15.0 Annual Inspection of the Salt Lake City, Utah, UMTRCA Title I Disposal Site

15.1 Compliance Summary

The Salt Lake City, Utah, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site, inspected on May 9, 2012, is in good condition. During the 2010 annual inspection, 8 square-meter monitoring stations were constructed for the purpose of monitoring the small percentage of rock cover that is degrading. Observations of the rock quality monitoring stations performed during this inspection indicated very little change from the previous year. No change was observed in the three slight depressions found on the disposal cell top; visual monitoring for settlement will continue. No waste debris or indication of windblown or spillover contamination from EnergySolutions' adjacent radioactive waste disposal operations was noted. Radiological survey measurements performed during the 2012 inspection indicated that no windblown contamination was present. Corner boundary markers remain in good condition and protected with PVC pipe by EnergySolutions. EnergySolutions removed greasewood (*Sacrobatus vermiculatus*) adjacent to the southern drainage in 2011 as well as any windblown debris from inside the disposal cell boundary. Other minor maintenance issues, such as the removal of greasewood from around site marker SMK–1 and tumbleweeds from the inside perimeter, were also performed as requested in 2011. No maintenance needs or cause for a follow-up or contingency inspection was identified.

Numbers in the left margin of this report refer to items summarized in the "Executive Summary" table.

15.2 Inspection Requirements

The inspection was conducted in accordance with the *Long-Term Surveillance Plan for the South Clive Disposal Site, Clive, Utah* (DOE/AL/62350–228, Rev. 2, U.S. Department of Energy [DOE], September 1997; LTSP) and procedures established by DOE to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27. Table 15–1 lists these requirements.

Table 15–1. License Requirements for the Salt Lake City Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.0	Section 15.4
Follow-Up or Contingency Inspections	Section 3.4	Section 15.5
Routine Maintenance and Repairs	Section 5.0	Section 15.6
Groundwater Monitoring	Section 4.0	Section 15.7.1
Corrective Action	Section 6.0	Section 15.8

15.3 Institutional Controls

The 100-acre disposal site is owned by the United States of America and was accepted under the U.S. Nuclear Regulatory Commission general license (10 CFR 40.27) in 1997. DOE 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 at the site include federal ownership of the property and the following features that are inspected annually: site markers, boundary monuments, warning/no-trespassing signs, a site perimeter fence, and locked gates at the site entrances.

15.4 Inspection Results

The site, 85 miles west of Salt Lake City, Utah, was inspected on May 9, 2012. J. Gillespie and K. Turley of the S.M. Stoller Corporation, the Legacy Management Support contractor at the DOE office in Grand Junction, Colorado, conducted the inspection. J. Nguyen, the DOE Office of Legacy Management site manager, and R. Topham and C. Bishop, of the Utah Department of Environmental Quality, attended. EnergySolutions provided an escort, B. Kirkwood, accompanied by the chief engineer, D. Booth, and the compliance/permitting manager, S. McCandless.

The purposes of the annual inspection were to confirm the integrity of visible features at the site, to identify changes in conditions that may affect site integrity, and to determine the need, if any, for maintenance or additional inspections and monitoring.

15.4.1 Site Surveillance Features

The locations of site surveillance features are shown on Figure 15–1. Inspection results and recommended maintenance activities associated with site surveillance features are included in the following subsections. Photographs to support specific observations are identified in the text and on Figure 15–1 by photograph location (PL) numbers.

15.4.1.1 Entrance Gates, Entrance Signs, and Access Road

Access to the site is attained by following paved and graded roads to the EnergySolutions facility in Clive, Utah. The DOE disposal site is completely surrounded by EnergySolutions' active radioactive waste disposal operations. A perpetual right-of-way easement is in place that ensures DOE, and its representatives, continued access across EnergySolutions' property to the site. All personnel entering the EnergySolutions facility must sign in at the security building near the northwest corner of the site.

