

**ISRA 009 – IEL-2.
Soil Sampling for Radionuclides.
Results and Statistical Analysis.
Waste Certification.**

This data package provides the laboratory results and statistical analysis of the 8 samples taken at the ISRA Outfall 009, IEL-2 area. This analysis and data interpretation complies with the procedure approved by the California Department of Public Health¹.

Samples taken for waste disposal characterization were analyzed for strontium-90, tritium and gamma emitting radionuclides by gamma spectroscopy, using an off-site laboratory. Minimum detectable activity (MDA) for cesium-137 and strontium-90 averaged ~0.033 pCi/g and ~0.043 pCi/g respectively. Minimum detectable activity for tritium averaged ~1.0 pCi/g. The gamma spectroscopy library also included the following contaminants-of-concern: Na-22, K-40, Mn-54, Co-60, Cs-134, Cs-137, Eu-152, Eu-154, Th-228, Th-232, U-235, U-238 and Am-241.

Statistical evaluation of sample analytical results to determine whether or not the sampled waste contains Cs-137 or Sr-90 activity elevated above local background was conducted using the Wilcoxon Rank Sum Test using protocols described in NUREG-1505² and DTSC guidance³ (See Appendix 1). Appendix 2 shows the complete analytical results for all radionuclides. Complete laboratory data packages are available on request.

Local background data for cesium-137 and strontium-90 was taken from Table 20 of the 1995 McLaren/Hart report⁴. Background for tritium in soil is not well established, and is not reported in the 1995 McLaren/Hart report, therefore tritium background in soil is conservatively assumed to be zero. Tritium data is therefore compared to the MDA of the analysis and the EPA preliminary remediation goal (PRG)⁵ for residential 10^{-6} risk.

Conclusions

Cesium-137 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from IEL-2 does not exceed the local background for Cs-137, indeed is all non-detect. The incremental dose from Cs-137 above background is therefore zero mrem/y. The highest Cs-137 result is 0.011 pCi/g which is less than the highest background result of 0.21 pCi/g. The highest non-background subtracted Cs-137 result is equivalent to an effective dose of 0.0077 mrem/y⁶.

¹ Boeing, "Northern Drainage Waste Sampling for Radionuclides." Revision 9, November 5, 2007. (Attachment 3 to Northern Drainage Work Plan) and "ISRA Waste Sampling for Radionuclides", Attachment A to the ISRA Soil Management Plan.

² NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998. http://www.philrutherford.com/Radiation_Cleanup_Standards/NUREG-1505.pdf

³ DTSC, "Selecting Inorganic Constituents as Chemicals of Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities." February 1997.

⁴ McLaren/Hart, "Additional Soil and Water Sampling at the Brandeis-Bardin Institute and Santa Monica Mountains Conservancy." Jan 19, 1995. <http://www.etec.energy.gov/Health-and-Safety/Documents/BrandeisBardin/AddSoilandWaterSamp.pdf>

⁵ EPA preliminary remediation goals for radionuclides - <http://epa-prgs.ornl.gov/radionuclides/>.

Strontium-90 - Based on the results of the statistical analysis of Appendix 1, soil to be excavated from IEL-2 does not exceed the local background for Sr-90, indeed is all non-detect. The incremental dose from Sr-90 above background is therefore zero mrem/y. The highest Sr-90 result is 0.025 pCi/g which is non-detect and less than the highest background result of 0.13 pCi/g. The highest non-background subtracted, non-detect Sr-90 result is equivalent to an effective dose of 0.0077 mrem/y⁶.

Tritium - All tritium results are non-detect, the average tritium result is -0.38 pCi/g and the highest tritium result is 0.0 pCi/g. The highest non-detected, non-background subtracted tritium result is equivalent to an effective dose of 0.0 mrem/y⁶.

This waste is certified to be “radiologically” acceptable for shipment to, and disposal at, any waste disposal facility. The waste requires no further radiological controls.

