TEXAS Health and Human Services | Texas Department of State Health Services

Radiation Inspection Branch

Environmental Monitoring Summary

for 2016

October 2018

NOTE: Items within these environmental summaries have been removed due to confidential homeland security information under The Texas Public Information Act and House Bill 9, Gov. § code 418.

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Introduction

The document consists of the data collected for each monitoring point at each facility. The data are presented in the same manner as in the past. Limits of detection were not included with data in an effort to reduce the space required for data entry. A listing of expected limits of detection for various media, geometries, and radionuclides is found in the appendices. Maps of the facilities are included, but some details have been omitted. Specific information about individual facilities can be found in the license files. Redacted copies of this and previous annual reports can be found at http://www.dshs.state.tx.us/radiation/publications.shtm

All analyses of environmental media, i.e., soil, air, water, vegetation, and sewage are performed by the Texas Department of State Health Services (DSHS), Laboratory Services Section. The Laboratory Services Section operates a highly capable radio-chemistry program. Currently, the Environmental Sciences Branch participates in a program sponsored by the United States Department of Energy (USDOE), referred to as Department of Energy Laboratory Accreditation Program. It was developed by the USDOE in order to provide quality assurance and control for USDOE contractors. The most recent results of the Laboratory Services Section's performance in these "cross checks" can be found in the appendices to this document or on the internet at the following location: http://www.eml.st.dhs.gov/qap/reports/ .

Landauer, Inc. performs Optically Stimulated Luminescence (OSL) readings for the facilities that have neutron sources. Approximately 200 OSLs are exchanged and read each calendar quarter. Background is subtracted from all station readings except for Comanche Peak Nuclear Power Plant, South Texas Project, and Pantex. Background is not subtracted from these three locations because the readings identify ambient doses.

Analysis of sample data from the monitored facilities indicated no release of radioactive material to the environment that exceeded the regulatory or license limits of the DSHS or any other agency such as the United States Nuclear Regulatory Commission or the USDOE. Some of the OSL readings at a few of the monitored facilities exceeded 100 mrem for the year. All licensed facilities are required by rule to document that exposures from conducting operations do not cause doses in excess of the regulatory limits to employees or individual members of the general public. The documentation is maintained for inspection by the Radiation Branch. Licensees are allowed to use mitigating factors, such as occupancy times and distance to nearest occupied areas, in demonstrating compliance with those limits. Taking into account occupancy factors, all facilities monitored during the **2016** calendar year were found to be in compliance with radiation dose limits.

Any questions should be directed to Robert E. Free at 737-218-7082 or robert.free@dshs.state.tx.us.

Robert Free

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Fixed Nuclear Facilities

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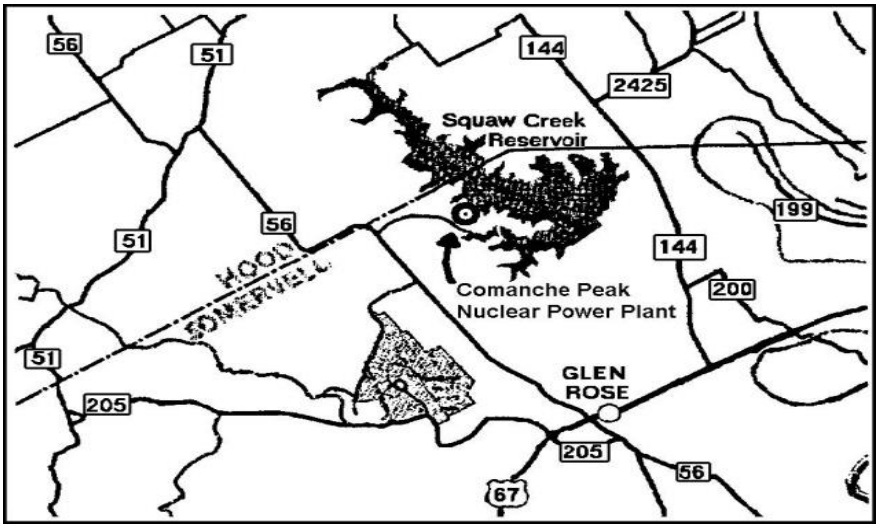
Comanche Peak Nuclear Power Plant
Radiation Branch Site No. 031

Comanche Peak Nuclear Power Plant (CPNPP) is a two-unit nuclear-fueled power plant owned and operated by Luminant Power. The plant is located in Somervell County four and one-half miles northwest of Glen Rose and approximately 80 miles southwest of downtown Dallas.

CPNPP, Luminant Power's sole nuclear power plant, with an operating capacity of 2,500 megawatts [two Westinghouse 1,250 megawatt (electric) pressurized water reactor units], began operation in 1990, although fuel had been received on-site in 1982-1983. The plant has approximately 1,300 employees. The Radiation Branch surveillance program consists of OSL monitoring and sampling air, fish, food products, sediment, vegetation, and water.

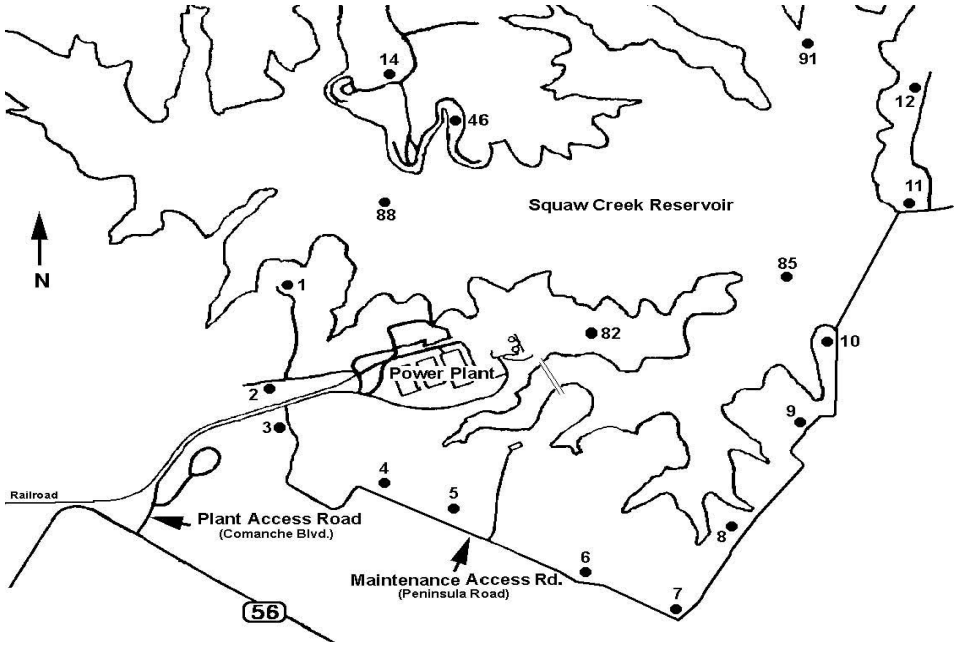
Shaded area indicates location of Somervell County

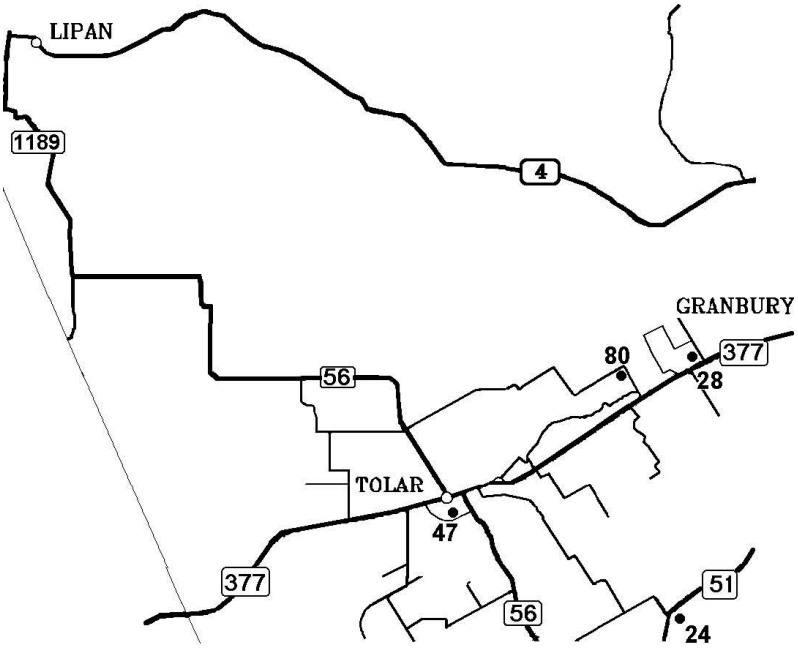
Somervell County



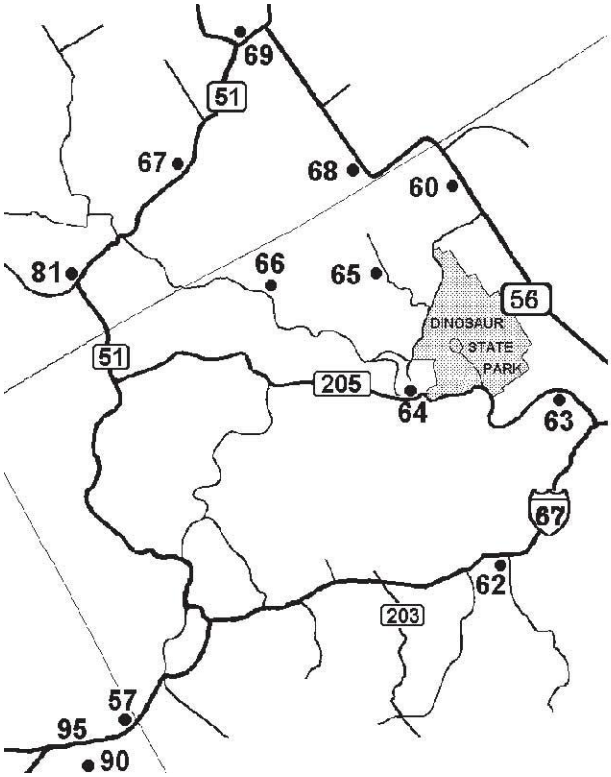
Comanche Peak Nuclear Power Plant
Monitoring Station Locations

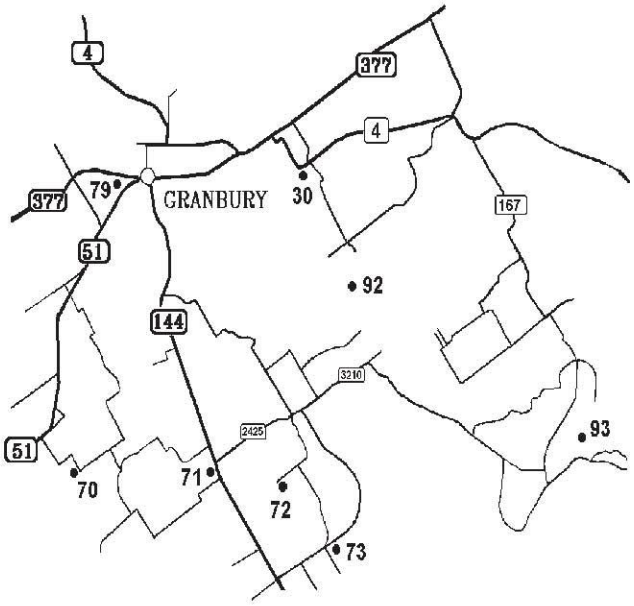
Note: Sample type not indicated on maps.

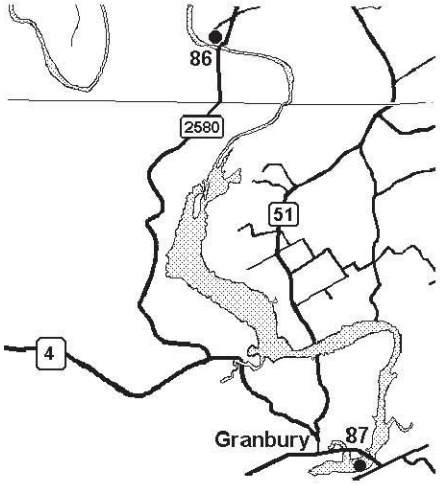


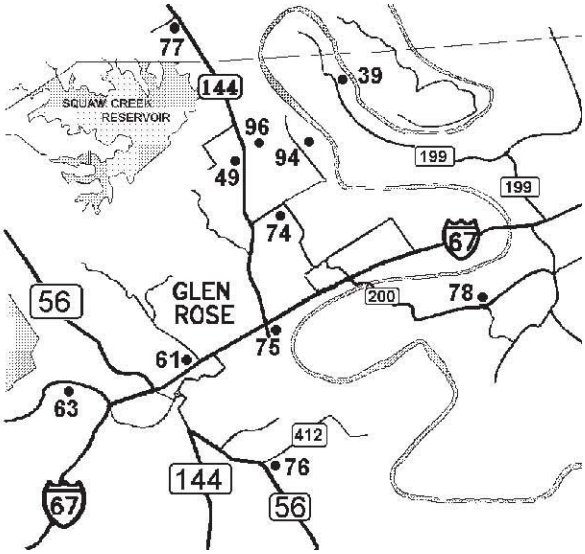


Comanche Peak Nuclear Power Plant
Monitoring Station Locations









Comanche Peak Nuclear Power Plant
Environmental Sample Results

Optically Stimulated Luminescent Dosimeter (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	20	28	24	23	95	
STATION 2	24	24	27	26	101	
STATION 3	20	25	24	23	92	
STATION 4	23	21	26	26	96	
STATION 5	22	25	26	25	98	
STATION 6	20	26	27	24	97	
STATION 7	20	24	25	25	94	
STATION 8	23	22	25	25	95	
STATION 9	23	24	26	26	99	
STATION 10	22	26	26	25	99	
STATION 11	20	24	25	22	91	
STATION 12	23	10	27	28	88	
STATION 14	34	25	26	25	110	
STATION 24	22	24	25	24	95	
STATION 28	24	25	28	28	105	
STATION 30	27*	27	28	25	107	[2]Q1-OSL Missing
STATION 39	21	25	25	23	94	
STATION 46	34	29*	25	29*	118	[2]Q2, Q4-OSL Missing
STATION 47	22	24	25	24	95	
STATION 49	22	25	27	25	99	
STATION 60	21	23	26	24	94	
STATION 61	33	22	23	22	100	
STATION 62	22	24	27	25	98	
STATION 63	24	26	28	25	103	
STATION64	22	23	28	25	98	
STATION 65	20	23	24	23	90	
STATION 66	21	24	27	25	97	
STATION 67	21	23	25	23	92	
STATION 68	20	23	24	26	93	
STATION 69	20	23	23	23	89	
STATION 70	22	24	25	25	96	
STATION 71	23	24	26	25	98	
STATION 72	23	24	27	25	99	
STATION 73	23	25	26	24	98	
STATION 74	22	24	25	25	96	
STATION 75	22	24*	26	23	95	[2]Q2-OSL Missing
STATION 76	20	25	25	24	94	
STATION 77	21	24	23	25	93	
STATION 78	22	25	26	24	97	
STATION 79	21	24	24	24	93	
STATION 80	24	26	28	26	104	
STATION 81	22	26	28	26	102	
STATION 82	33	33*	33*	33*	132	[2]Q2, Q3, Q4-OSL Missing

NOTE: [1]Background is not subtracted from the data
[2]If data are missing during a quarter, an average of known quarter readings for that year and location is used to fill in for the missing data.