Because EnergySolutions' radioactive waste disposal activities surround the site, posted radiological control areas have to be crossed in order to access the site. Inspectors and other site visitors are, therefore, required by EnergySolutions to receive a radiological hazard awareness briefing, sign in on a Radiological Work Permit, and be issued a dosimeter before entering the site. Typically, the escort provided by EnergySolutions is also a health physics technician. Following the inspection, personnel and equipment are scanned upon leaving the radiological control area. Prior to leaving the EnergySolutions facility, inspectors and other visitors are again monitored for any radiological surface contamination with a personnel contamination monitor. Hardhats, safety glasses, and leather work boots are also required on EnergySolutions' property.

Access to the DOE disposal cell is via a route across EnergySolutions' property to the southwest corner of the site (site access was rerouted from the northwest corner in 2002 to accommodate EnergySolutions' waste disposal activities). Four locked gates provide access to the DOE disposal cell; one in the southwest corner of the chain-link perimeter fence that EnergySolutions maintains around the entire DOE property and three in the interior security fence DOE maintains around the disposal cell (two in the northwest corner and one in the southwest corner). The EnergySolutions escort admits inspectors through their perimeter gate in the southwest corner. DOE provides EnergySolutions access to the entire disposal site to perform, as needed, periodic maintenance activities through a signed access agreement and license. EnergySolutions is to notify DOE anytime access to the site is needed.