This waste meets the requirements of disposal facility permits^{7,8} and complies with the California Health & Safety Code⁹.

The Governor’s Executive Order D-62-02 prohibits the “*disposal of decommissioned materials to Class III landfills or unclassified management units.*” The soil from IEL-2 is not decommissioned material, and does not originate from the proximity of any radiological facility. The sampling in this certification has therefore been conducted as a best management practice that complies with the requirements of D-62-02. Verification sampling and/or approval by the California Department of Public Health (CDPH) Radiologic Health Branch (RHB) are not required for the off-site disposal of decommissioned material or of the subject material¹⁰.

⁶ EPA dose compliance concentrations for radionuclides - <http://epa-dccs.ornl.gov/>. Soil concentrations that meet the 10⁻⁶ residential risk PRG are < 0.1 mrem/y. The Cs-137 residential PRG of 0.0597 pCi/g is equivalent to 0.042 mrem/y. The Sr-90 residential PRG of 0.231 pCi/g is equivalent to 0.071 mrem/y. The tritium residential PRG of 2.28 pCi/g is equivalent to 0.032 mrem/y.

⁷ This waste is exempt from regulation and licensing or is expressly authorized for disposal under the Radiation Control Law (Division 104, Part 9, Chapter 8 of the California Health & Safety Code).

⁸ This waste is not prohibited from disposal by any government agency with jurisdictional authority over this waste.

⁹ Division 104, Part 9, Chapter 5, Article 1, Section 114715, “No person shall bury, throw away, or in any manner dispose of radioactive wastes within the state except in a manner and at locations as will result in no significant radioactive contamination of the environment.” For the purposes of this requirement, “significant” is defined in Section 114710 as amounts of radioactive materials that are likely to expose persons to ionizing radiation greater than the guide levels published by the Federal Radiation Council (FRC). The FRC no longer exists, but the applicable guide level last published by the FRC was 500 mrem per year to a member of the public. Because the regulatory dose limit to members of the public has since been lowered to 100 mrem per year, CDPH/RHB conservatively utilizes the lower dose for purposes of defining “significant” radioactive contamination in this Article of the California Health and Safety Code.
<http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=114001-115000&file=114705-114780>

¹⁰ The California Department of Public Health (CDPH) Radiologic Health Branch (RHB) has stated in a November 9, 2007 email to Phil Rutherford (Boeing) ... “*The Governor’s Executive Order D-62-02, does not specifically require the Department of Health Services (now the Department of*



Phil Rutherford
Manager, Health, Safety & Radiation Services

Public Health) to perform verification sampling of decommissioned material or to provide approval for disposal of specific decommissioned material shipped offsite (e.g., to Class I or II landfills). The California DPH has not imposed a requirement that Boeing or the Department of Energy (DOE) seek DPH verification sampling or approval of all decommissioned material destined for Class I or II landfills in compliance with the Governor's Executive Order."

Appendix 1

Wilcoxon Rank Sum Statistical Test for Cesium-137 and Strontium-90

Wilcoxon Rank Sum Test -- (Cesium-137)**General Information:**

The WRS tests whether or not measurements of samples from a survey area (S) tend to be consistently larger than those from a background reference area (R) by more than the DCGL.

The null hypothesis, H_0 , is: Survey sample concentrations exceed those in the background

The alternative hypothesis, H_a , is: Survey sample concentrations do not exceed those in the background

Instruction on how to use this template:

- 1) Enter analysis results in pCi/gram
- 2) Enter number of samples for background and survey data sets, m and n.
- 3) The WRS test is calculated using the method prescribed in NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998.

DCGL (pCi/g)	0.00
Type I Error Rate, Alpha:	0.05
Type II Error Rate, Beta:	0.05
Number of Background Samples, m:	51
Number of Survey Samples, n:	8
Z-value for Alpha	1.645
Critical Value	1604
Sum of Reference Ranks	1734

If the sum of the reference ranks is larger than the critical value, there is enough evidence to reject the null hypothesis and accept the alternative hypothesis. Otherwise the null hypothesis is accepted.