Comanche Peak Nuclear Power Plant
Environmental Sample Results

				Air Particulate pCi/m^3		
Date	Lab No	Station	I-131	Date	Lab No	Station
05-Jan-16	AD17158	001	<7.0e-15	05-Jan-16	AD17157	001
05-Jan-16	AD17160	057	<7.7e-15	05-Jan-16	AD17159	057
12-Jan-16	AD17716	001	<6.9e-15	12-Jan-16	AD17717	001
12-Jan-16	AD17718	057	<5.9e-15	12-Jan-16	AD17719	057
19-Jan-16	AD18765	001	<3.1e-15	19-Jan-16	AD18764	001
19-Jan-16	AD18763	057	<4.9e-15	19-Jan-16	AD18762	057
26-Jan-16	AD20545	001	<6.3e-15	26-Jan-16	AD20544	001
26-Jan-16	AD20547	057	<5.4e-15	26-Jan-16	AD20546	057
02-Feb-16	AD21648	001	<5.6e-15	02-Feb-16	AD21647	001
02-Feb-16	AD21646	057	<7.2e-15	02-Feb-16	AD21645	057
09-Feb-16	AD22862	001	<7.1e-15	09-Feb-16	AD22861	001
09-Feb-16	AD22864	057	<7.1e-15	09-Feb-16	AD22863	057
16-Feb-16	AD23513	001	<5.6e-15	16-Feb-16	AD23512	001
16-Feb-16	AD23515	057	<4.8e-15	16-Feb-16	AD23514	057
23-Feb-16	AD25534	001	<8.3e-15	23-Feb-16	AD25533	001
23-Feb-16	AD25536	057	<8.5e-15	23-Feb-16	AD25535	057
01-Mar-16	AD26485	001	<7.6e-15	01-Mar-16	AD26484	001
01-Mar-16	AD26487	057	<7.9e-15	01-Mar-16	AD26486	057
08-Mar-16	AD27740	001	<7.1e-15	08-Mar-16	AD27739	001
08-Mar-16	AD27742	057	<7.1e-15	08-Mar-16	AD27741	057
15-Mar-16	AD28660	001	<7.3e-15	15-Mar-16	AD28659	001
15-Mar-16	AD28662	057	<7.2e-15	15-Mar-16	AD28661	057
22-Mar-16	AD29980	001	<7.4e-15	22-Mar-16	AD29979	001
22-Mar-16	AD29982	057	<7.7e-15	22-Mar-16	AD29981	057
29-Mar-16	AD31333	001	<8.0e-15	29-Mar-16	AD31332	001
29-Mar-16	AD31335	057	<8.0e-15	29-Mar-16	AD31334	057
05-Apr-16	AD32390	001	<8.3e-15	05-Apr-16	AD32391	001
05-Apr-16	AD32392	057	<8.6e-15	05-Apr-16	AD32393	057
12-Apr-16	AD32929	001	<8.2e-15	12-Apr-16	AD32928	001
12-Apr-16	AD32931	057	<6.1e-15	12-Apr-16	AD32930	057
19-Apr-16	AD33532	001	<7.7e-15	19-Apr-16	AD33531	001
19-Apr-16	AD33534	057	<7.8e-15	19-Apr-16	AD33533	057
26-Apr-16	AD34541	001	<7.8e-15	26-Apr-16	AD34540	001
26-Apr-16	AD34543	057	<7.9e-15	26-Apr-16	AD34542	057
03-May-16	AD35236	001	<7.2e-15	03-May-16	AD35235	001
03-May-16	AD35238	057	<9.0e-14	03-May-16	AD35237	057
10-May-16	AD35938	001	<7.2e-15	10-May-16	AD35937	001
10-May-16	AD35936	057	<7.1e-15	10-May-16	AD35935	057
17-May-16	AD37122	001	<7.0e-15	17-May-16	AD37121	001
17-May-16	AD37124	057	<7.1e-15	17-May-16	AD37123	057
24-May-16	AD37854	001	<6.9e-15	24-May-16	AD37855	001
24-May-16	AD37856	057	<7.6e-15	24-May-16	AD37857	057
31-May-16	AD39031	001	<7.6e-15	31-May-16	AD39032	001
31-May-16	AD39033	057	<8.1e-15	31-May-16	AD39034	057
07-Jun-16	AD39877	001	<7.9e-15	07-Jun-16	AD39876	001
07-Jun-16	AD39879	057	<8.0e-15	07-Jun-16	AD39878	057
14-Jun-16	AD40628	001	<6.6e-15	14-Jun-16	AD40627	001
14-Jun-16	AD40630	057	<5.6e-15	14-Jun-16	AD40629	057
21-Jun-16	AD41426	001	<7.0e-15	21-Jun-16	AD41425	001
21-Jun-16	AD41428	057	<7.3e-15	21-Jun-16	AD41427	057
28-Jun-16	AD42559	001	<6.0e-15	28-Jun-16	AD42558	001

Comanche Peak Nuclear Power Plant
Environmental Sample Results

Date	Lab No	Station	I-131	Date	Lab No	Station	Beta
21-Jun-16	AD41428	57	<7.3e-15	21-Jun-16	AD41427	57	2.74E-14
28-Jun-16	AD42559	1	<6.0e-15	28-Jun-16	AD42558	1	2.20E-14
28-Jun-16	AD42561	57	<5.0e-15	28-Jun-16	AD42560	57	2.44E-14
5-Jul-16	AD43225	1	<7.6e-15	5-Jul-16	AD43224	1	2.39E-14
5-Jul-16	AD43227	57	<7.9e-15	5-Jul-16	AD43226	57	2.39E-14
12-Jul-16	AD43955	1	<3.7e-15	12-Jul-16	AD43954	1	2.25E-14
12-Jul-16	AD43957	57	<5.1e-15	12-Jul-16	AD43956	57	2.25E-14
19-Jul-16	AD44784	1	<7.8e-15	19-Jul-16	AD44783	1	2.28E-14
19-Jul-16	AD44786	57	<7.9e-15	19-Jul-16	AD44785	57	2.23E-14
26-Jul-16	AD45829	1	<7.7e-15	26-Jul-16	AD45828	1	1.73E-14
26-Jul-16	AD45827	57	<7.8e-15	26-Jul-16	AD45826	57	1.79E-14
2-Aug-16	AD46785	1	<7.8e-15	2-Aug-16	AD46784	1	1.83E-14
2-Aug-16	AD46787	57	<8.1e-15	2-Aug-16	AD46786	57	2.11E-14
9-Aug-16	AD47355	1	<8.6e-15	9-Aug-16	AD47354	1	1.96E-14
9-Aug-16	AD47357	57	<9.0e-15	9-Aug-16	AD47356	57	2.09E-14
16-Aug-16	AD47403	1	<5.3e-15	16-Aug-16	AD47402	1	1.97E-14
16-Aug-16	AD47401	57	<6.3e-15	16-Aug-16	AD47400	57	1.99E-14
23-Aug-16	AD47519	1	<8.8e-15	23-Aug-16	AD47518	1	1.31E-14
23-Aug-16	AD47521	57	<8.8e-15	23-Aug-16	AD47520	57	1.44E-14
30-Aug-16	AD47598	1	<8.9e-15	30-Aug-16	AD47597	1	1.85E-14
30-Aug-16	AD47602	57	<9.1e-15	30-Aug-16	AD47601	57	1.89E-14
6-Sep-16	AD48046	1	<8.8e-15	6-Sep-16	AD48045	1	2.79E-14
6-Sep-16	AD48044	57	<8.3e-15	6-Sep-16	AD48043	57	3.00E-14
13-Sep-16	AD49569	1	<6.1e-15	13-Sep-16	AD49572	1	2.28E-14
13-Sep-16	AD49571	57	<5.1e-15	13-Sep-16	AD49570	57	2.51E-14
20-Sep-16	AD50465	1	<7.8e-15	20-Sep-16	AD50464	1	1.43E-14
20-Sep-16	AD50467	57	<7.8e-15	20-Sep-16	AD50466	57	1.77E-14
27-Sep-16	AD51582	1	<9.0e-15	27-Sep-16	AD51581	1	2.33E-14
27-Sep-16	AD51584	57	<8.9e-15	27-Sep-16	AD51583	57	2.62E-14
4-Oct-16	AD52493	1	<8.0e-15	4-Oct-16	AD52492	1	2.73E-14
4-Oct-16	AD52495	57	<7.9e-15	4-Oct-16	AD52494	57	3.06E-14
11-Oct-16	AD53025	1	<7.8e-15	11-Oct-16	AD53024	1	2.47E-14
11-Oct-16	AD53023	57	<7.6e-15	11-Oct-16	AD53022	57	2.58E-14
18-Oct-16	AD53639	1	<7.7e-15	18-Oct-16	AD53638	1	2.36E-14
18-Oct-16	AD53641	57	<8.1e-15	18-Oct-16	AD53640	57	2.77E-14
25-Oct-16	AD54966	1	<8.4e-15	25-Oct-16	AD54965	1	2.20E-14
25-Oct-16	AD54968	57	<8.6e-15	25-Oct-16	AD54967	57	2.88E-14
1-Nov-16	AD56581	1	<9.4e-15	1-Nov-16	AD56580	1	3.01E-14
1-Nov-16	AD56583	57	<9.5e-15	1-Nov-16	AD56582	57	3.36E-14
8-Nov-16	AD57231	1	<7.8e-15	8-Nov-16	AD57230	1	3.00E-14
8-Nov-16	AD57229	57	<7.5e-15	8-Nov-16	AD57228	57	1.42E-14
15-Nov-16	AD58406	1	<8.3e-15	15-Nov-16	AD58405	1	4.88E-14
15-Nov-16	AD58408	57	<8.5e-15	15-Nov-16	AD58407	57	6.11E-14
22-Nov-16	AD59092	1	<1.2e-14	22-Nov-16	AD59091	1	3.78E-14
22-Nov-16	AD59094	57	<1.2e-14	22-Nov-16	AD59093	57	4.70E-14
29-Nov-16	AD59696	1	<9.0e-15	29-Nov-16	AD59695	1	4.82E-14
29-Nov-16	AD59694	57	<8.4e-15	6-Dec-16	AD60995	1	2.19E-14
6-Dec-16	AD60996	1	<8.4e-15	6-Dec-16	AD60997	57	2.65E-14
6-Dec-16	AD60998	57	<8.9e-15	13-Dec-16	AD62294	1	3.84E-14
13-Dec-16	AD62295	1	<4.9e-15	13-Dec-16	AD62292	57	4.86E-14
13-Dec-16	AD62293	57	<5.3e-15	20-Dec-16	AD62666	1	6.00E-14
20-Dec-16	AD62667	1	<5.2e-15	20-Dec-16	AD62664	57	7.19E-14
20-Dec-16	AD62665	57	<5.6e-15	27-Dec-16	AD62830	1	3.04E-14
				27-Dec-16	AD62832	57	3.70E-14