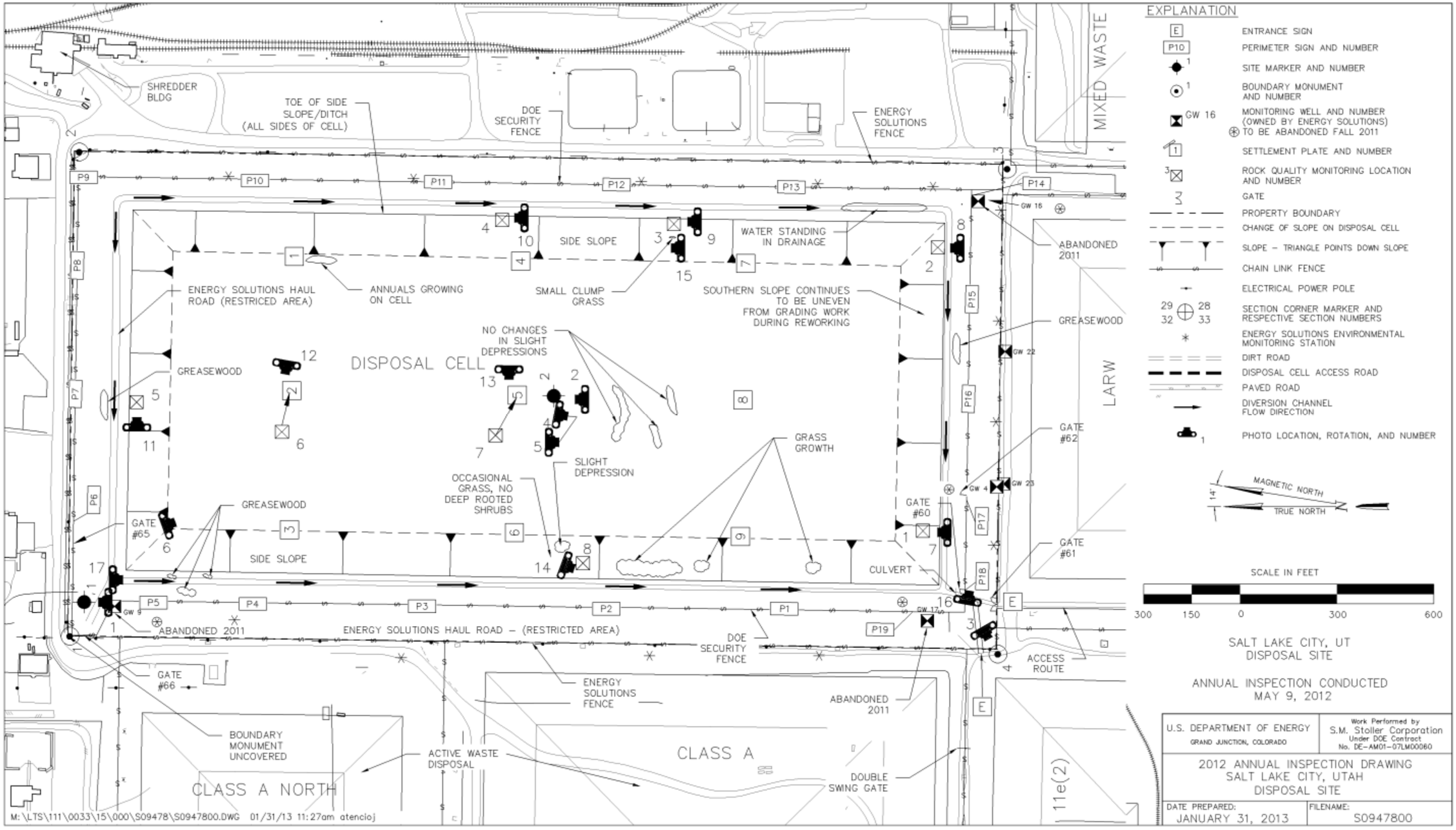

Figure 15–1. 2012 Annual Compliance Drawing for the Salt Lake City Disposal Site

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15.4.1.2 Perimeter Fence and Perimeter Signs

The exterior EnergySolutions fence was in good condition.

The DOE interior fence, site entrance sign, and all perimeter warning signs were present and in good condition. Decal number designations (1 through 18) have been placed on the outward-facing side of all perimeter signs to correspond with the numbered designations on the site map.

15.4.1.3 Site Markers

Both of the granite site markers were in excellent condition (PL–1 and PL–2). Site marker SMK–1 is etched from windblown sand and dirt, but it is legible. EnergySolutions had removed vegetation to clear the area surrounding SMK–1.

15.4.1.4 Survey Monuments and Boundary Monuments

All four boundary monuments were observed to be in good condition. The EnergySolutions protective casings at all four of the locations (PL–3) appeared to be working well for protection from surrounding earth moving activities.

15.4.1.5 Monitoring Wells

Supplemental standards based on limited use (40 CFR 192.21[g]) were applied to the groundwater in the uppermost aquifer underlying the site. The groundwater under the site was determined to be of limited use because of excessive total dissolved solids concentrations (greater than 10,000 parts per million) that naturally occur in the uppermost aquifer. Consequently, in accordance with the LTSP, no groundwater monitoring is required at the site.

Four groundwater monitoring wells that belong to EnergySolutions are located on DOE property. All four wells were properly abandoned in 2011. Abandonment reports are on file at the Utah Department of Environmental Quality and with the Office of Legacy Management.

15.4.2 Inspection Areas

In accordance with the LTSP, the site is divided into three inspection areas (referred to as "transects" in the LTSP) to ensure a thorough and efficient inspection: (1) the disposal cell (including the riprap-covered top and side slopes, diversion channels, and outflow channel), (2) the terrace area north and northeast of the disposal cell, and (3) the outlying area.

Within each area, the inspectors examined specific site surveillance features, drainage structures, vegetation, rock quality monitoring plots, and other features. Inspectors examined each area for evidence of erosion, settling, slumping, or other disturbances that might affect the site's integrity, protectiveness, or long-term performance.

15.4.2.1 Disposal Cell, Diversion Channels, and Outflow Channel

Inspectors walked the perimeter road that surrounds the base of the disposal cell and traversed the top and side slopes of the disposal cell. The crest (PL–4) of each side slope was inspected in order to provide a vantage point to view the planes of both the side slopes and the top of the

disposal cell (PL–5). The riprap was in good condition, and no evidence of erosion or slumping of the side slopes was observed. Several slight depressions in the riprap have been observed during previous inspections along the slopes of the cell, and they appear to have been created by the heavy equipment tracks during installation of the riprap (PL–6). These depressions continue to be monitored to ensure settlement is not occurring.