Test Result:

Survey sample concentrations do not exceed those in the background by more than the DCGL

	Bkgd Ref (R)	Survey (S)
Mean	0.087	-0.008
Max	0.213	0.011
Min	0.015	-0.030
σ	0.062	0.013
$m-1.96\sigma$	-0.035	-0.033
$m+1.96\sigma$	0.210	0.017

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
1		0.092	0.092	R	36	36
2		0.020	0.020	R	15	15
3		0.020	0.020	R	15	15
4		0.100	0.100	R	40.5	40.5
5		0.020	0.020	R	15	15
6		0.158	0.158	R	51.5	51.5
7		0.175	0.175	R	53	53
8		0.209	0.209	R	58	58
9		0.180	0.180	R	54	54
10		0.030	0.030	R	23	23
11		0.213	0.213	R	59	59
12		0.025	0.025	R	20	20
13		0.020	0.020	R	15	15
14		0.020	0.020	R	15	15
15		0.074	0.074	R	32	32
16		0.147	0.147	R	47	47
17		0.100	0.100	R	40.5	40.5

No.	Soil ID	Cs-137	Adjusted Cs-137	Area	Ranks	Reference Ranks
18		0.067	0.067	R	30.5	30.5
19		0.099	0.099	R	39	39
20		0.101	0.101	R	42	42
21		0.148	0.148	R	48	48
22		0.153	0.153	R	50	50
23		0.025	0.025	R	20	20
24		0.188	0.188	R	55	55
25		0.198	0.198	R	57	57
26		0.030	0.030	R	23	23
27		0.079	0.079	R	33	33
28		0.158	0.158	R	51.5	51.5
29		0.109	0.109	R	43	43
30		0.059	0.059	R	29	29
31		0.067	0.067	R	30.5	30.5
32		0.113	0.113	R	44	44
33		0.015	0.015	R	10	10
34		0.031	0.031	R	25	25
35		0.042	0.042	R	28	28
36		0.097	0.097	R	37.5	37.5
37		0.015	0.015	R	10	10
38		0.020	0.020	R	15	15
39		0.085	0.085	R	35	35
40		0.080	0.080	R	34	34
41		0.015	0.015	R	10	10
42		0.020	0.020	R	15	15
43		0.035	0.035	R	26.5	26.5
44		0.035	0.035	R	26.5	26.5
45		0.025	0.025	R	20	20
46		0.150	0.150	R	49	49
47		0.140	0.140	R	45.5	45.5
48		0.190	0.190	R	56	56
49		0.097	0.097	R	37.5	37.5
50		0.030	0.030	R	23	23
51		0.140	0.140	R	45.5	45.5
52	ILWC0005S001	-0.030	-0.030	S	1	0
53	ILWC0006S001	-0.009	-0.009	S	4	0
54	ILWC0007S001	0.011	0.011	S	8	0
55	ILWC0008S001	0.002	0.002	S	7	0
56	ILWC0009S001	-0.012	-0.012	S	3	0
57	ILWC0010S001	-0.007	-0.007	S	5	0
58	ILWC0011S001	0.001	0.001	S	6	0
59	ILWC0012S001	-0.018	-0.018	S	2	0
Sum					1770	1734

Wilcoxon Rank Sum Test -- (Strontium-90)**General Information:**

The WRS tests whether or not measurements of samples from a survey area (S) tend to be consistently larger than those from a background reference area (R) by more than the DCGL..

The null hypothesis, Ho, is: Survey sample concentrations exceed those in the background

The alternative hypothesis, Ha, is: Survey sample concentrations do not exceed those in the background

Instruction on how to use this template:

- 1) Enter analysis results in pCi/gram
- 2) Enter number of samples for background and survey data sets, m and n.
- 3) The WRS test is calculated using the method prescribed in NUREG-1505, Nuclear Regulatory Commission, "A Non-parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys." January 1998.