Comanche Peak Nuclear Power Plant
Environmental Sample Results

Date	Lab No	Station	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Air Particulate Composite pCi/Sample														
28-Jan-16	AD19460	001	<1.2e-5	<3.4e-6	<3.6e-6	<3.6e-6	<4.0e-6	<6.3e-6	<3.8e-6	<4.0e-6	<3.7e-6	<3.6e-6	<8.4e-6	<6.1e-6
28-Jan-16	AD19461	057	<9.9e-6	<2.9e-6	<3.1e-6	<3.0e-6	<3.2e-6	<5.6e-6	<2.8e-6	<2.8e-6	<2.9e-6	<2.9e-6	<7.0e-6	<4.8e-6
26-Apr-16	AD32419	001	<1.2e-5	<3.3e-6	<4.1e-6	<3.3e-6	<4.3e-6	<7.0e-6	<3.7e-6	<4.0e-6	<3.3e-6	<3.4e-6	<7.9e-6	<6.3e-6
26-Apr-16	AD32420	057	<1.2e-5	<3.4e-6	<3.9e-6	<3.3e-6	<4.1e-6	<6.8e-6	<3.8e-6	<3.9e-6	<3.7e-6	<3.3e-6	<7.7e-6	<6.1e-6
09-Aug-16	AD43427	001	<1.3e-5	<3.3e-6	<3.7e-6	<3.3e-6	<3.9e-6	<6.7e-6	<3.6e-6	<4.1e-6	<3.6e-6	<3.6e-6	<8.2e-6	<5.8e-6
09-Aug-16	AD43428	057	<1.2e-6	4.33e-4	<3.8e-6	<3.5e-6	<4.2e-6	<6.2e-6	<3.8e-6	<4.1e-6	<3.6e-6	<3.7e-6	<8.4e-6	<6.3e-6
15-Nov-16	AD53300	001	<8.3e-6	<2.4e-6	<2.9e-6	<2.4e-6	<2.5e-6	<5.3e-6	<2.5e-6	<3.2e-6	<2.5e-6	<2.4e-6	<5.5e-6	<4.2e-6
15-Nov-16	AD53301	057	<1.4e-5	<3.7e-6	<4.0e-6	<3.6e-6	<4.3e-6	<6.7e-6	<4.3e-6	<4.5e-6	<3.8e-6	<3.8e-6	<8.3e-6	<6.3e-6
Fish pCi/kg														
12-Apr-16	AD32933	091	<8.0e-8	<1.7e-8	<1.8e-8	<1.7e-8	<1.9e-8	<3.6e-8	<3.2e-8	<2.4e-8	<1.7e-8	<1.9e-8	<3.8e-8	<3.2e-8
12-Apr-16	AD32934	091	<6.1e-8	<1.2e-8	<1.3e-8	<1.2e-8	<1.3e-8	<2.6e-8	<2.3e-8	<1.6e-8	<1.2e-8	<1.4e-8	<2.8e-8	<2.1e-8
12-Apr-16	AD32935	092	<5.5e-8	<1.2e-8	<1.3e-8	<1.2e-8	<1.3e-8	<2.7e-8	<2.1e-8	<1.8e-8	<1.2e-8	<1.4e-8	<2.8e-8	<2.2e-8
02-Aug-16	AD46788	092	<5.4e-8	<1.5e-8	<1.7e-8	<1.5e-8	<1.7e-8	<3.1e-8	<1.8e-8	<1.7e-8	<1.5e-8	<1.5e-8	<3.6e-8	<2.6e-8
04-Oct-16	AD52497	091	<5.5e-8	<1.3e-8	<1.5e-8	<1.5e-8	<1.6e-8	<2.6e-8	<1.8e-8	<1.5e-8	<1.4e-8	<1.5e-8	<2.9e-8	<2.4e-8
04-Oct-16	AD52498	091	<4.2e-8	<1.1e-8	<1.3e-8	<1.2e-8	<1.2e-8	<2.3e-8	<1.4e-8	<1.4e-8	<1.2e-8	<1.2e-8	<2.7e-8	<2.1e-8
04-Oct-16	AD52499	092	<6.6e-8	<1.4e-8	<1.4e-8	<1.4e-8	<1.5e-8	<2.8e-8	<2.5e-8	<1.8e-8	<1.3e-8	<1.5e-8	<3.1e-8	<2.4e-8
04-Oct-16	AD52500	092	<5.0e-8	<1.2e-8	<1.4e-8	<1.4e-8	<1.4e-8	<2.5e-8	<1.7e-8	<1.6e-8	<1.3e-8	<1.3e-8	<3.0e-8	<2.3e-8
Food pCi/kg														
06-Dec-16	AD60999	093	<2.5e-8	<6.6e-9	<8.3e-9	<7.0e-9	<7.2e-9	<1.6e-8	<7.8e-9	<8.7e-9	<6.7e-9	<7.0e-9	<2.0e-8	<1.3e-8
26-Jul-16	AD45832	096	<2.4e-9	<5.1e-9	<5.4e-9	<4.7e-9	<5.5e-9	<1.2e-8	<8.9e-9	<6.6e-9	<5.2e-9	<5.5e-9	<1.3e-8	<9.1e-9
26-Jul-16	AD45833	096	<1.8e-8	<3.7e-9	<4.2e-9	<3.5e-9	<3.9e-9	<8.3e-9	<6.2e-9	<4.9e-9	<3.6e-9	<4.1e-9	<9.1e-9	<6.3e-9
04-Oct-16	AD52496	094	<2.8e-8	<6.1e-9	<7.3e-9	<5.6e-9	<6.2e-9	<1.5e-8	<1.1e-8	<7.9e-9	<5.8e-9	<6.4e-9	<1.6e-8	<1.2e-8
Sediment pCi/kg														
26-Jan-16	AD20548	088	<4.1e-7	<8.9e-8	<7.8e-8	<9.2e-8	<8.8e-8	<1.8e-7	<1.4e-7	<9.9e-8	<8.3e-8	<9.4e-8	<2.4e-7	<1.4e-7
05-Jul-16	AD43228	088	<2.4e-7	<5.1e-8	<5.9e-8	<7.6e-8	<6.1e-8	<1.2e-7	<7.8e-8	<6.6e-8	<6.1e-8	<5.6e-8	<1.4e-7	<9.9e-8
Vegetation for Milk pCi/kg														
26-Jan-16	AD20549	014	<1.5e-7	<3.2e-8	<3.2e-8	<3.2e-8	<3.3e-8	<5.8e-8	<6.0e-8	<4.9e-8	<2.9e-8	<3.4e-8	<6.8e-8	<5.5e-8
23-Feb-16	AD25537	014	<3.0e-8	<6.1e-9	<6.8e-9	<7.0e-9	9.9e-9	<1.4e-8	<1.3e-8	<1.1e-8	<6.5e-9	<7.3e-9	<1.5e-8	<1.2e-8
29-Mar-16	AD31338	014	<6.0e-8	<1.6e-8	<1.7e-8	<1.5e-8	<1.7e-8	<3.6e-8	<2.0e-8	<1.6e-8	<1.6e-8	<1.7e-8	<4.1e-8	<2.7e-8
29-Mar-16	AD31339	090	<3.8e-8	<1.1e-8	<1.2e-8	<9.2e-9	<1.1e-8	<2.4e-8	<1.3e-8	<1.1e-8	<9.7e-9	<1.1e-8	<2.7e-8	<1.8e-8
26-Apr-16	AD34539	014	<5.2e-8	<1.1e-8	<1.2e-8	<1.1e-8	<1.2e-8	<2.4e-8	<2.0e-8	<1.4e-8	<1.1e-8	<1.3e-8	<2.7e-8	<1.9e-8
31-May-16	AD39035	014	<4.5e-8	<1.2e-8	<1.4e-8	<1.2e-8	<1.3e-8	<3.0e-8	<1.6e-8	<1.3e-8	<1.3e-8	<1.3e-8	<3.1e-8	<2.3e-8
28-Jun-16	AD42563	014	<8.3e-8	<1.7e-8	<1.8e-8	<1.4e-8	<1.6e-8	<3.9e-8	<3.6e-8	<2.4e-8	<1.6e-8	<1.8e-8	<3.9e-8	<2.9e-8
28-Jun-16	AD42562	090	<7.6e-8	<1.7e-8	<1.9e-8	<1.5e-8	<1.6e-8	<3.9e-8	<3.1e-8	<2.3e-8	<1.6e-8	<1.8e-8	<4.1e-8	<2.9e-8
26-Jul-16	AD45834	014	<7.5e-8	<1.8e-8	<2.0e-8	<1.8e-8	<1.9e-8	<4.4e-8	<2.9e-8	<2.2e-8	<1.8e-8	<2.0e-8	<4.6e-8	<3.1e-8
30-Aug-16	AD47596	014	<5.4e-8	<1.1e-8	<1.1e-8	<9.7e-9	<1.1e-8	<2.4e-8	<2.1e-8	<1.4e-8	<9.9e-9	<1.2e-8	<2.6e-8	<1.9e-8
27-Sep-16	AD51585	014	<5.0e-8	<1.3e-8	<1.5e-8	<1.4e-8	<1.4e-8	<3.1e-8	<1.9e-8	<1.7e-8	<1.4e-8	<1.4e-8	<3.4e-8	<2.3e-8
27-Sep-16	AD51586	090	<7.3e-8	<1.7e-8	<1.8e-8	<1.7e-8	<1.7e-8	<3.4e-8	<3.2e-8	<2.6e-8	<1.7e-8	<1.9e-8	<3.6e-8	<2.9e-8
25-Oct-16	AD54971	014	<8.7e-8	<1.9e-8	<1.8e-8	<1.9e-8	<2.0e-8	<3.9e-8	<3.4e-8	<2.5e-8	<1.9e-8	<2.1e-8	<4.1e-8	<3.2e-8
29-Nov-16	AD59690	014	<1.4e-7	<3.1e-8	<3.1e-8	<3.1e-8	<3.2e-8	<6.7e-8	<5.4e-8	<4.5ee-8	<3.0e-8	<3.3e-8	<7.2e-8	<5.6e-8
27-Dec-16	AD62837	014	<8.8e-8	<2.2e-8	<2.6e-6	<2.3e-8	<2.3e-8	<4.5e-6	<3.1e-8	<2.6e-8	<2.2e-8	<2.4e-8	<5.4e-8	<3.7e-8
27-Dec-16	AD62836	090	<9.3e-8	<2.4e-8	<2.5e-8	<2.5e-8	<2.7e-8	<4.7e-8	<3.1e-8	<3.2e-8	<2.4e-8	<2.3e-8	<5.8e-8	<4.2e-8

Comanche Peak Nuclear Power Plant
Environmental Sample Results

Date	Lab No	Station	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Water Surface pCi/L														
26-Jan-16	AD20550	085	<7.7e-9	<1.7e-9	<1.7e-9	<2.0e-9	<2.0e-9	<3.4e-9	<2.7e-9	<2.3e-9	<1.7e-9	<1.9e-9	<4.3e-9	<3.0e-9
26-Jan-16	AD20551	086	<7.9e-9	<1.9e-9	<2.1e-9	<2.1e-9	<2.3e-9	<4.2e-9	<3.0e-9	<2.9e-9	<2.1e-9	<2.2e-9	<4.6e-9	<3.7e-9
23-Feb-16	AD25538	085	<7.0e-9	<1.6e-9	<1.7e-9	<1.8e-9	<1.9e-9	<3.0e-9	<2.4e-9	<2.0e-9	<1.7e-9	<1.7e-9	<3.7e-9	<2.9e-9
23-Feb-16	AD25539	086	<7.9e-9	<2.1e-9	<2.2e-9	<2.0e-9	<2.2e-9	<4.1e-9	<2.7e-9	<2.6e-9	<2.1e-9	<2.1e-9	<4.6e-9	<3.7e-9
29-Mar-16	AD31337	085	<8.1e-9	<2.1e-9	<2.3e-9	<2.1e-9	<2.2e-9	<4.0e-9	<2.8e-9	<2.6e-9	<2.1e-9	<2.1e-9	<4.4e-9	<3.5e-9
29-Mar-16	AD31336	086	<7.0e-9	<1.8e-9	<1.8e-9	<1.8e-9	<1.9e-9	<3.2e-9	<2.4e-9	<2.0e-9	<1.7e-9	<1.8e-9	<3.6e-9	<2.9e-9
26-Apr-16	AD34538	085	<7.0e-9	<1.7e-9	<1.8e-9	<1.8e-9	<1.9e-9	<3.2e-9	<2.7e-9	<2.1e-9	<1.7e-9	<1.8e-9	<3.6e-9	<2.8e-9
26-Apr-16	AD34537	086	<8.6e-9	<2.3e-9	<2.5e-9	<2.5e-9	<2.4e-9	<4.4e-9	<3.1e-9	<3.1e-9	<2.3e-9	<2.6e-9	<5.9e-9	<3.9e-9
31-May-16	AD39037	085	<7.6e-9	<2.1e-9	<2.2e-9	<2.1e-9	<2.1e-9	<4.0e-9	<2.8e-9	<2.9e-9	<2.2e-9	<2.0e-9	<4.3e-9	<3.6e-9
31-May-16	AD39036	086	<6.9e-9	<1.7e-9	<1.7e-9	<1.7e-9	<1.9e-9	<3.3e-9	<2.3e-9	<2.0e-9	<1.7e-9	<1.8e-9	<3.5e-9	<2.8e-9
28-Jun-16	AD42565	085	<1.1e-8	<2.1e-9	<2.3e-9	<2.1e-9	<2.2e-9	<4.3e-9	<4.1e-9	<3.5e-9	<2.2e-9	<2.4e-9	<4.4e-9	<3.8e-9
28-Jun-16	AD42564	086	<9.0e-9	<1.7e-9	<1.7e-9	<1.8e-9	<1.8e-9	<3.5e-9	<3.6e-9	<2.6e-9	<1.7e-9	<1.9e-9	<3.6e-9	<3.0e-9
26-Jul-16	AD45830	086	<7.4e-9	<2.0e-9	<2.1e-9	<2.1e-9	<2.2e-9	<3.9e-9	<2.6e-9	<2.7e-9	<2.1e-9	<2.2e-9	<4.5e-9	<3.7e-9
26-Jul-16	AD45831	085	<7.0e-9	<1.7e-9	<1.7e-9	<1.8e-9	<1.9e-9	<3.1e-9	<2.4e-9	<2.0e-9	<1.8e-9	<1.7e-9	<3.5e-9	<2.9e-9
30-Aug-16	AD47600	085	<6.9e-9	<1.5e-9	<1.7e-9	<1.7e-9	<1.9e-9	<3.2e-9	<2.4e-9	<1.9e-9	<1.6e-9	<1.7e-9	<3.5e-9	<2.9e-9
30-Aug-16	AD47599	086	<8.2e-9	<2.0e-9	<2.2e9	<2.2e-9	<2.2e-9	<4.1e-9	<2.9e-9	<2.7e-9	<2.0e-9	<2.1e-9	<4.4e-9	<3.6e-9
27-Sep-16	AD51587	085	<7.8e-9	<2.2e-9	<2.0e-9	<2.1e-9	<2.1e-9	<4.1e-9	<2.7e-9	<2.8e-9	<2.0e-9	<2.2e-9	<4.5e-9	<3.6e-9
27-Sep-16	AD51588	086	<7.3e-9	<1.7e-9	<1.7e-9	<1.7e-9	<1.9e-9	<3.1e-9	<2.5e-9	<2.0e-9	<1.6e-9	<1.7e-9	<3.3e-9	<2.9e-9
25-Oct-16	AD54970	085	<7.6e-9	<2.1e-9	<2.2e-9	<2.2e-9	<2.2e-9	<4.2e-9	<2.8e-9	<2.7e-9	<2.0e-9	<2.3e-9	<4.5e-9	<3.4e-9
25-Oct-16	AD54969	086	<6.8e-9	<1.5e-9	<1.7e-9	<1.7e-9	<1.9e-9	<3.1e-9	<2.4e-9	<2.0e-9	<1.6e-9	<1.8e-9	<3.4e-9	<2.8e-9
29-Nov-16	AD59692	085	<8.0e-9	<1.9e-9	<2.0e-9	<2.0e-9	<2.2e-9	<3.7e-9	<2.6e-9	<2.7e-9	<2.0e-9	<2.1e-9	<4.2e-9	<3.5e-9
29-Nov-16	AD59691	086	<6.6e-9	<1.7e-9	<1.8e-9	<1.7e-9	<2.0e-9	<3.1e-9	<2.2e-9	<2.2e-9	<1.7e-9	<1.8e-9	<3.9e-9	<2.9e-9
27-Dec-16	AD62835	085	<7.5e-9	<1.9e-9	<2.0e-9	<1.9e-9	<2.0e-9	<3.8e-9	<2.6e-9	<2.6e-9	<1.9e-9	<2.0e-9	<4.1e-9	<3.5e-9
27-Dec-16	AD62834	086	<6.6e-9	<1.7e-9	<1.8e-9	<1.6e-9	<1.9e-9	<3.1e-9	<2.1e-9	<2.2e-9	<1.8e-9	<1.7e-9	<3.7e-9	<2.8e-9

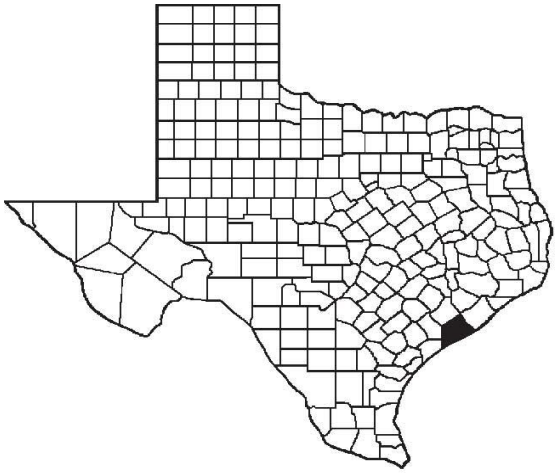
			H^3
Water Composite pCi/L			
25-Feb-16	AD19466	085	1.680e-5
25-Feb-16	AD19467	086	<1.0e-6
19-Apr-16	AD32417	085	1.340e-5
19-Apr-16	AD32418	086	<1.0e-6
3-Oct-16	AD43433	085	1.419e-5
3-Oct-16	AD43434	086	<1.0e-6
17-Oct-16	AD53306	085	1.065e-5
17-Oct-16	AD53307	086	<1.0e-6

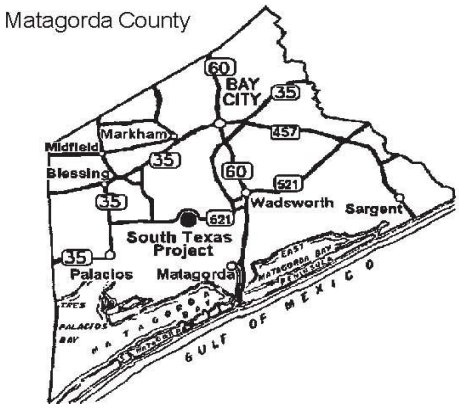
*NOTE: * indicates the analysis was by alpha spectrometry, or Ra-226, analysis by radon emanation.*
***Indicates the tritium (H-3) analysis for food product, sediment, and vegetation is reported in UCi/ml*

South Texas Project
Radiation Branch Site No. 012

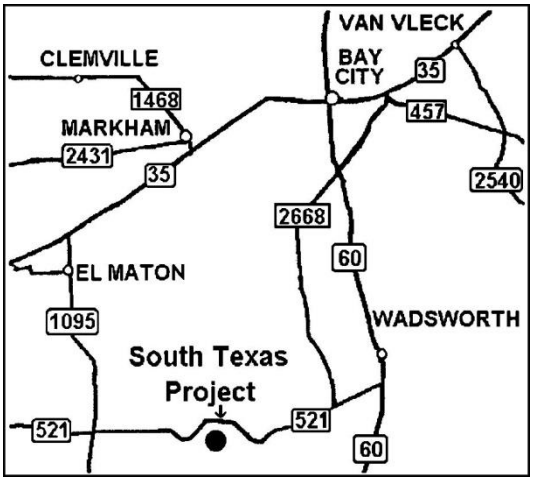
The South Texas Project (STP) is a commercial nuclear power plant operated by STP Nuclear Operating Company and is located 89 miles southwest of Houston and 14 miles south-southwest of Bay City. Two 1250 megawatt (electric) Westinghouse pressurized water nuclear reactors are in operation at the site. Unit 1 became operational in August of 1988 and Unit 2 in June of 1989.

STP Nuclear Operating Company is owned by NRG Energy, Austin Energy, and City Public Service of San Antonio. STP Nuclear Operating Company manages and operates the plant for its owners, who share its energy in proportion to their ownership interest. The Radiation Branch surveillance program consists of OSL monitoring and sampling air, fish, food products, sediment, vegetation, and water.