A minor portion of the riprap, approximately 1 percent (the percentage determined using eight square-meter grids installed during the 2010 inspection), showed signs of weathering (PL–7 through PL–14). The rock type was consistent, and the weathering effects were all similar. The material weathering does not pose a problem at this time, due to the estimated low percentage observed, but the eight square-meter grids have been permanently located as illustrated on the figure and will continue to be monitored during future inspections.

15A

No deep-rooted plants were found growing on the top or side slopes of the cell. However, vegetation was observed on the cell (PL–15), in areas where finer-grain material is filling voids, but does not pose a threat at this time.

Nine settlement plates are located on the cell top; several were inspected and found to be in good condition. Surveying of the settlement plates was conducted for several years following cell construction, but it is no longer required.

The inspectors examined the area between the toe of the disposal cell and the security fence. No evidence of slumping, settling, or significant vegetation encroachment was seen.

The perimeter road was in good condition. All surface water diversion channels were operating and in good condition during the 2012 inspection. Some standing water from recent precipitation was ponded in channels on the east and south sides (PL–16).

Minor plant encroachment has occurred within the diversion channels, with a few scattered greasewood plants observed growing along the top edge of these channels (PL–17). This vegetation does not interfere with the performance of the channels, but its size has increased since the last inspection. EnergySolutions has removed the larger vegetation.

15.4.2.2 Outlying Area

The site perimeter transect extends from the security fence to 0.25 mile beyond the site boundary. This transect includes the EnergySolutions perimeter fence, the enclosed area between the two fences, the outflow channel, and monitoring wells. All features were in good condition.

A variety of features and ongoing waste disposal activities managed by EnergySolutions surround the site. The most obvious waste disposal activities are occurring directly west of the site, where a Class A (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 an 11e(2) waste disposal cell, and to the southeast is an operating mixed-waste treatment and disposal facility. Administration, security, and maintenance buildings lie directly to the north-northwest. A shredding facility, rotary dump, and railroad spur delivery loop are located to the northwest.

All areas surrounding DOE's property are restricted due to radiological hazards resulting from these waste disposal activities conducted by EnergySolutions. However, EnergySolutions ensures perpetual access to the site. Personnel radiological protection procedures are enforced as previously discussed.

15.4.2.3 Cursory Scanning for Spillover and Windblown Radioactive Surface Contamination

Radiological surveys for spillover and windblown radioactive contamination are generally performed onsite every other year during the inspection due to concerns regarding the ongoing radioactive waste disposal activities being conducted by EnergySolutions adjacent to the site. Survey measurements include taking dose rate measurements at random locations across the site, and the collection of smears are subsequently analyzed for removable alpha/beta contamination. In addition, EnergySolutions maintains several surface soil radiological monitoring and sampling stations, and performs routine scanning onsite, just inside the DOE property boundary.

A radiological survey was performed in 2010 as part of the inspection by an EnergySolutions Rad Tech and again during the 2012 inspection. Results of both surveys are included as part of this 2012 annual inspection report, as an attachment. All radiological survey measurements were below the DOE *Radcon Manual* limits. A prior radiological survey in 2007 also resulted in measurements below DOE *Radcon Manual* limits, which indicates that spillover and windblown radiological contamination does not currently appear to be an issue onsite. EnergySolutions performs periodic walkthroughs of the site to remove any windblown debris. No radiological waste items were found on the site in 2012.

15.5 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) an annual inspection or other site visit reveals a condition that must be reevaluated during a return to the site, or (2) a citizen or outside agency notifies DOE that conditions at the site are substantially changed.

No need for a follow-up or contingency inspection was identified during the inspection.

15.6 Maintenance and Repairs

No maintenance needs were identified during the inspection.

15.7 Environmental Monitoring

15.7.1 Groundwater Monitoring

In accordance with 40 CFR 192.21(g), groundwater at the site qualifies for narrative supplemental standards. Groundwater was determined to be of limited use due to naturally occurring concentrations of total dissolved solids in the uppermost aquifer, which exceed 10,000 milligrams per liter. Consequently, the LTSP does not require groundwater monitoring at the site.