DCGL (pCi/g)	0.00
Type I Error Rate, Alpha:	0.05
Type II Error Rate, Beta:	0.05
Number of Background Samples, m:	51
Number of Survey Samples, n:	8
Z-value for Alpha	1.645
Critical Value	1604
Sum of Reference Ranks	1717

If the sum of the reference ranks is larger than the critical value, there is enough evidence to reject the null hypothesis and accept the alternative hypothesis. Otherwise the null hypothesis is accepted.

Test Result:

Survey sample concentrations do not exceed those in the background by more than the DCGL

	Bkgd Ref (R)	Survey (S)
Mean	0.051	-0.001
Max	0.130	0.025
Min	0.005	-0.020
σ	0.030	0.018
m-1.96 σ	-0.008	-0.035
m+1.96 σ	0.109	0.034

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
1		0.030	0.030	R	20	20
2		0.010	0.010	R	8.5	8.5
3		0.045	0.045	R	34.5	34.5
4		0.045	0.045	R	34.5	34.5
5		0.050	0.050	R	44	44
6		0.040	0.040	R	26	26
7		0.035	0.035	R	22.5	22.5
8		0.050	0.050	R	44	44
9		0.050	0.050	R	44	44
10		0.130	0.130	R	58.5	58.5
11		0.120	0.120	R	57	57
12		0.040	0.040	R	26	26
13		0.045	0.045	R	34.5	34.5
14		0.130	0.130	R	58.5	58.5
15		0.050	0.050	R	44	44
16		0.088	0.088	R	52	52
17		0.080	0.080	R	49	49
18		0.100	0.100	R	56	56
19		0.069	0.069	R	48	48
20		0.097	0.097	R	54	54

No.	Soil ID	Sr-90	Adjusted Sr-90	Area	Ranks	Reference Ranks
21		0.084	0.084	R	51	51
22		0.098	0.098	R	55	55
23		0.045	0.045	R	34.5	34.5
24		0.045	0.045	R	34.5	34.5
25		0.020	0.020	R	12	12
26		0.045	0.045	R	34.5	34.5
27		0.089	0.089	R	53	53
28		0.050	0.050	R	44	44
29		0.045	0.045	R	34.5	34.5
30		0.050	0.050	R	44	44
31		0.045	0.045	R	34.5	34.5
32		0.040	0.040	R	26	26
33		0.045	0.045	R	34.5	34.5
34		0.045	0.045	R	34.5	34.5
35		0.045	0.045	R	34.5	34.5
36		0.025	0.025	R	17.5	17.5
37		0.082	0.082	R	50	50
38		0.045	0.045	R	34.5	34.5
39		0.040	0.040	R	26	26
40		0.035	0.035	R	22.5	22.5
41		0.025	0.025	R	17.5	17.5
42		0.005	0.005	R	6	6
43		0.020	0.020	R	12	12
44		0.010	0.010	R	8.5	8.5
45		0.020	0.020	R	12	12
46		0.020	0.020	R	12	12
47		0.050	0.050	R	44	44
48		0.030	0.030	R	20	20
49		0.030	0.030	R	20	20
50		0.020	0.020	R	12	12
51		0.040	0.040	R	26	26
52	ILWC0005S001	0.005	0.005	S	7	0
53	ILWC0006S001	0.000	0.000	S	5	0
54	ILWC0007S001	0.025	0.025	S	16	0
55	ILWC0008S001	-0.020	-0.020	S	1	0
56	ILWC0009S001	0.024	0.024	S	15	0
57	ILWC0010S001	-0.009	-0.009	S	4	0
58	ILWC0011S001	-0.012	-0.012	S	3	0
59	ILWC0012S001	-0.019	-0.019	S	2	0
				Sum	1770	1717