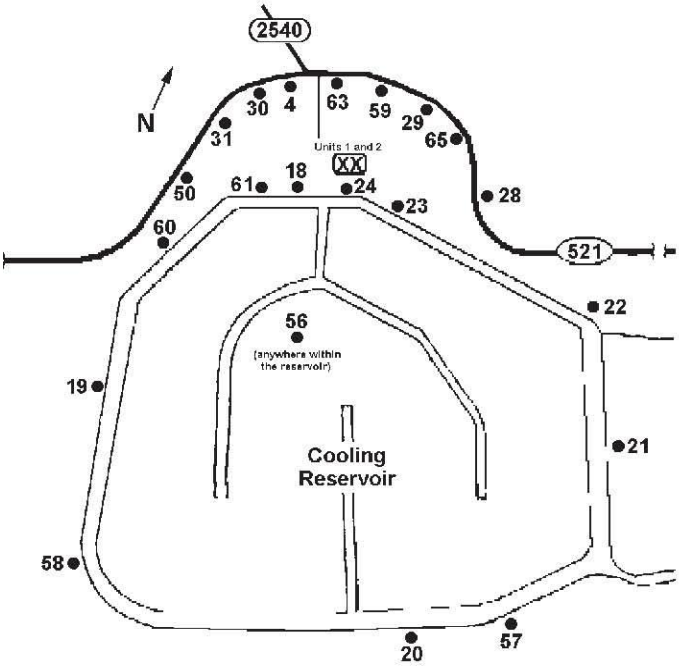


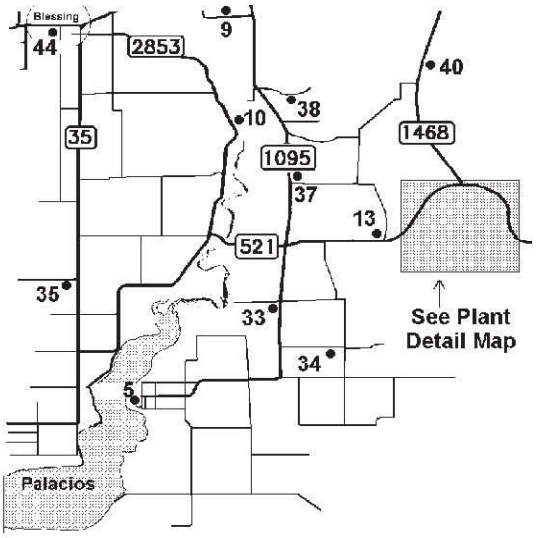


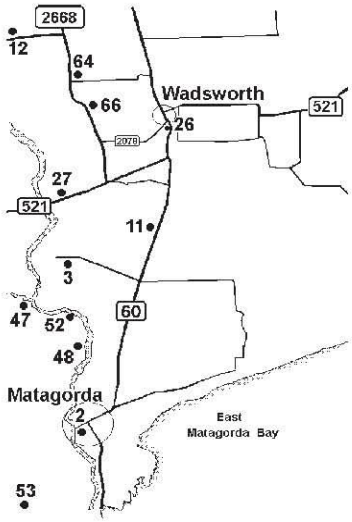
Shaded area indicates location of Matagorda County

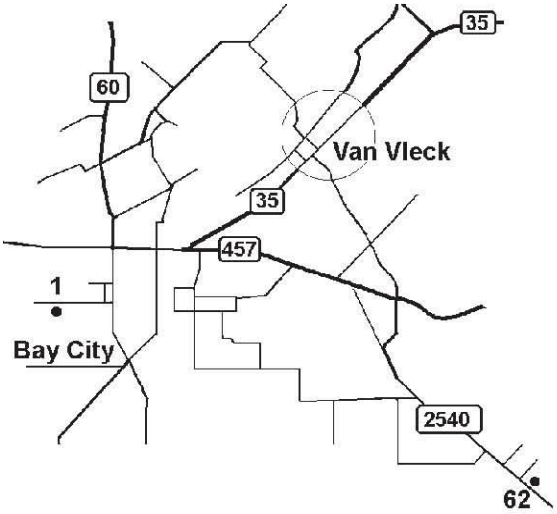


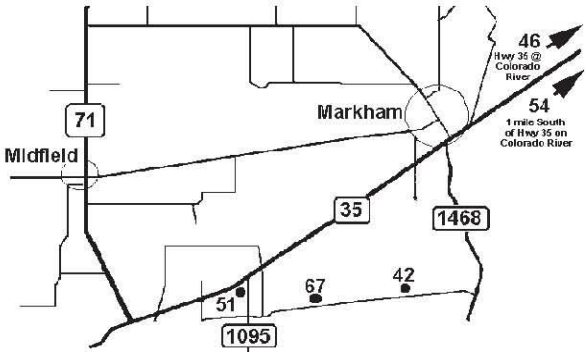
South Texas Project
Monitoring Station Locations











Note: Sample type not indicated on maps.

South Texas Project
Environmental Sample Results

Optically Stimulated Luminescent Dosimeter (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	24	25	27	25*	101	*[2]Q3-OSL Missing*
STATION 2	23	25	27	26	101	
STATION 3	20	21	28	25	94	
STATION 4	24	25	27	27	103	
STATION 5	21	23	24	25	93	
STATION 9	23	25	27	26	101	
STATION 10	23	25	27	26	101	
STATION 11	25	25	26	26	102	
STATION 12	23	26	27	28	104	
STATION 13	27*	27	27	27	108	*[2]Q1-OSL Missing*
STATION 18	21	24	25	23	93	
STATION 19	22	27	27	26	102	
STATION 20	23	24	26	25	98	
STATION 21	22	25	27	24	98	
STATION 22	22	25	27	26	100	
STATION 23	20	23	22*	24	89	*[2]Q3-OSL Missing*
STATION 24	24	27	30	28	109	
STATION 26	21	23	25	23	92	
STATION 27	24	27	28	27	106	
STATION 28	25	24*	24*	23	96	*[2]Q2,Q3-OSL Missing*
STATION 29	24	27	29	29	109	
STATION 30	23	26	26	27	102	
STATION 31	27	28	29	29	113	
STATION 33	24	26	26	26	102	
STATION 34	24	26	28	26	104	
STATION 35	23	27	28	27	105	
STATION 37	27*	26	28	28	109	*[2]Q1-OSL Missing*
STATION 38	24	26	26	25	101	
STATION 40	22	26	26	25	99	
STATION 42	29	30	31	33	123	
STATION 44	22	25	27	24	98	
STATION 50	28	29	30	31	118	
STATION 51	27*	26	27	28	108	*[2]Q1-OSL Missing*
STATION 57	21	24	24*	26	95	*[2]Q3-OSL Missing*
STATION 58	23	26	28	26	103	
STATION 59	24	23	29	29	105	
STATION 60	23	26	28	28	105	
STATION 61	21	23	26	25	95	
STATION 62	25	28	31	30	114	
STATION 63	25	26	28	28	107	
STATION 64	24	26	27	27	104	
STATION 65	24	25	28	29	106	
STATION 66	24	26	27	26	103	
STATION 67	25	26	29	28	108	

NOTE: [1]Background is not subtracted from the data
[2]If data are missing during a quarter, an average of known quarter readings for that year and location is used to fill in for the missing data

South Texas Project
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Air Iodine pCi/L

Date	Lab No	Station	I-131
05-Jan-16	AD17168	035	<3.1e-15
05-Jan-16	AD17170	030	<3.2e-15
12-Jan-16	AD18406	035	<8.2e-15
12-Jan-16	AD18408	030	<2.2e-14
19-Jan-16	AD19078	035	<7.8e-15
19-Jan-16	AD19080	030	<9.8e-15
27-Jan-16	AD20867	035	<6.6e-15
27-Jan-16	AD20869	030	<2.9e-15
02-Feb-16	AD21976	035	<9.1e-15
02-Feb-16	AD21978	030	<5.8e-15
09-Feb-16	AD23197	035	<7.6e-15
09-Feb-16	AD23199	030	<7.3e-15
16-Feb-16	AD24095	035	<6.0e-15
16-Feb-16	AD24097	030	<4.8e-15
23-Feb-16	AD25530	035	<7.6e-15
23-Feb-16	AD25532	030	<7.7e-15
02-Mar-16	AD27026	035	<6.7e-15
02-Mar-16	AD27028	030	<6.8e-15
08-Mar-16	AD28088	035	<9.2e-15
08-Mar-16	AD28090	030	<9.8e-15
15-Mar-16	AD29239	035	<7.5e-15
15-Mar-16	AD29241	030	<7.6e-15
22-Mar-16	AD30277	035	<6.6e-15
22-Mar-16	AD30279	030	<5.5e-15
30-Mar-16	AD31555	035	<6.7e-15
30-Mar-16	AD31557	030	<6.5e-15
30-Mar-16	AD31558	035	<1.5e-8
05-Apr-16	AD32188	035	<8.7e-15
05-Apr-16	AD32190	030	<8.7e-15
12-Apr-16	AD32925	035	<7.6e-15
12-Apr-16	AD32927	030	<7.8e-15
20-Apr-16	AD33816	035	<7.2e-15
20-Apr-16	AD33818	030	<6.8e-15
26-Apr-16	AD34545	035	<4.0e-15
26-Apr-16	AD34547	030	<4.0e-15
03-May-16	AD35488	035	<7.4e-15
03-May-16	AD35490	030	<7.8e-15
10-May-16	AD36244	035	<7.1e-15
10-May-16	AD36246	030	<7.4e-15
17-May-16	AD37383	035	<7.6e-15
17-May-16	AD37385	030	<7.9e-15
24-May-16	AD38387	035	<6.0e-15
24-May-16	AD38389	030	<6.9e-15
01-Jun-16	AD39263	035	<6.4e-15
01-Jun-16	AD39265	030	<6.5e-15
07-Jun-16	AD40311	035	<1.5e-14
07-Jun-16	AD40313	030	<1.5e-14
14-Jun-16	AD40623	035	<6.8e-15
14-Jun-16	AD40625	030	<5.5e-15
21-Jun-16	AD41433	035	<7.5e-15
21-Jun-16	AD41435	030	<1.2e-14
21-Jun-16	AD41436	035	<1.2e-8
21-Jun-16	AD41437	030	<1.8e-8
28-Jun-16	AD42554	035	<7.4e-15

Air Particulate pCi/L

Date	Lab No	Station	Beta
05-Jan-16	AD17167	035	3.64e-14
05-Jan-16	AD17169	030	3.80e-14
12-Jan-16	AD18405	035	2.84e-14
12-Jan-16	AD18407	030	4.55e-14
19-Jan-16	AD19077	035	3.15e-14
19-Jan-16	AD19079	030	2.25e-14
27-Jan-16	AD20866	035	2.67e-14
27-Jan-16	AD20868	030	2.77e-14
02-Feb-16	AD21975	035	2.99e-14
02-Feb-16	AD21977	030	2.84e-14
09-Feb-16	AD23196	035	2.17e-14
09-Feb-16	AD23198	030	1.78e-14
16-Feb-16	AD24094	035	1.66e-14
16-Feb-16	AD24096	030	1.82e-14
23-Feb-16	AD25529	035	2.00e-14
23-Feb-16	AD25531	030	2.19e-14
02-Mar-16	AD27025	035	2.25e-14
02-Mar-16	AD27027	030	2.200e-14
08-Mar-16	AD28087	035	2.29e-14
08-Mar-16	AD28089	030	2.42e-14
15-Mar-16	AD29238	035	1.41e-14
15-Mar-16	AD29240	030	1.49e-14
22-Mar-16	AD30276	035	1.79e-14
22-Mar-16	AD30278	030	1.81e-14
30-Mar-16	AD31554	035	1.84e-14
30-Mar-16	AD31556	030	1.83e-14
05-Apr-16	AD32187	035	2.05e-14
05-Apr-16	AD32189	030	2.05e-14
12-Apr-16	AD32924	035	1.84e-14
12-Apr-16	AD32926	030	2.12e-14
20-Apr-16	AD33815	035	1.49e-14
20-Apr-16	AD33817	030	1.57e-14
26-Apr-16	AD34544	035	2.14e-14
26-Apr-16	AD34546	030	2.14e-14
03-May-16	AD35487	035	2.05e-14
03-May-16	AD35489	030	2.07e-14
10-May-16	AD36243	035	2.10e-14
10-May-16	AD36245	030	2.20e-14
17-May-16	AD37382	035	2.00e-14
17-May-16	AD37384	030	2.16e-14
24-May-16	AD38386	035	1.39e-14
24-May-16	AD38388	030	1.42e-14
01-Jun-16	AD39262	035	1.65e-14
01-Jun-16	AD39264	030	1.64e-14
07-Jun-16	AD40310	035	1.27e-14
07-Jun-16	AD40312	030	1.08e-14
14-Jun-16	AD40622	035	2.12e-14
14-Jun-16	AD40624	030	2.02e-14
21-Jun-16	AD41432	035	2.46e-14
21-Jun-16	AD41434	030	2.71e-14
28-Jun-16	AD42553	035	2.68e-14
28-Jun-16	AD42555	030	2.65e-14

South Texas Project
Environmental Sample Results

Air Iodine pCi/L

Date	Lab No	Station	I-131
28-Jun-16	AD42556	030	<8.6e-15
06-Jul-16	AD43410	035	<6.5e-15
06-Jul-16	AD43412	030	<6.6e-15
13-Jul-16	AD44387	035	<2.9e-15
13-Jul-16	AD44389	030	<8.2e-15
19-Jul-16	AD45094	035	<1.0e-14
19-Jul-16	AD45096	030	<1.8e-14
26-Jul-16	AD46051	035	<8.0e-15
26-Jul-16	AD46053	030	<8.4e-15
26-Jul-16	AD46054	030	<1.5e-8
02-Aug-16	AD47351	035	<1.6e-14
02-Aug-16	AD47353	030	<1.6e-14
10-Aug-16	AD47364	035	<7.3e-15
10-Aug-16	AD47366	030	<9.4e-15
16-Aug-16	AD47397	035	<9.4e-15
16-Aug-16	AD47399	030	<9.6e-15
23-Aug-16	AD47515	035	<8.3e-15
23-Aug-16	AD47517	030	<8.2e-15
30-Aug-16	AD47590	035	<8.3e-15
30-Aug-16	AD47592	030	<1.9e-14
07-Sep-16	AD48593	035	<7.2e-15
07-Sep-16	AD48595	030	<7.7e-15
13-Sep-16	AD49565	035	<1.0e-14
13-Sep-16	AD49567	030	<9.7e-15
20-Sep-16	AD50918	035	<8.8e-15
20-Sep-16	AD50920	030	<9.3e-15
20-Sep-16	AD50921	035	<1.7e-8
20-Sep-16	AD50922	030	<2.2e-8
26-Sep-16	AD51577	035	<1.1e-14
26-Sep-16	AD51579	030	<1.1e-14
04-Oct-16	AD52585	035	<7.0e-15
04-Oct-16	AD52587	030	<7.4e-15
12-Oct-16	AD53237	035	<7.0e-15
12-Oct-16	AD53239	030	<6.9e-15
18-Oct-16	AD53909	035	<9.9e-15
18-Oct-16	AD53911	030	<9.8e-15
25-Oct-16	AD54973	035	<8.9e-15
25-Oct-16	AD54975	030	<6.4e-15
01-Nov-16	AD56585	035	<9.5e-15
01-Nov-16	AD56587	030	<1.0e-14
08-Nov-16	AD57525	035	<7.9e-15
08-Nov-16	AD57527	030	<8.2e-15
14-Nov-16	AD58413	030	<9.2e-9
15-Nov-16	AD58410	035	<8.9e-15
15-Nov-16	AD58412	030	<8.8e-15
22-Nov-16	AD59096	035	<7.3e-15
22-Nov-16	AD59098	030	<6.8e-15
29-Nov-16	AD59698	035	<8.8e-15
29-Nov-16	AD59700	030	<8.6e-15
06-Dec-16	AD61001	035	<8.8e-15
06-Dec-16	AD61003	030	<8.8e-15
06-Dec-16	AD61004	035	<1.1e-8
06-Dec-16	AD61005	030	<1.1e-8
13-Dec-16	AD61803	035	<7.7e-15
13-Dec-16	AD61805	030	<7.7e-15
20-Dec-16	AD62669	035	<8.7e-15
20-Dec-16	AD62671	030	<9.8e-15
27-Dec-16	AD62881	035	<1.4e-14
27-Dec-16	AD62883	030	<8.2e-6