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 corrective action was required in 2012.

15.9 Photographs

Photo Location Number	Azimuth	Description
PL–1	0	Site marker SMK–1's pitted surface.
PL–2	0	Site marker SMK–2.
PL–3	240	Boundary corner number 4.
PL–4	190	View of western slope of cell.
PL–5	180	View across the top of cell.
PL–6	160	View southeast across top of the cell.
PL–7	0	Rock Degradation Plot No. 1.
PL–8	0	Rock Degradation Plot No. 2.
PL–9	0	Rock Degradation Plot No. 3 (eastern slope).
PL–10	0	Rock Degradation Plot No. 4.
PL–11	90	Rock Degradation Plot No. 5.
PL–12	280	Rock Degradation Plot No. 6.
PL–13	270	Rock Degradation Plot No. 7.
PL–14	200	Rock Degradation Plot No. 8.
PL–15	0	Clump of grass in finer-grain materials.
PL–16	100	Standing water in drain south side of perimeter road.
PL–17	180	View along drainage west of perimeter road with greasewood.

SLD 5/2012. PL–1. Site marker SMK–1's pitted surface.

SLD 5/2012. PL–2. Site marker SMK–2.

SLD 5/2012. PL–3. Boundary corner number 4.

SLD 5/2012. PL–4. View of western slope of cell.

SLD 5/2012. PL–5. View across the top of cell.

SLD 5/2012. PL–6. View southeast across top of the cell.

SLD 5/2012. PL–7. Rock Degradation Plot No. 1.

SLD 5/2012. PL–8. Rock Degradation Plot No. 2.

SLD 5/2012. PL–9. Rock Degradation Plot No. 3 (eastern slope).

SLD 5/2012. PL–10. Rock Degradation Plot No. 4.

SLD 5/2012. PL–11. Rock Degradation Plot No. 5.

SLD 5/2012. PL–12. Rock Degradation Plot No. 6.

SLD 5/2012. PL–13. Rock Degradation Plot No. 7.

SLD 5/2012. PL–14. Rock Degradation Plot No. 8.

SLD 5/2012. PL–15. Clump of grass in finer-grain materials.

SLD 5/2012. PL–16. Standing water in drain south side of perimeter road.

SLD 5/2012. PL–17. View along drainage west of perimeter road with greasewood.

COPY

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Radiological Survey Form

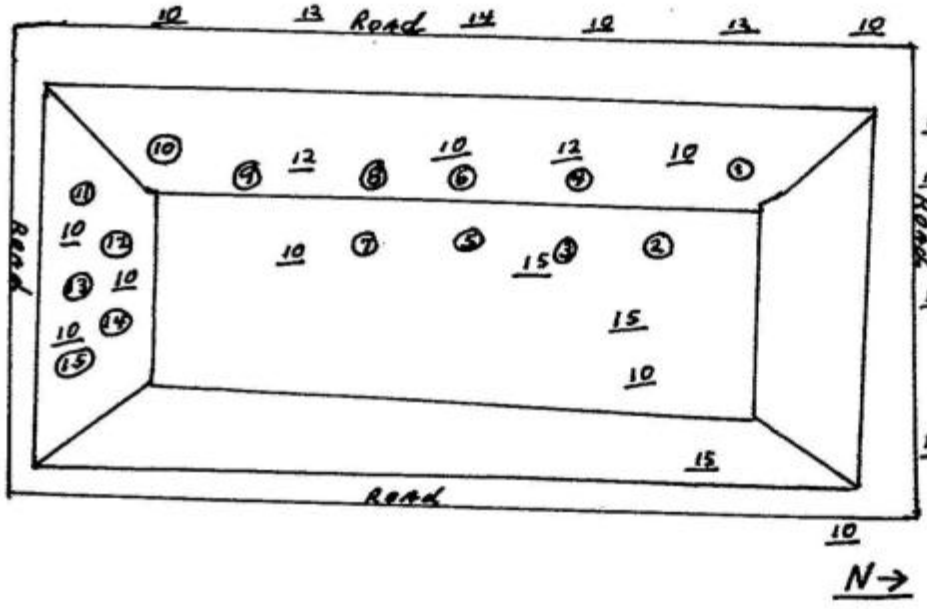
CL-RS-PR-112 F1
Rev. 0

Survey Information

Date: 5-12-10
Survey number: ~~N/A~~
Bates number: N/A
Location: VITRO CELL
Item: N/A
Reason: INSPECTION