Soil Data from ISRA 009 - IEL-2

No.	Sample ID	Stockpile ID	Sampling Date	Laboratory Batch	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
					Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?
1	ILWC0005S001	N/A	4/28/2010	251963	-0.0297	0.0186	0.0317	NDA	0.00509	0.0213	0.0398	NDA	-0.312	0.449	0.795	NDA
2	ILWC0006S001	N/A	4/28/2010	251963	-0.00937	0.0218	0.0375	NDA	0.000213	0.0184	0.0367	NDA	0	0.641	1.1	NDA
3	ILWC0007S001	N/A	4/28/2010	251963	0.0108	0.0181	0.0327	NDA	0.0249	0.0237	0.0385	NDA	-0.503	0.436	0.784	NDA
4	ILWC0008S001	N/A	4/28/2010	251963	0.00244	0.0189	0.0337	NDA	-0.0198	0.0234	0.049	NDA	-0.148	0.632	1.1	NDA
5	ILWC0009S001	N/A	4/30/2010	252094	-0.0124	0.0177	0.0305	NDA	0.0236	0.0224	0.0362	NDA	-0.677	0.611	1.09	NDA
6	ILWC0010S001	N/A	4/30/2010	252094	-0.00699	0.0194	0.0339	NDA	-0.00946	0.022	0.0464	NDA	-0.287	0.632	1.1	NDA
7	ILWC0011S001	N/A	4/28/2010	251963	0.00137	0.0173	0.0299	NDA	-0.0117	0.0221	0.0463	NDA	-0.589	0.628	1.11	NDA
8	ILWC0012S001	N/A	4/28/2010	251963	-0.0183	0.0204	0.0331	NDA	-0.0188	0.022	0.0479	NDA	-0.524	0.621	1.1	NDA

	Cesium-137 (pCi/g)				Strontium-90 (pCi/g)				Tritium (pCi/g)			
	Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?	Activity	+/- 2σ Error	MDA	Non-detect?
Average	-0.008		0.033		-0.001		0.043		-0.380		1.022	
Maximum	0.011		0.038		0.025		0.049		0.000		1.110	
Minimum	-0.030		0.030		-0.020		0.036		-0.677		0.784	
Count				8				8				8
Number of Non-Detects				8				8				8
% Non-Detects				100%				100%				100%