Air Particulate pCi/L

Date	Lab No	Station	Beta
06-Jul-16	AD43409	035	1.67e-14
06-Jul-16	AD43411	030	1.700e-14
13-Jul-16	AD44386	035	2.43e-14
13-Jul-16	AD44388	030	2.20e-14
19-Jul-16	AD45093	035	2.00e-14
19-Jul-16	AD45095	030	2.68e-14
26-Jul-16	AD46050	035	1.52e-14
26-Jul-16	AD46052	030	1.46e-14
02-Aug-16	AD47350	035	1.90e-14
02-Aug-16	AD47352	030	1.95e-14
10-Aug-16	AD47363	035	1.79e-14
10-Aug-16	AD47365	030	1.74e-14
16-Aug-16	AD47396	035	1.74e-14
16-Aug-16	AD47398	030	1.72e-14
23-Aug-16	AD47514	035	1.65e-14
23-Aug-16	AD47516	030	1.55e-14
30-Aug-16	AD47589	035	1.38e-14
30-Aug-16	AD47591	030	2.06e-14
07-Sep-16	AD48592	035	2.14e-14
07-Sep-16	AD48594	030	2.04e-14
13-Sep-16	AD49564	035	1.50e-14
13-Sep-16	AD49566	030	1.35e-14
20-Sep-16	AD50917	035	1.09e-14
20-Sep-16	AD50919	030	9.84e-15
26-Sep-16	AD51576	035	1.90e-14
26-Sep-16	AD51578	030	1.60e-14
04-Oct-16	AD52584	035	2.76e-14
04-Oct-16	AD52586	030	2.80e-14
12-Oct-16	AD53236	035	1.93e-14
12-Oct-16	AD53238	030	2.18e-14
18-Oct-16	AD53908	035	1.40e-14
18-Oct-16	AD53910	030	1.61e-14
25-Oct-16	AD54972	035	1.82e-14
25-Oct-16	AD54974	030	1.88e-14
01-Nov-16	AD56584	035	3.15e-14
01-Nov-16	AD56586	030	2.99e-14
08-Nov-16	AD57524	035	2.51e-14
08-Nov-16	AD57526	030	2.38e-14
15-Nov-16	AD58409	035	4.19e-14
15-Nov-16	AD58411	030	4.14e-14
22-Nov-16	AD59095	035	3.27e-14
22-Nov-16	AD59097	030	3.65e-14
29-Nov-16	AD59697	035	4.75e-14
29-Nov-16	AD59699	030	4.44e-14
06-Dec-16	AD61000	035	1.98e-14
06-Dec-16	AD61002	030	1.90e-14
13-Dec-16	AD61802	035	2.90e-14
13-Dec-16	AD61804	030	2.71e-14
20-Dec-16	AD62668	035	4.03e-14
20-Dec-16	AD62670	030	3.81e-14
27-Dec-16	AD62880	035	2.11e-14
27-Dec-16	AD62882	030	<3.6e-6

South Texas Project
Environmental Sample Results

Date	Lab No	Station	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Air Composite pCi/Sa														
28-Jan-16	AD19462	030	<7.8e-6	<2.5e-6	<2.9e-6	<2.6e-6	<2.8e-6	<4.9e-6	<2.5e-6	<3.1e-6	<2.6e-6	<2.5e-6	<6.4e-6	<4.3e-6
28-Jan-16	AD19463	035	<1.3e-5	<3.5e-6	<3.9e-6	<3.6e-6	<4.0e-6	<6.7e-6	<3.9e-6	<4.1e-6	<3.6e-6	<3.6e-6	<8.1e-6	<6.0e-6
26-Apr-16	AD32421	030	<1.3e-5	<3.3e-6	<3.9e-6	<3.5e-6	<3.9e-6	<7.2e-6	<3.9e-6	<4.2e-6	<3.5e-6	<3.8e-6	<7.8e-6	<6.7e-6
26-Apr-16	AD32422	035	<1.3e-6	<3.5e-6	<3.7e-6	<3.4e-6	<3.9e-6	<6.5e-6	<4.0e-6	<4.2e-6	<3.5e-6	<3.4e-6	<7.9e-6	<6.3e-6
09-Aug-16	AD43429	030	<1.2e-5	<3.5e-6	<4.0e-6	<3.3e-6	<3.9e-6	<6.8e-6	<3.8e-6	<4.2e-6	<3.6e-6	<3.7e-6	<7.7e-6	<6.1e-6
09-Aug-16	AD43430	035	<1.2e-5	<3.6e-6	<4.0e-6	<3.3e-6	<4.0e-6	<6.4e-6	<4.0e-6	<4.4e-6	<3.4e-6	<3.6e-6	<8.0e-6	<6.3e-6
15-Nov-16	AD53302	030	<1.3e-5	<3.7e-6	<4.0e-6	<3.4e-6	<4.2e-6	<7.4e-6	<4.5e-6	<4.7e-6	<3.7e-6	<3.8e-6	<8.5e-6	<6.3e-6
15-Nov-16	AD53303	035	<1.3e-5	<3.7e-6	<4.1e-6	<3.8e-6	<4.2e-6	<7.0e-6	<4.5e-6	<4.7e-6	<3.7e-6	<3.8e-6	<8.2e-6	<6.4e-6
Fish pCi/kg														
14-Jun-16	AD40621	053	<5.7e-8	<1.5e-8	<1.6e-8	<1.6e-8	<1.6e-8	<2.9e-8	<2.0e-8	<1.9e-8	<1.6e-8	<1.7e-8	<3.5e-8	<2.6e-8
07-Sep-16	AD49269	053	<8.8e-8	<1.8e-8	<2.1e-8	<1.9e-8	<1.9e-8	<3.9e-8	<3.6e-8	<2.7e-8	<1.8e-8	<2.1e-8	<4.1e-8	<3.4e-8
Food Product pCi/kg														
30-Mar-16	AD31558	035	<4.2e-8	<9.5e-9	<1.0e-8	<9.4e-9	<1.1e-8	<2.1e-8	<1.5e-8	<1.1e-8	<9.4e-9	<1.1e-8	<2.4e-8	<1.6e-8
30-Mar-16	AD31559	063	<4.7e-8	<1.1e-8	<1.2e-8	<1.1e-8	<1.1e-8	<2.4e-8	<1.7e-8	<1.3e-8	<1.1e-8	<1.2e-8	<2.7e-8	<2.0e-8
21-Jun-16	AD41437	030	<4.9e-8	<1.3e-8	<1.6e-8	<1.3e-8	<1.5e-8	<2.8e-8	<1.8e-8	<1.5e-8	<1.3e-8	<1.4e-8	<3.2e-8	<2.3e-8
21-Jun-16	AD41436	035	<3.6e-8	<9.1e-9	<1.0e-8	<9.0e-9	<1.0e-8	<2.0e-8	<1.2e-8	<9.8e-9	<9.5e-9	<9.3e-9	<2.2e-8	<1.6e-8
20-Sep-16	AD50922	030	<5.8e-8	<1.4e-8	<1.5e-8	<1.3e-8	<1.4e-8	<2.9e-8	<2.2e-8	<1.8e-8	<1.3e-8	<1.4e-8	<3.2e-8	<2.3e-8
20-Sep-16	AD50921	035	<4.5e-8	<9.6e-9	<9.6e-9	<9.1e-9	<1.1e-8	<2.1e-8	<1.7e-8	<1.3e-8	<9.0e-9	<1.1e-8	<2.4e-8	<1.7e-8
06-Dec-16	AD61005	030	<3.4e-8	<8.8e-9	<1.1e-8	<8.9e-9	<9.7e-9	<2.0e-8	<1.1e-8	<9.1e-9	<9.0e-9	<9.0e-9	<2.2e-8	<1.6e-8
06-Dec-16	AD61004	035	<3.4e-8	<8.8e-9	<1.1e-8	<8.5e-9	<9.8e-9	<1.9e-8	<1.1e-8	<1.1e-8	<9.2e-9	<8.7e-9	<2.4e-8	<1.6e-8
Sediment pCi/kg														
25-Feb-16	AD26489	052	<3.9e-7	<7.3e-8	<8.1e-8	<9.3e-8	<9.3e-8	<1.7e-7	<1.7e-7	<1.2e-7	<8.4e-8	<1.1e-7	<2.4e-7	<1.5e-7
Vegetation for Milk pCi/kg														
27-Jan-16	AD20870	004	<3.2e-8	<7.3e-9	<8.4e-9	<6.8e-9	<7.7e-9	<1.8e-8	<1.2e-8	<7.6e-9	<7.4e-9	<8.0e-9	<2.0e-8	<1.3e-8
16-Feb-16	AD24099	004	<2.2e-8	<5.0e-9	<5.9e-9	<5.2e-9	<5.8e-9	<1.2e-8	<7.1e-9	<5.7e-9	<5.2e-9	<5.6e-9	<1.3e-8	<8.6e-9
15-Mar-16	AD29243	063	<2.2e-8	<5.9e-9	<6.7e-9	<5.7e-9	<6.3e-9	<1.4e-8	<7.1e-9	<6.3e-9	<6.3e-9	<6.4e-9	<1.6e-8	<1.1e-8
26-Apr-16	AD34548	063	<3.7e-8	<8.4e-9	<9.3e-9	<7.6e-9	<8.2e-9	<2.0e-8	<1.4e-8	<1.1e-8	<8.2e-9	<9.2e-9	<2.2e-8	<1.6e-8
17-May-16	AD37386	004	<3.7e-8	<1.1e-8	<1.3e-8	<9.1e-9	<1.1e-8	<2.4e-8	<1.3e-8	<1.1e-8	<1.1e-8	<1.1e-8	<2.7e-8	<1.8e-8
28-Jun-16	AD42557	004	<3.9e-8	<7.8e-9	<8.4e-9	<7.2e-9	<8.3e-9	<1.9e-8	<1.6e-8	<9.5e-9	<7.6e-9	<8.7e-9	<2.0e-8	<1.4e-8
26-Jul-16	AD46054	030	<3.8e-8	<8.6e-9	<8.7e-9	<7.4e-9	<8.7e-9	<1.9e-8	<1.5e-8	<9.4e-9	<8.3e-9	<8.9e-9	<2.1e-8	<1.5e-8
30-Aug-16	AD47593	004	<2.9e-8	<8.0e-9	<9.7e-9	<7.3e-9	<8.1e-9	<2.1e-8	<1.1e-8	<8.2e-9	<8.1e-9	<8.3e-9	<2.1e-8	<1.5e-8
20-Sep-16	AD50923	004	<4.8e-8	<1.1e-8	<1.2e-8	<9.8e-9	<1.1e-8	<2.6e-8	<1.9e-8	<1.6e-8	<1.1e-8	<1.2e-8	<2.7e-8	<1.9e-8
18-Oct-16	AD53913	063	<3.0e-9	<6.2e-9	<6.8e-9	<5.6e-9	<6.7e-9	<1.5e-8	<1.1e-8	<7.6e-9	<6.2e-9	<7.0e-9	<1.7e-8	<1.1e-8
14-Nov-16	AD58413	030	<2.8e-8	<7.1e-9	<7.8e-9	<6.5e-9	<7.3e-9	<1.8e-8	<9.2e-9	<7.3e-9	<6.9e-9	<7.1e-9	<1.9e-8	<1.3e-8
06-Dec-16	AD61005	030	<3.4e-8	<8.8e-9	<1.1e-8	<8.9e-9	<9.7e-9	<2.0e-8	<1.1e-8	<9.1e-9	<9.0e-9	<9.0e-9	<2.2e-8	<1.6e-8