Instrument Information

Model	Serial Number	Cal Due	Background alpha	Background beta	MDA alpha	MDA beta
3030	222777	9-19-10	0.0	50.4	7.7	87.5
3030	222790	10-14-10	0.0	37.8	7.7	81.2
BICRON	1957	7-28-10	N/A			N/A
N/A						



	Location	dpm/100cm² alpha	dpm/100cm² beta
1	GROUND ROCK	5	0
2		0	31
3		0	0
4		0	19
5		0	0
6		2	6
7		0	0
8		2	31
9		2	0
10		0	19
11		5	0
12		0	0
13		5	15
14		0	19
15	GROUND ROCK	0	0
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

N/A

(#) Denotes: Swipe location. (#) Denotes: Direct survey location. # Denotes: General Area dose rate.

All dose rate are in urem/hr unless otherwise noted

Remarks: DOSE RATE IN UREM/HR

Surveyed by (Print): LEO G. BLANCO JR Sign: Leo G Blanco Jr Date: 5-12-10
Surveyed by (Print): N/A Sign: N/A Date: N/A
Reviewed by (Print): SLong Sign: SLong Date: 5-12-10

Page ___ of ___

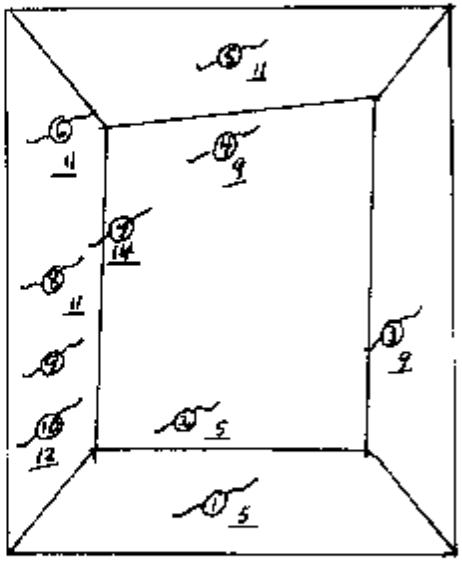
FY2012

ENERGYSOLUTIONS

Radiological Survey Form

CL-RS-PR-112 F1
Rev. 0

Survey Information		Instrument Information			Background		MDA	
		Model	Serial Number	Cal Due	alpha	beta	alpha	beta
Date: 5-9-12		2360	202414	4-12-12 7-17-12	1.0	229.2	110	1100
Survey number: U12-828		Ortec	1525	6-14-12	N/A			N/A
Rates number: N/A								
Location: Vitro GEW								
Item: Ground								
Reason: Inspection								



	Location	dpm/100cm² alpha	beta
1	Ground	0	81
2	Ground	13	204
3		16	198
4		15	143
5		6	220
6		33	206
7		43	338
8		33	291
9		6	171
10	Ground	30	195
11			
12			
13			
14			
15			
16			
17			
18		N/A	
19			
20			
21			
22			
23			
24			
25			

Remarks: Highest contact dose rate: 0.014 mrem/hr. All swipes are large area swipes (100) swipe divide by (3) due to large area swipe.

Surveyed by (Print): Lee G Blanco Sign: Lee G Blanco Date: 5-9-12
Surveyed by (Print): N/A Sign: N/A Date: N/A
Reviewed by (Print): S Long Sign: S Long Date: 5/9/12

Page 1 of 1

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