Appendix 2
Radionuclide Results

ISRA Outfall 009 - IEL-2

Project Name	Sampling Organization	Sampling Date	Sampling Location (General)	Sampling Location (Specific)	Sample Serial Number	Media Type	Isotope	Value	Error (+/-)	MDA	Non-Detect?	Units	Error Type	Analysis Protocol	Analysis Organization	Document	Status
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Americium-241	-0.0095	0.0199	0.0336	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Americium-241	0.0504	0.0989	0.193	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Americium-241	0.0582	0.0853	0.142	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Americium-241	0.0346	0.115	0.2	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Americium-241	-0.036	0.106	0.206	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Americium-241	0.0643	0.0786	0.141	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Americium-241	-0.0265	0.0705	0.124	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Americium-241	0.103	0.0725	0.123	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Cesium-134	0	0.0308	0.0396	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Cesium-134	0.0395	0.0297	0.0545	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Cesium-134	0	0.0408	0.0449	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Cesium-134	0	0.0366	0.0525	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Cesium-134	0	0.0364	0.0464	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Cesium-134	0	0.0358	0.0516	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Cesium-134	0	0.033	0.0464	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Cesium-134	0	0.0403	0.0484	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Cesium-137	-0.0297	0.0186	0.0317	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Cesium-137	-0.00937	0.0218	0.0375	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Cesium-137	0.0108	0.0181	0.0327	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Cesium-137	0.00244	0.0189	0.0337	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Cesium-137	-0.0124	0.0177	0.0305	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Cesium-137	-0.00699	0.0194	0.0339	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Cesium-137	0.00137	0.0173	0.0299	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Cesium-137	-0.0183	0.0204	0.0331	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Cobalt-60	3.43E-05	0.0155	0.0266	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Cobalt-60	-0.00226	0.0245	0.0413	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Cobalt-60	-0.00174	0.0179	0.0307	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Cobalt-60	-0.011	0.021	0.0341	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Cobalt-60	0.0117	0.0182	0.0332	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Cobalt-60	0.000189	0.0203	0.0349	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Cobalt-60	0.0103	0.0183	0.0323	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Cobalt-60	-0.026	0.0223	0.0341	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Europium-152	-0.023	0.0359	0.0623	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Europium-152	0.0226	0.0582	0.102	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Europium-152	-0.0195	0.0612	0.0809	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Europium-152	-0.000526	0.0596	0.0931	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Europium-152	0.0135	0.048	0.0778	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Europium-152	-0.0194	0.0533	0.0821	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Europium-152	0.00415	0.0476	0.0778	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Europium-152	0.0216	0.0814	0.0879	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Europium-154	-0.0232	0.054	0.0905	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Europium-154	0.0439	0.0759	0.135	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Europium-154	-0.0235	0.0582	0.0987	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Europium-154	-0.00404	0.0641	0.11	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Europium-154	-0.0185	0.0639	0.109	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Europium-154	-0.0114	0.062	0.105	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Europium-154	-0.0418	0.0634	0.101	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Europium-154	0.0294	0.0732	0.128	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Manganese-54	-0.00597	0.0153	0.0261	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Manganese-54	0.00974	0.0232	0.0407	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Manganese-54	0.0176	0.0193	0.0303	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Manganese-54	-0.00171	0.0199	0.0341	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Manganese-54	0.00797	0.0178	0.0319	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Manganese-54	0.0154	0.0193	0.0348	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Manganese-54	0.00972	0.0177	0.0323	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Manganese-54	0.0037	0.021	0.0358	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Potassium-40	21.6	1.95	0.214	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Potassium-40	23.9	2.47	0.317	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Potassium-40	22.9	2.57	0.275	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Potassium-40	21.4	2.13	0.264	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Potassium-40	22.3	2.28	0.264	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Potassium-40	22.1	2.17	0.299	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Potassium-40	23.4	2.22								