South Texas Project
Environmental Sample Results

Date	Lab No	Station	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Water Surface pCi/L														
12-Jan-16	AD18409	046	<8.2e-9	<2.1e-9	<2.2e-9	<2.1e-9	<2.3e-9	<4.1e-9	<3.2e-9	<2.8e-9	<2.2e-9	<2.2e-9	<4.3e-9	<3.7e-9
25-Feb-16	AD26489	052	<3.9e-7	<7.3e-8	<8.1e-8	<9.3e-8	<9.3e-8	<1.7e-7	<1.7e-7	<1.2e-7	<8.4e-8	<1.1e-7	<2.4e-7	<1.5e-7
12-Apr-16	AD32932	054	<7.2e-9	<1.7e-9	<1.7e-9	<1.9e-9	<1.9e-9	<3.4e-9	<2.7e-9	<2.2e-9	<1.7e-9	<1.8e-9	<3.7e-9	<2.8e-9
16-Feb-16	AD24098	054	<8.6e-9	<2.0e-9	<2.2e-9	<2.0e-9	<2.9e-9	<4.1e-9	<3.0e-9	<2.9-9	<2.1e-9	<2.2e-9	<4.4e-9	<3.6e-9
15-Mar-16	AD29242	054	<7.2e-9	<1.6e-9	<1.8e-9	<1.8e-9	<1.9e-9	<3.0e-9	<2.3e-9	<1.8e-9	<1.7e-9	<1.8e-9	<3.6e-9	<2.7e-9
23-Mar-16	AD30590	052	<7.9e-9	<1.7e-9	<1.7e-9	<1.8e-9	<1.8e-9	<3.3e-9	<3.0e-9	<2.3e-9	<1.7e-9	<1.9e-9	<3.7e-9	<2.8e-9
28-Jan-16	AD20874	052	<8.4e-9	<1.7e-9	<1.8e-9	<1.9e-9	<1.9e-9	<3.5e-9	<3.0e-9	<2.4e-9	<1.7e-9	<1.8e-9	<3.7e-9	<2.8e-9
25-Feb-16	AD26488	052	<1.1e-8	<2.1e-9	<2.1e-9	<2.2e-9	<2.2e-9	<4.4e-9	<4.3e-9	<3.5e-9	<2.1e-9	<2.4e-9	<4.5e-9	<3.7e-9
27-Apr-16	AD34549	047	<7.8e-9	<2.0e-9	<2.1e-9	<2.1e-9	<2.2e-9	<3.9e-9	<2.9e-9	<2.9e-9	<2.2e-9	<2.2e-9	<4.5e-9	<3.6e-9
10-May-16	AD36247	046	<7.5e-9	<1.7e-9	<1.7e-9	<1.7e-9	<1.9e-9	<3.3e-9	<2.6e-9	<2.1e-9	<1.7e-9	<1.8e-9	<3.7e-9	<2.9e-9
26-May-16	AD38391	047	<8.3e-9	<1.8e-9	<1.7e-9	<1.8e-9	<2.0e-9	<3.2e-9	<3.0e-9	<2.5e-9	<1.7e-9	<1.8e-9	<3.9e-9	<3.0e-9
14-Jun-16	AD40626	054	<7.0e-9	<1.7e-9	<1.7e-9	<1.8e-9	<1.8e-9	<3.1e-9	<2.4e-9	<2.0e-9	<1.7e-9	<1.8e-9	<3.6e-9	<2.8e-9
22-Jun-16	AD41726	052	<6.8e-9	<1.7e-9	<1.7e-9	<1.8e-9	<1.9e-9	<3.0e-9	<2.4e-9	<2.0e-9	<1.6e-9	<1.8e-9	<3.6e-9	<2.8e-9
13-Jul-16	AD44390	054	<8.2e-9	<2.1e-9	<2.1e-9	<2.1e-9	<2.2e-9	<3.9e-9	<2.7e-9	<2.8e-9	<2.1e-9	<2.2e-9	<4.5e-9	<3.5e-9
25-Jul-16	AD45825	052	<6.7e-9	<1.7e-9	<1.7e-9	<1.8e-9	<1.9e-9	<3.1e-9	<2.4e-9	<1.9e-9	<1.6e-9	<1.7e-9	<3.7e-9	<2.8e-9
10-Aug-16	AD47367	054	<8.1e-9	<2.0e-9	<2.0e-9	<2.1e-9	<2.3e-9	<4.2e-9	<2.8e-9	<2.7e-9	<2.0e-9	<2.2e-9	<4.5e-9	<3.5e-9
25-Aug-16	AD47573	052	<8.1e-9	<1.7e-9	<1.6e-9	<1.7e-9	<1.9e-9	<3.3e-9	<3.0e-9	<2.3e-9	<1.7e-9	<1.9e-9	<3.5e-9	<2.8e-9
13-Sep-16	AD49568	054	<8.3e-9	<1.6e-9	<1.7e-9	<1.8e-9	<1.9e-9	<3.4e-9	<3.3e-9	<2.5e-9	<1.7e-9	<1.9e-9	<3.5e-9	<3.0e-9
27-Sep-16	AD51580	052	<6.6e-9	<1.7e-9	<1.6e-9	<1.8e-9	<1.9e-9	<3.1e-9	<2.4e-9	<1.9e-9	<1.7e-9	<1.8e-9	<3.2e-9	<2.9e-9
20-Oct-16	AD54151	052	<2.7e-9	<2.0e-9	<2.0e-9	<2.1e-9	<2.1e-9	<4.1e-9	<2.6e-9	<2.7e-9	<2.0e-9	<2.2e-9	<4.4e-9	<3.7e-9
20-Oct-16	AD54468	054	<9.4e-9	<2.1e-9	<2.1e-9	<2.1e-9	<2.3e-9	<4.1e-9	<3.4e-9	<3.3e-9	<2.1e-9	<2.2e-9	<4.2e-9	<3.7e-9
15-Nov-16	AD58414	054	<6.8e-9	<1.7e-9	<1.7e-9	<1.7e-9	<1.9e-9	<3.0e-9	<2.4e-9	<2.1e-9	<1.7e-9	<1.7e-9	<3.5e-9	<2.8e-9
16-Nov-16	AD58965	052	<8.1e-9	<1.7e-9	<1.8e-9	<1.8e-9	<2.0e-9	<3.6e-9	<2.9e-9	<2.9e-9	<1.8e-9	<1.9e-9	<3.8e-9	<3.1e-9
13-Dec-16	AD61806	054	<6.3e-9	<1.7e-9	<1.8e-9	<1.9e-9	<2.0e-9	<3.2e-9	<2.0e-9	<2.2e-9	<1.8e-9	<1.8e-9	<4.2e-9	<3.0e-9
12-Dec-16	AD61807	052	<7.5e-9	<1.9e-9	<2.2e-9	<2.1e-9	<2.1e-9	<3.9e-9	<2.5e-9	<2.3e-9	<2.0e-9	<2.2e-9	<4.2e-9	<3.3e-9

Water Surface Composite pCi/L			**H-3**
25-Feb-16	AD19464	054	<1.0e-6
25-Feb-16	AD19465	052	<1.0e-6
19-Apr-16	AD32415	046	<1.0e-6
19-Apr-16	AD32416	052	<1.0e-6
3-Oct-16	AD43431	046	<1.0e-6
3-Oct-16	AD43432	052	<1.0e-6
17-Oct-16	AD53304	054	<1.0e-6
17-Oct-16	AD53305	052	<1.0e-6

*NOTE: * indicates the analysis was by alpha spectrometry, or Ra-226, analysis by radon emanation.*
***Indicates the tritium (H-3) analysis for food product, sediment, and vegetation is reported in UCi/ml*

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Research Reactors

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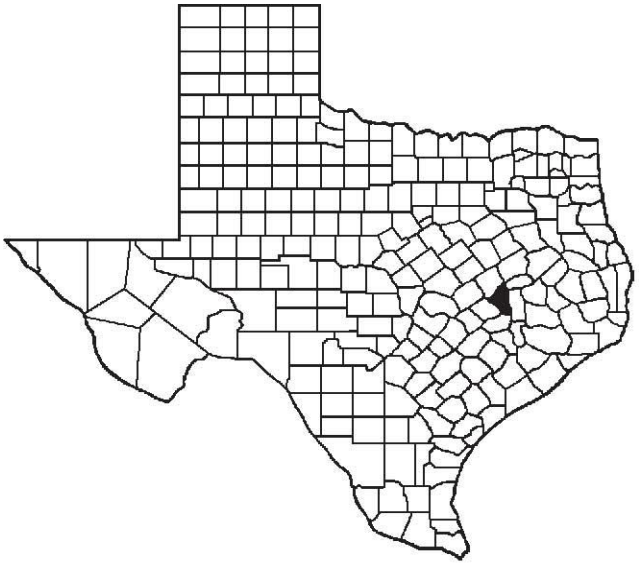
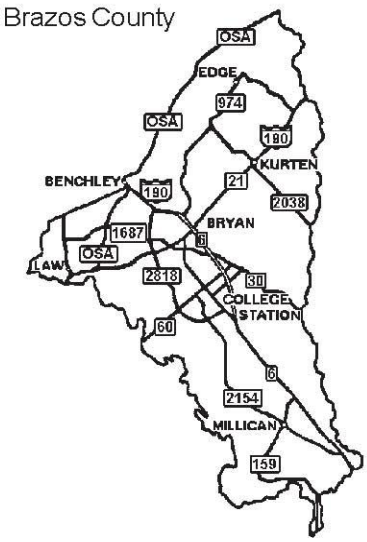
Texas A & M University Nuclear Science Center

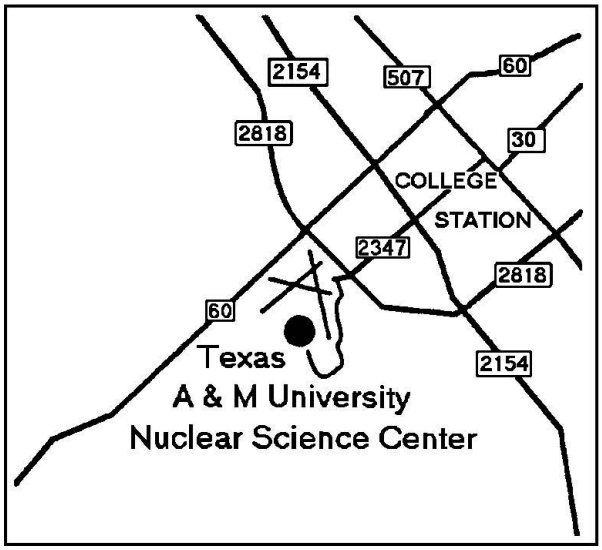
Radiation Branch Site No. 001

Texas A&M Nuclear Science Center (NSC) is located seven miles south of downtown Bryan just south of Easterwood Airport. NSC houses a one-megawatt TRIGA (Testing, Research, Isotope Production, General Atomics) research reactor that came online in 1961. The Radiation Branch surveillance program consists of OSL monitoring.





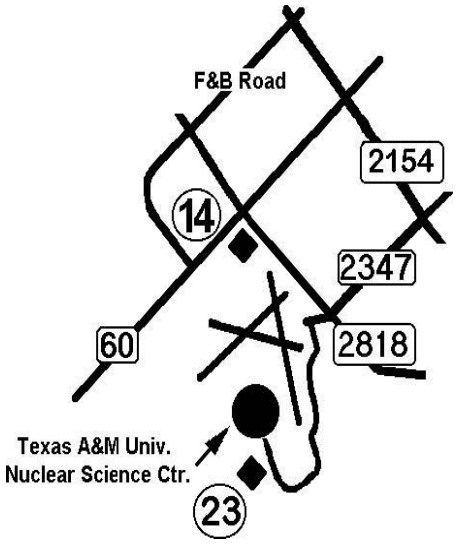
Shaded area indicates location of Brazos County



Texas A & M University Nuclear Science Center
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Texas A & M Nuclear Science Center
Optically Stimulated Luminescent Dosimeter (OSL) Monitoring Results[1]
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 2	26	29	36	30	121	
STATION 3	25	28	32	28	113	
STATION 4	28	32	43	34	137	
STATION 5	25	27	32	29	113	
STATION 10	24	27	30	28	109	
STATION 11	25	26	29	28	108	
STATION 14	24*	24*	24*	24	96	*[1]Background;[2]Q1,Q2,Q3-OSL Missing*
STATION 18	25	28	32	30	115	
STATION 19	24	31	42	30	127	
STATION 20	23	23	30	27	103	
STATION 21	22	25	31	28	106	
STATION 22	20	23	27	26	96	
STATION 23	24	26	29	27	106	*[1]Background*
STATION 24	24	25	35	29	113	
STATION 25	22	26	29	27	104	
STATION 26	25	24	32	26	107	
STATION 27	23	26	29	27	105	
STATION 28	24	26	33	30	113	
STATION 29	27	27	34	30	118	

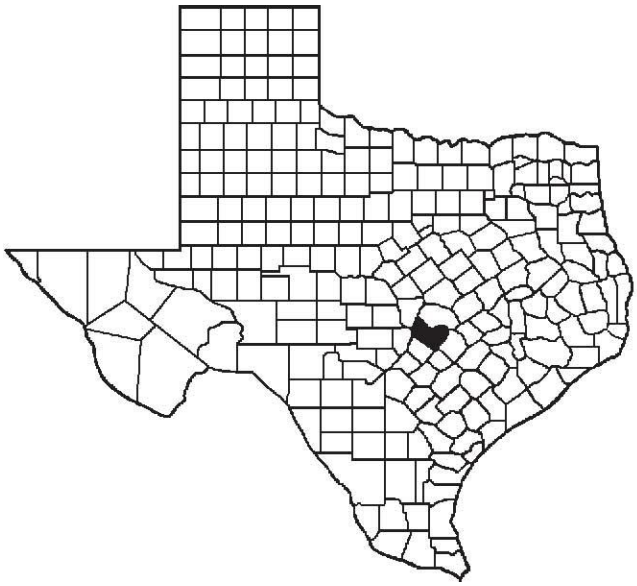
NOTE: [1]Background is not subtracted from the data

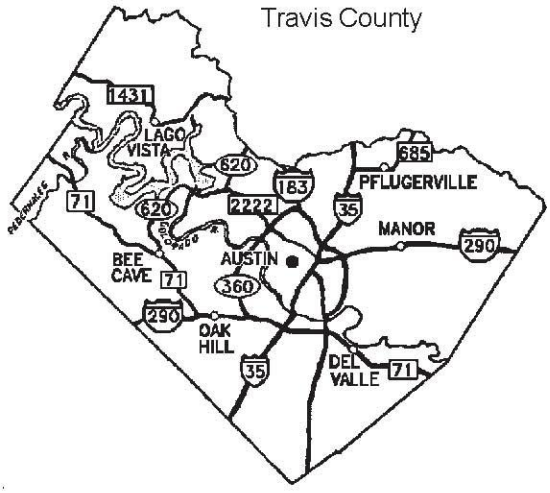
[2]If data are missing during a quarter, an average of known quarter readings for that year and location is used to fill in for the missing data

University of Texas Nuclear Engineering Teaching Laboratory

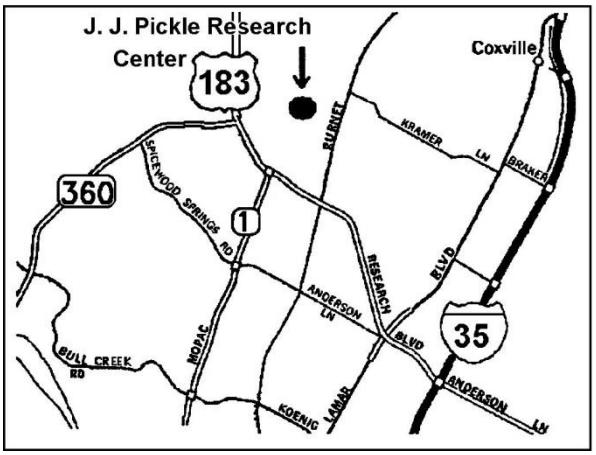
Radiation Branch Site No. 003

University of Texas Nuclear Engineering Teaching Laboratory (NETL) is located at the J. J. Pickle Research Center, approximately five miles north of the Texas Department of State Health Services main campus. NETL houses an above-ground, fixed-core 1.1 megawatt TRIGA (Testing, Research, Isotope Production, General Atomics) research reactor that came online in 1992. The Radiation Branch surveillance program consists of sampling sewage and water and OSL monitoring.





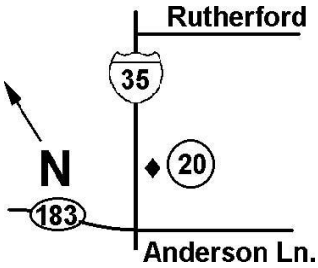
Shaded area indicates location of Travis County



University of Texas Nuclear Engineering Teaching Laboratory
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



University of Texas Nuclear Engineering Teaching Laboratory

Optically Stimulated Luminescent Dosimeter (OSL) Monitoring Results[1]
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	25	22	24	26	97	
STATION 2	21	25	26	24	96	
STATION 3	21	23	24	25	93	
STATION 4	22	26	28	27	103	
STATION 5	23	25	26	27	101	
STATION 20	21	24	27	25	97	[1]Background

NOTE: [1]Background is not subtracted from the data

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Other Facilities

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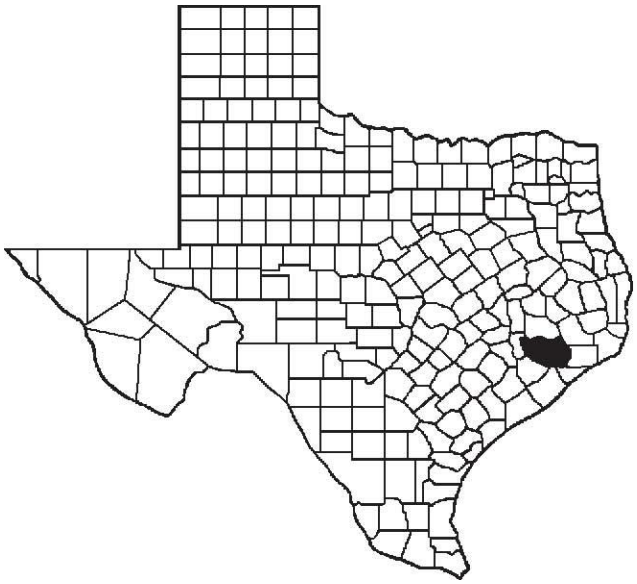
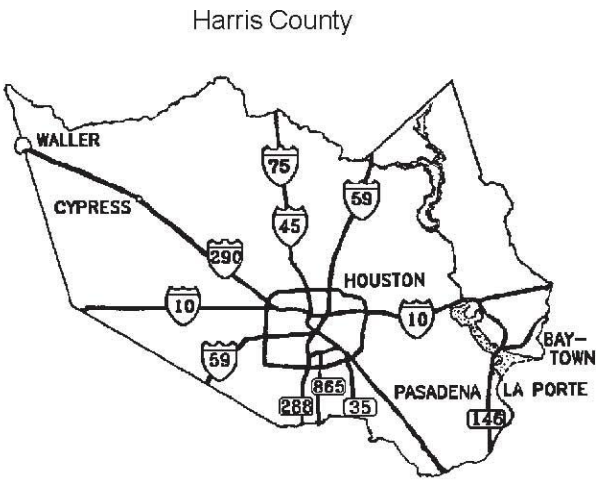
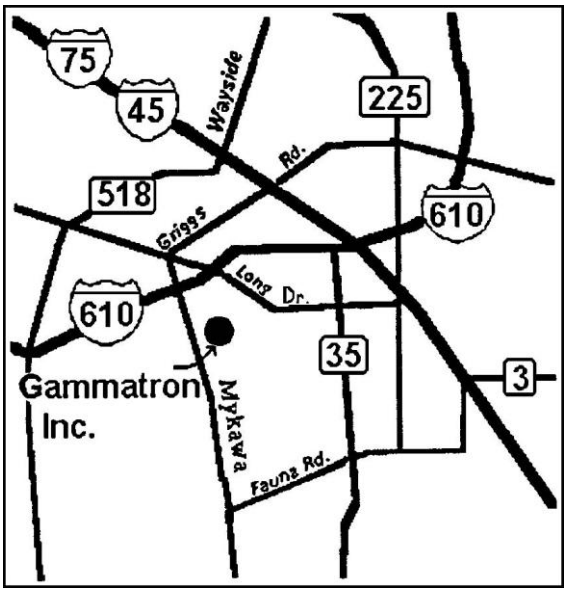
Gammatron, Inc.
Radiation Branch Site No. 018

Gammatron, Inc. is a manufacturer of sealed radioactive sources. The facility is located in an industrial area of Houston approximately four miles northwest of William P. Hobby Airport. The Radiation Branch surveillance program consists OSL monitoring.





