySolutions conducts periodic walkthroughs of the site to remove any windblown debris, and the company reported no debris on the site in 2020. No maintenance needs were identified.

15.4.2.3 Outlying Area

The area beyond the site boundary for a distance of 0.25 mile was visually observed for erosion, changes in land use, or other phenomena that might affect the long-term integrity of the site. No such impacts were observed.

A variety of features and ongoing waste disposal activities that are managed by EnergySolutions surround the site (PL-13). The most obvious waste disposal activities are occurring directly west of the site where a Class A (i.e., low-level radioactive waste) disposal cell is being capped. On the northeast and east sides of the site, incoming wastes are unloaded from railcars and transferred to haul trucks; decontamination facilities are also present. Directly to the south is a completed low-level radioactive waste disposal cell, to the southwest is a waste disposal cell containing Atomic Energy Act Section 11e.(2) byproduct material, and to the southeast is an operating mixed-waste treatment and disposal facility. Administration, security, and maintenance buildings lie directly north-northwest of the site. A shredding facility, rotary dump, and railroad spur delivery loop are northwest of the site. These adjacent operations and facilities are not affecting the site.

15.5 Follow-Up Inspections

LM will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition or (2) LM is notified by a citizen or outside agency that conditions at the site have substantially changed. No need for a follow-up inspection was identified.

15.6 Maintenance and Repairs

Inspectors replaced the broken perimeter sign P5 following the 2020 inspection.

One minor maintenance item will be completed by EnergySolutions by the next inspection in 2021:

- Repair section of down fence just north of Gate 64

No other maintenance needs were identified.

15.7 Groundwater Monitoring

In accordance with the LTSP, groundwater monitoring is not required. Supplemental standards have been applied as site standards because (1) the uppermost aquifer is classified as limited use due to naturally occurring concentrations of total dissolved solids that exceed 10,000 milligrams per liter, and (2) the site is not contributing to the contamination of any current or potentially

useful aquifer. EnergySolutions owns and maintains several groundwater monitoring wells throughout its licensed radioactive waste facility.

15.8 Corrective Action

Corrective action is taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192. No need for corrective action was identified.

15.9 References

10 CFR 40.27. U.S. Nuclear Regulatory Commission, “General License for Custody and Long-Term Care of Residual Radioactive Material Disposal Sites,” *Code of Federal Regulations*.

40 CFR 192. U.S. Environmental Protection Agency, “Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings,” *Code of Federal Regulations*.

DOE (U.S. Department of Energy), 1997. *Long-Term Surveillance Plan for the South Clive Disposal Site, Clive, Utah*, DOE/AL/62350-228, Rev. 2, September.

Radiological Control Manual, LMS/POL/S04322, continually updated, prepared by Navarro Research and Engineering, Inc., for the U.S. Department of Energy Office of Legacy Management.

15.10 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	0	EnergySolutions Fence Down
PL-2	300	Site Marker SMK-2
PL-3	135	Protective Casing on Boundary Monument BM-3
PL-4	90	Disposal Cell, South Side Toe Drainage
PL-5	0	Disposal Cell, East Side Toe Drainage
PL-6	220	Disposal Cell, West Side Apron
PL-7	—	(a) Rock Quality Plot No. I—2020 (b) Rock Quality Plot No. I—2010 Photo for Comparison
PL-8	—	(a) Rock Quality Plot No. II—2020 (b) Rock Quality Plot No. II—2010 Photo for Comparison
PL-9	—	(a) Rock Quality Plot No. III—2020 (b) Rock Quality Plot No. III—2010 Photo for Comparison
PL-10	—	(a) Rock Quality Plot No. IV—2020 (b) Rock Quality Plot No. IV—2010 Photo for Comparison
PL-11	—	(a) Rock Quality Plot No. VII—2020 (b) Rock Quality Plot No. VII—2010 Photo for Comparison
PL-12	90	Vegetation on Cell Perimeter Road
PL-13	40	EnergySolutions Facility

Note:

— = Photograph taken vertically from above.



PL-1. EnergySolutions Fence Down



PL-2. Site Marker SMK-2



PL-3. Protective Casing on Boundary Monument BM-3



PL-4. Disposal Cell, South Side Toe Drainage



PL-5. Disposal Cell, East Side Toe Drainage



PL-6. Disposal Cell, West Side Apron



PL-7. (a) Rock Quality Plot No. 1—2020



PL-7. (b) Rock Quality Plot No. 1—2010 Photo for Comparison



PL-8. (a) Rock Quality Plot No. II—2020



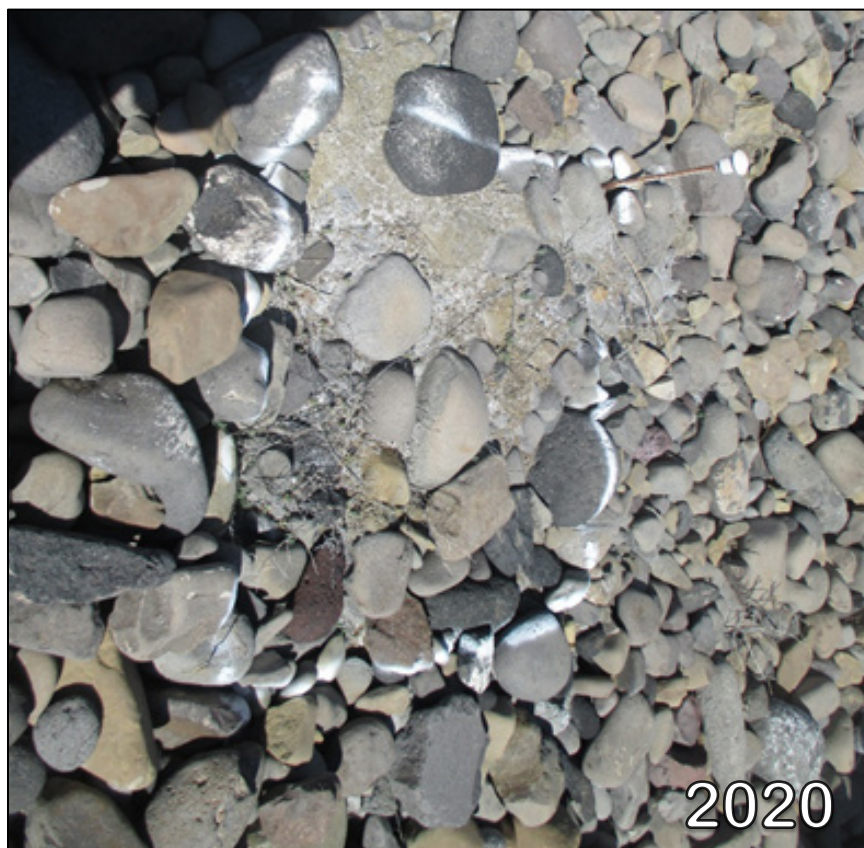
PL-8. (b) Rock Quality Plot No. II—2010 Photo for Comparison



PL-9. (a) Rock Quality Plot No. III—2020



PL-9. (b) Rock Quality Plot No. III—2010 Photo for Comparison



PL-10. (a) Rock Quality Plot No. IV—2020



PL-10. (b) Rock Quality Plot No. IV—2010 Photo for Comparison



PL-11. (a) Rock Quality Plot No. VII—2020



PL-11. (b) Rock Quality Plot No. VII—2010 Photo for Comparison



PL-12. Vegetation on Cell Perimeter Road



PL-13. EnergySolutions Facility

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