ISRA Outfall 009 - IEL-2

Project Name	Sampling Organization	Sampling Date	Sampling Location (General)	Sampling Location (Specific)	Sample Serial Number	Media Type	Isotope	Value	Error (+/-)	MDA	Non-Detect?	Units	Error Type	Analysis Protocol	Analysis Organization	Document	Status
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Potassium-40	25.8	2.45	0.291		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Sodium-22	0.000281	0.0185	0.0319	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Sodium-22	0.0161	0.0267	0.0475	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Sodium-22	-0.00954	0.0203	0.0344	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Sodium-22	-0.00176	0.0225	0.0385	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Sodium-22	-0.0138	0.0228	0.0381	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Sodium-22	-0.00486	0.0217	0.0368	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Sodium-22	-0.017	0.0224	0.0355	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Sodium-22	0.011	0.0258	0.0452	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Strontium-90	0.00509	0.0213	0.0398	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Strontium-90	0.000213	0.0184	0.0367	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Strontium-90	0.0249	0.0237	0.0385	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Strontium-90	-0.0198	0.0234	0.049	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Strontium-90	0.0236	0.0224	0.0362	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Strontium-90	-0.00946	0.022	0.0464	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Strontium-90	-0.0117	0.0221	0.0463	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Strontium-90	-0.0188	0.022	0.0479	NDA	pCi/g	2 sigma	EPA 905.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Thorium-228	1.3	0.152	0.0346		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Thorium-228	1.19	0.166	0.0795		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Thorium-228	1.3	0.138	0.0504		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Thorium-228	1.24	0.144	0.0533		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Thorium-228	1.05	0.126	0.0591		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Thorium-228	1.23	0.13	0.0506		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Thorium-228	1.25	0.157	0.0478		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Thorium-228	1.16	0.125	0.0521		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Thorium-232	1.23	0.197	0.0992		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Thorium-232	1.37	0.266	0.151		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Thorium-232	1.41	0.251	0.109		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Thorium-232	1.2	0.227	0.129		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Thorium-232	1.21	0.238	0.118		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Thorium-232	1.41	0.251	0.125		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Thorium-232	1.2	0.207	0.123		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Thorium-232	1.15	0.217	0.134		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Tritium	-0.312	0.449	0.795	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Tritium	0	0.641	1.1	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Tritium	-0.503	0.436	0.784	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Tritium	-0.148	0.632	1.1	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Tritium	-0.677	0.611	1.09	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Tritium	-0.287	0.632	1.1	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Tritium	-0.589	0.628	1.11	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Tritium	-0.524	0.621	1.1	NDA	pCi/g	2 sigma	EPA 906.0 Modified	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Uranium-235	0.0141	0.0697	0.124	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Uranium-235	0.0229	0.128	0.222	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Uranium-235	0.145	0.116	0.195	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Uranium-235	0.0871	0.111	0.21	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Uranium-235	-0.0502	0.104	0.181	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Uranium-235	-0.0328	0.119	0.185	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Uranium-235	0.06	0.0972	0.172	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Uranium-235	0.0783	0.114	0.2	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0005	ILWC0005S001	Soil	Uranium-238	0.817	0.372	0.342		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0006	ILWC0006S001	Soil	Uranium-238	0.135	0.941	1.73	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/30/2010	IEL-2	ILWC0007	ILWC0007S001	Soil	Uranium-238	1.32	0.978	1.21		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	252094	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0008	ILWC0008S001	Soil	Uranium-238	1.15	1.19	1.53	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0009	ILWC0009S001	Soil	Uranium-238	0.741	0.91	1.73	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0010	ILWC0010S001	Soil	Uranium-238	1.17	0.777	1.2	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0011	ILWC0011S001	Soil	Uranium-238	0.336	0.651	1.18	NDA	pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste
2010 ISRA Waste Characterization	MWH	4/28/2010	IEL-2	ILWC0012	ILWC0012S001	Soil	Uranium-238	1.13	0.852	1.1		pCi/g	2 sigma	DOE HASL 300, 4.5.2.3/Ga-01-R	GEL	251963	Waste

Outfall 009 Waste Characterization Sample Locations for IEL-2

- Base Map Legend**
- Administrative Area Boundary
 - RFI Site Boundary
 - Report Group Boundary
 - NPDES Outfall
 - A/C Paving
 - Drainage
 - Non Jurisdictional Surface Water Pathway
 - Surface Water Divide
 - Elevation Contour

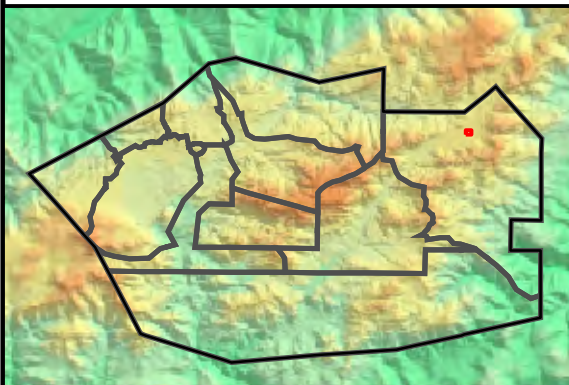
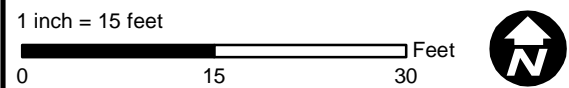
- Base Map Legend**
- ISRA Excavation Boundary
 - Waste Characterization Sample Location



Note:

1. Sample locations and depths were randomly selected. The 3ft x 3ft grid used in the sample location selection process is shown.
2. Aerial imagery from Google Earth, 2010.
3. Topographic contours from Lidar data, 2008.

Document: ISRA_Plots_SP_IEL-2_SampleLocations_062110_WC.mxd Date: Jun 21, 2010



S A N T A S U S A N A F I E L D L A B O R A T O R Y

FIGURE 1