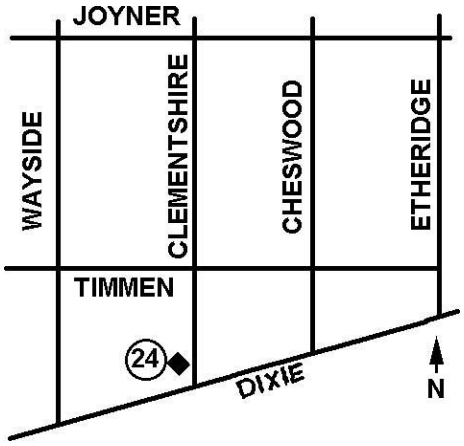
Shaded area indicates location of Harris County



Gammatron, Inc.
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Gammatron, Inc.

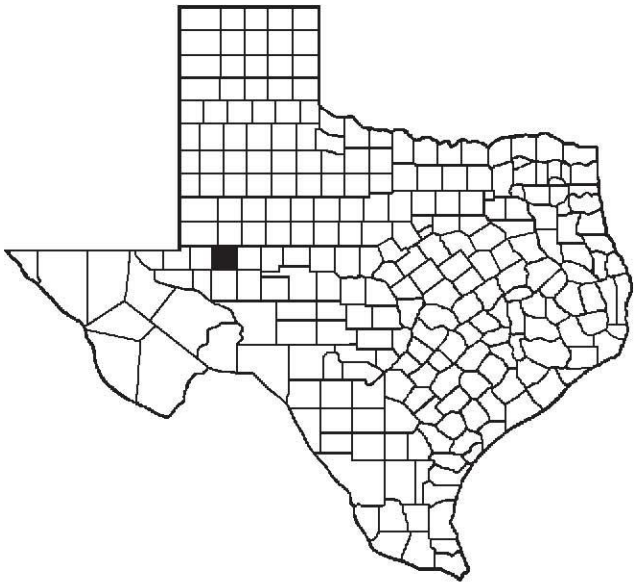
Optically Stimulated Luminescence (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 3	78	278	46	96	498	
STATION 5	243	349	347	202	1141	
STATION 8	337	156	220	408	1121	
STATION 24	22	26	27	25	100	[1]Background
STATION 30	99	82	47	45	273	
STATION 31	31	55	38	33	157	
STATION 34	219	172	154	457	1002	
STATION 40	87	36	41	41	205	

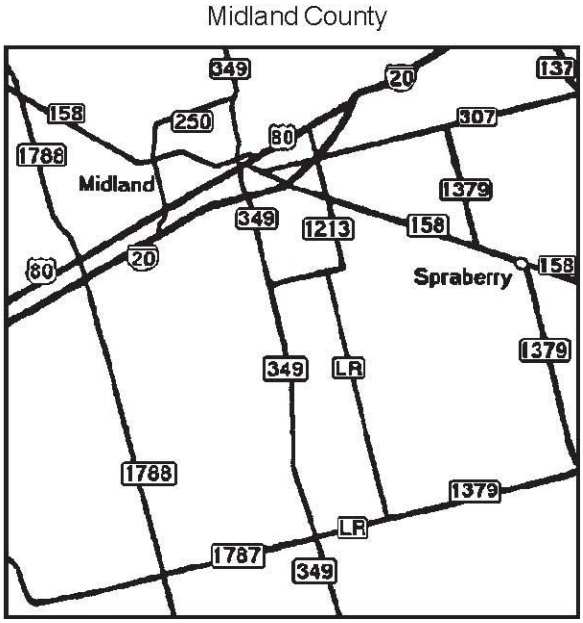
NOTE: [1]Background is not subtracted from the data

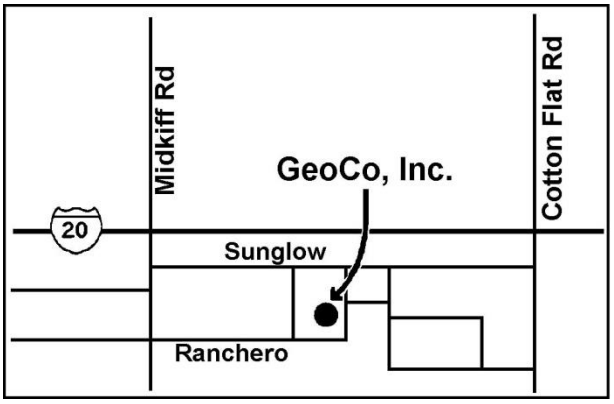
GeoCo, Inc.
Radiation Branch Site No. 051

GeoCo, Inc. is a tracer studies company specializing in oil and gas wells. The facility is located in Midland approximately six miles east of Midland-Odessa International Airport. The Radiation Branch surveillance program consists of OSL monitoring.



Shaded area indicates location of Midland County

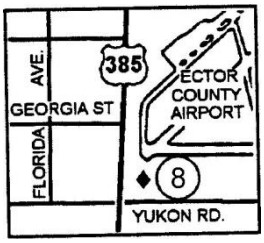




GeoCo, Inc.
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



GeoCo, Inc.

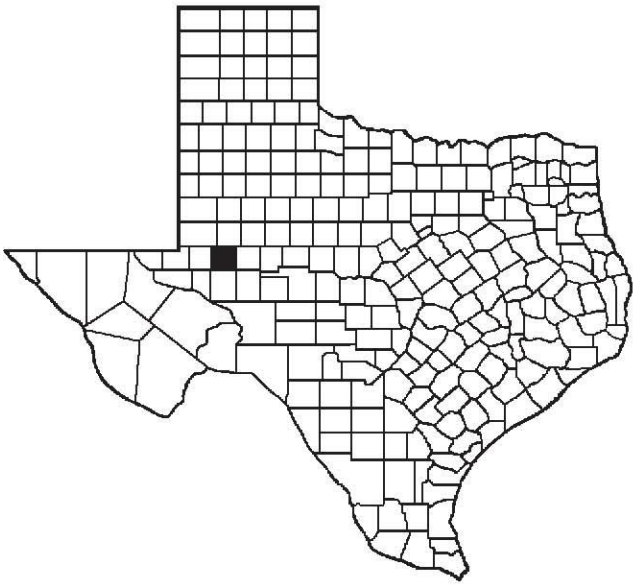
Optically Stimulated Luminescence (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	33	28	31	33	125	
STATION 8	26	29	31	30	116	[1]Background

NOTE: [1]Background is not subtracted from the data

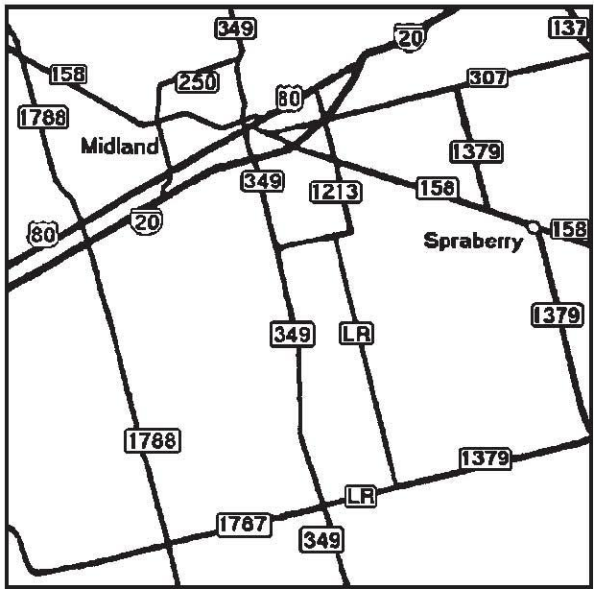
Isotech Laboratories, Inc.
Radiation Branch Site No. 008

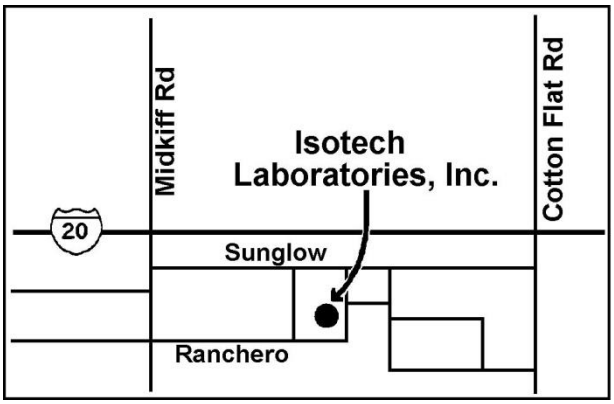
Isotech Laboratories, Inc. manufactures tracer material for the oil and gas industry, calibrates radiation detection instruments, and provides radiation safety training for well-logging and tracer services. The facility is located in Midland approximately six miles east of Midland-Odessa International Airport. The Radiation Branch surveillance program consists of OSL monitoring.



Shaded area indicates location of Midland County

Midland County

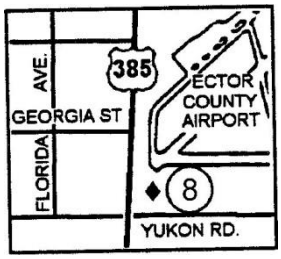




Isotech Laboratories, Inc.
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Isotech Laboratories, Inc.

Optically Stimulated Luminescence (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

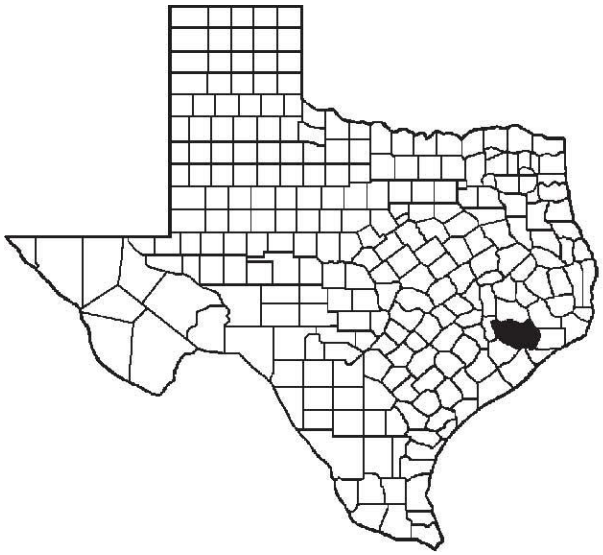
	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	27	47	30	32	136	
STATION 2	39	45	54	37	175	
STATION 3	38	59	45	36	178	
STATION 4	42	36	41	36	155	
STATION 6	43	31	37	34	145	
STATION 8	28	30*	31	30	119	[1]Background [2]Q2-OSL Missing

NOTE: [1]Background is not subtracted from the data
[2]If data are missing during a quarter, an average of known quarter readings for that year and location is used to fill in for the missing data

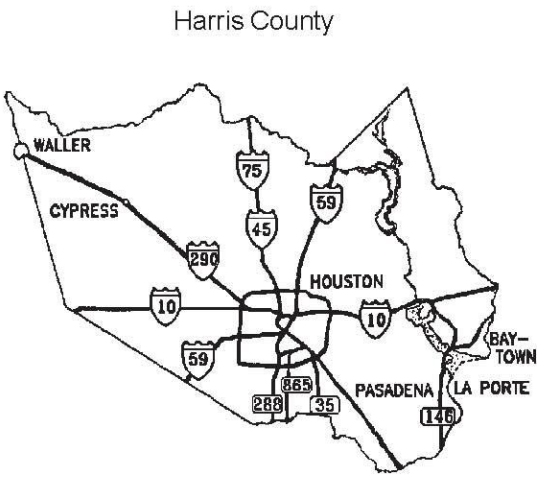
Nuclear Sources and Services, Inc.

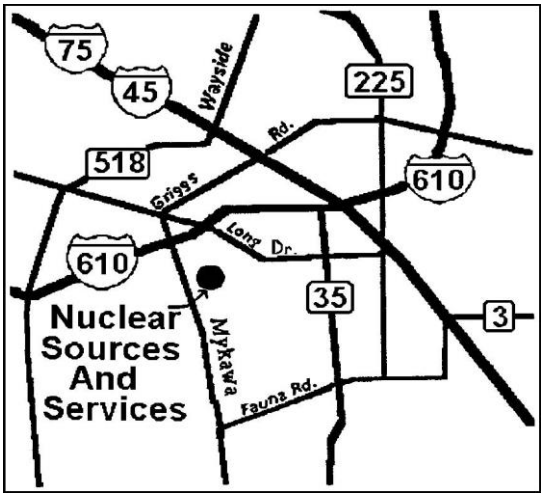
Radiation Branch Site No. 023

The Nuclear Sources and Services, Inc. (NSSI) facility occupies approximately five acres in a light industrial area of Southeast Houston approximately four miles northwest of William P. Hobby Airport. The primary activities of NSSI currently are waste treatment, storage, and disposal of radioactive and chemical hazardous materials. NSSI receives wastes from a variety of off-site generators both inside and outside of Texas. At the conclusion of treatment or storage, the residues are shipped to permitted off-site facilities for disposal. The Radiation Branch surveillance program consists of soil sampling and OSL monitoring.



Shaded area indicates location of Harris County

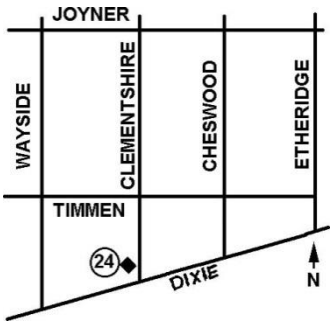




Nuclear Sources and Services, Inc.
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Nuclear Sources and Services, Inc.

Optically Stimulated Luminescence (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

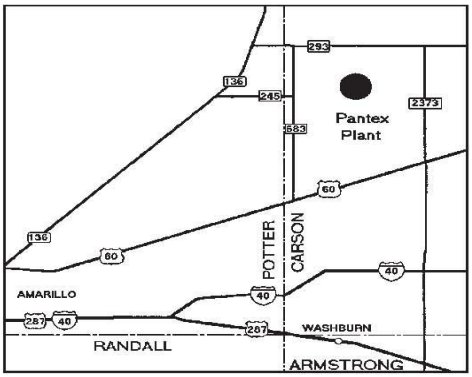
	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 3	272	145	203	199	819	
STATION 4	49	36	38	37	160	
STATION 6	47	31	34	34	146	
STATION 7	33	32	41	57	163	
STATION 11	27	28	31	27	113	
STATION 12	37	98	58	33	226	
STATION 16	34	34	37	37	142	
STATION 18	30	33	36	32	131	
STATION 19	32	39	48	33	152	
STATION 20	51	40	49	41	181	
STATION 21	346	286	426	63	1121	
STATION 22	22	26	28	26	102	
STATION 23	25	29	31	30	115	
STATION 24	22	26	27	25	100	[1]Background
STATION 25	22	26	27	25	100	
STATION 41	86	91	53	114	344	
	86	93	112	44	335	

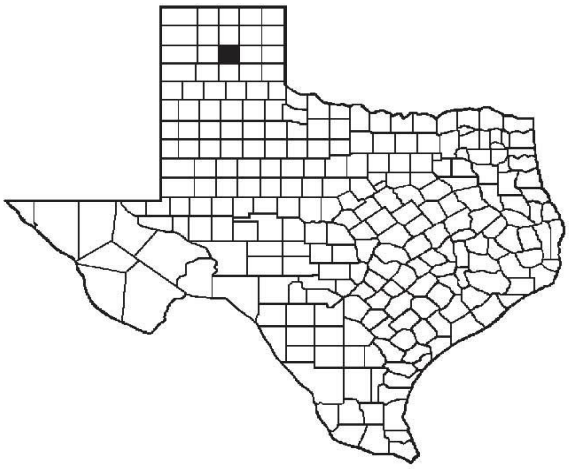
NOTE: [1]Background is not subtracted from the data

Pantex
Radiation Branch Site No. 005

The Pantex plant site is located in Carson County in the Texas Panhandle, north of U.S. Highway 60. The plant is located 17 miles (27 kilometers) northeast of downtown Amarillo. It is centered on a 18,000-acre site. The Pantex facility consists of 11,703 acres of United States Department of Energy (USDOE) owned land and 5,800 acres of land leased from Texas Tech University used as a safety and security buffer zone. The buffer area is managed by Texas Tech Research Farm and is used as rangeland and farmland. An additional 1,080 acres northwest of the plant is called Pantex Lake. Pantex Lake was formally used as the receiving area for treated wastewater discharges, and is now managed by Texas Tech University. An additional 7,926 acres to the east of the plant is USDOE-owned and is used for agricultural purposes through a cooperative agreement.

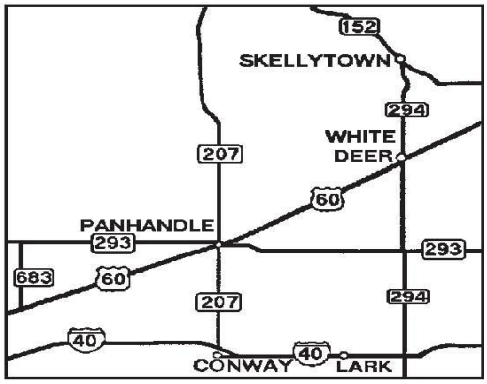
The Radiation Branch surveillance program consists of OSL monitoring and sampling air, food products, sediment, soil, vegetation, and water. Analysis of samples is performed to determine the presence of any special nuclear material.





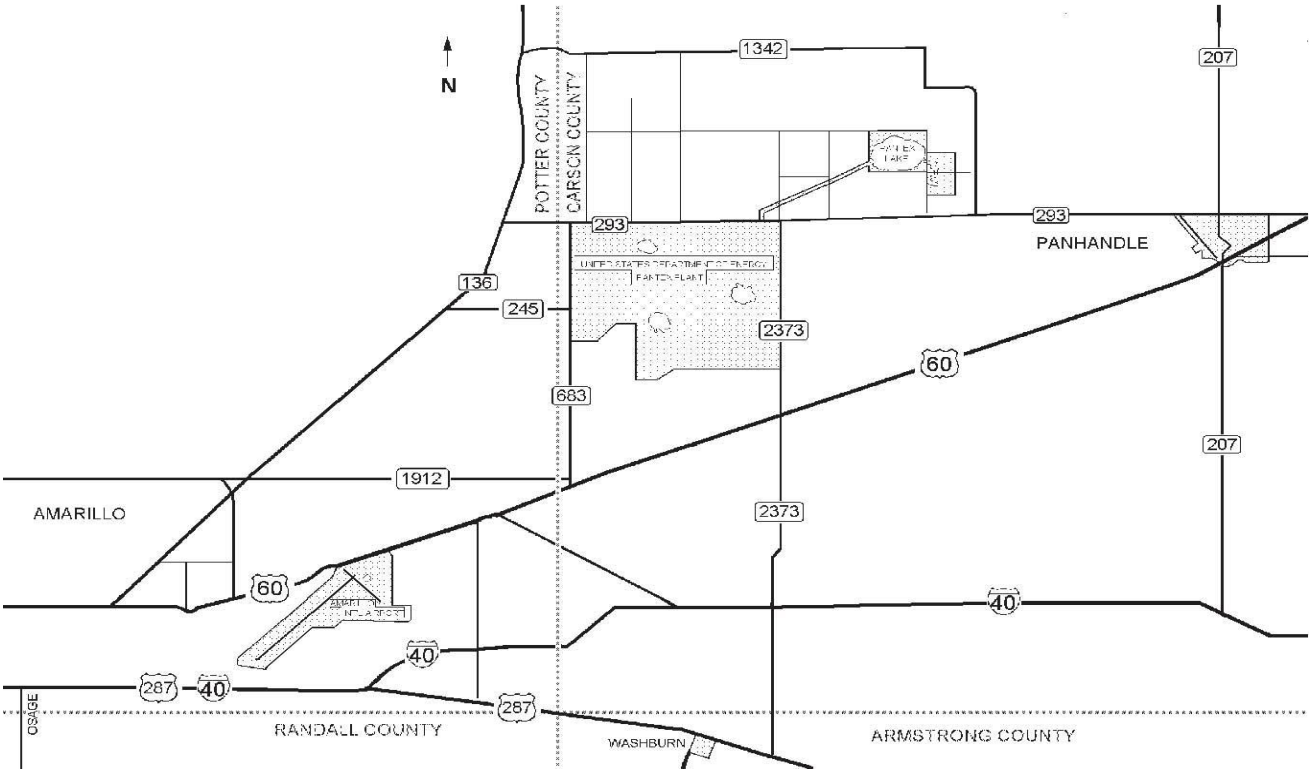
Shaded area indicates location of Carson County

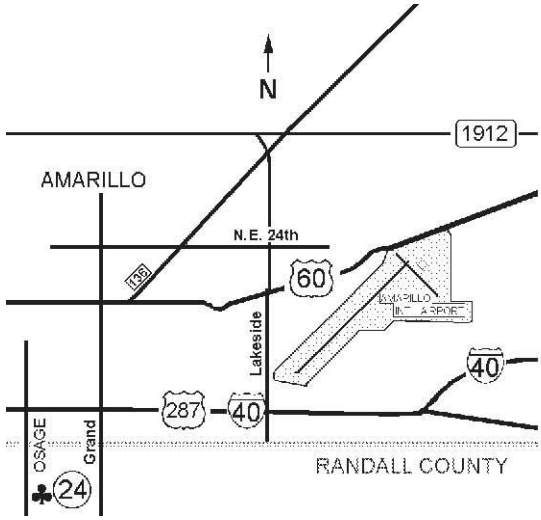
Carson County

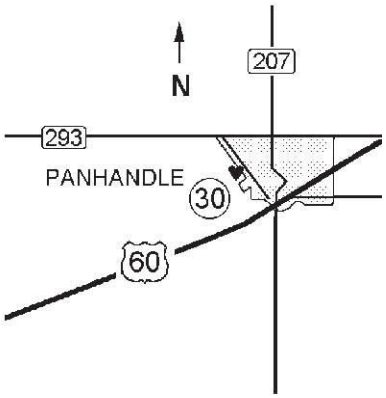


Pantex
Monitoring Station Locations

◆ TLD Station ♥ Sample Station ♣ TLD & Sample Station

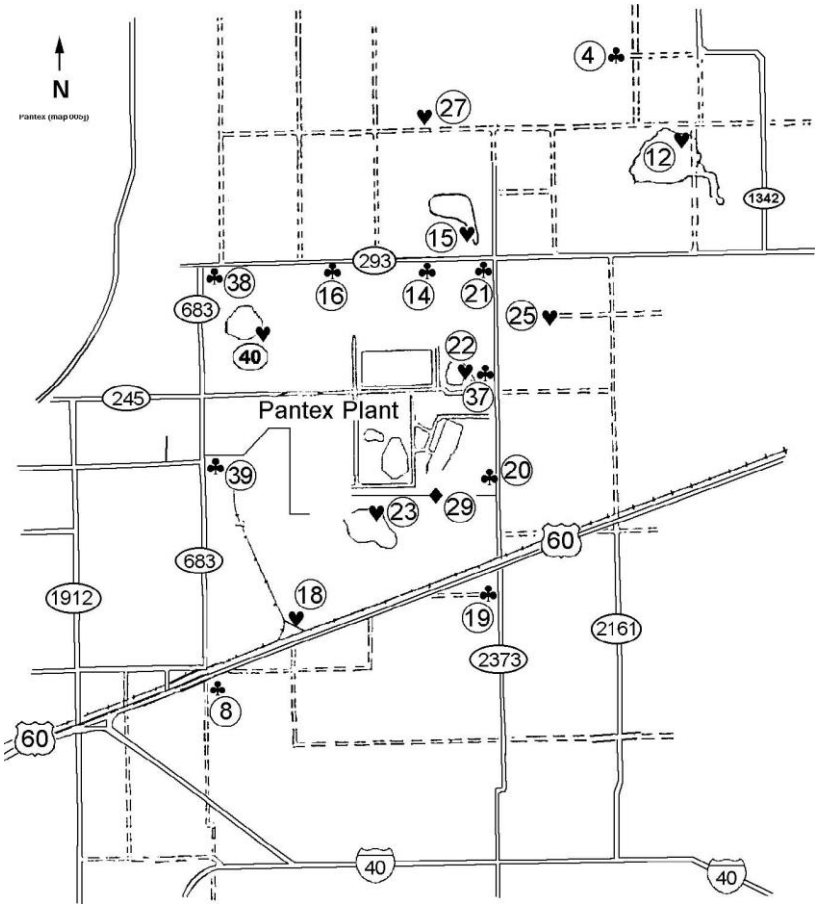






Pantex
Monitoring Station Locations

Homeland Security -Diagram Removed



Pantex
Environmental Sample Results

Optically Stimulated Luminescence (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 4	31	33	34	37	135	
STATION 8	31	33	36	36	136	
STATION 14	35	36	33	38	142	
STATION 16	35	34	36	37	142	
STATION 19	34	34	38	37	143	
STATION 20	34	36	36	36	142	
STATION 21	30	34	34	33	131	
STATION 24	28	31	33	34	126	[1]Background
STATION 29	33	34	37	37	141	
STATION 37	35	35	38	39	147	
STATION 38	33	32	33	34	132	
STATION 39	32	34	37	37	140	

NOTE: [1]Background is not subtracted from the data

Pantex
Environmental Air Sample Results

Date	Lab No	Station	P-239	U-234	U-235	U-238
Air Particulate uCi/mL						
13-Jan-16	AD27053	104	<6.0e-17	<5.9e-16	<5.9e-16	<5.9e-16
28-Jan-16	AD27052	104	<5.9e-17	<5.9e-16	<5.9e-16	<5.9e-16
15-Feb-16	AD32414	104	<5.2e-17	<5.2e-16	<5.2e-16	<5.2e-16
23-Feb-16	AD32413	104	<5.8e-17	<5.8e-16	<5.8e-16	<5.8e-16
16-Mar-16	AD35741	104	<6.0e-17	<5.9e-16	<5.9e-16	<5.9e-16
01-Apr-16	AD35742	104	<5.9e-17	<5.9e-16	<5.9e-16	<5.9e-16
08-Apr-16	AD35743	104	<6.0e-17	<5.9e-16	<5.9e-16	<5.9e-16
29-Apr-16	AD39291	104	<6.1e-17	<6.0e-16	<6.0e-16	<6.0e-16
12-May-16	AD43423	104	<5.9e-17	<5.8e-16	<5.8e-16	<5.8e-16
24-May-16	AD43424	105	<5.6e-17	<5.6e-16	<5.6e-16	<5.6e-16
02-Jun-16	AD43425	104	<6.3e-17	<6.3e-16	<6.3e-16	<6.3e-16
09-Jun-16	AD47263	105	<5.5e-17	<5.5e-16	<5.5e-16	<5.5e-16
14-Jul-16	AD47264	104	<6.4e-17	<6.3e-16	<6.3e-16	<6.3e-16
25-Jul-16	AD48680	104	<5.9e-17	<5.9e-16	<5.9e-16	<5.9e-16
02-Aug-16	AD48682	105	<5.7e-17	<5.7e-16	<5.7e-16	<5.7e-16
11-Aug-16	AD48681	105	<6.0e-17	<5.9e-16	<5.9e-16	<5.9e-16
14-Sep-16	AD52713	104	<6.0e-17	<6.0e-16	<6.0e-16	<6.0e-16
28-Sep-16	AD57880	104	<6.0e-17	<6.0e-16	<6.0e-16	<6.0e-16
21-Oct-16	AD62620	104	<5.7e-17	<5.6e-16	<5.6e-16	<5.6e-16
15-Nov-16	AD62619	104	<5.5e-17	<5.5e-16	<5.5e-16	<5.5e-16

Pantex
Environmental Sample Results

Date	Lab No	Station	P-239	U-234	U-235	U-238	H-3
Food Products uCi/g							
20-Apr-16	AD33805	025	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Jul-16	AD45307	025	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
18-Oct-16	AD53926	025	<1.1e-8	2.9e-8	<1.1e-8	2.3e-8	<1.0e-6
Sediment uCi/g							
20-Jan-16	AD19086	022	<1.0e-7	1.04e-6	<1.0e-6	1.37e-6	<1.0e-6
20-Apr-16	AD33810	023	<1.0e-7	<1.0e-6	<1.0e-6	1.11e-6	
20-Jul-16	AD45311	040	<1.0e-10	<1.0e-9	<1.0e-9	<1.0e-9	<1.0e-6
18-Oct-16	AD53927	015	<6.2e-8	1.11e-6	<9.4e-8	1.06e-6	
Soil uCi/g							
19-Jan-16	AD19081	014	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19082	018	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19083	020	<1.0e-7	1.02e-6	<1.0e-6	1.02e-6	
19-Jan-16	AD19084	037	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19085	039	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
20-Apr-16	AD33793	004	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
20-Apr-16	AD33794	008	<1.0e-7	1.05e-6	<1.0e-6	<1.0e-6	
20-Apr-16	AD33795	016	<1.0e-7	1.07e-6	<1.0e-6	<1.0e-6	
20-Apr-16	AD33796	019	<1.0e-7	1.10e-6	<1.0e-6	1.12e-6	
20-Apr-16	AD33797	021	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
20-Apr-16	AD33798	038	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
20-Jul-16	AD45297	014	<1.0e-7	<1.0e-6	<1.0e-6	1.15e-6	
20-Jul-16	AD45298	018	<1.0e-7	1.12e-6	<1.0e-6	1.00e-6	
20-Jul-16	AD45299	020	<1.0e-7	<1.0e-6	<1.0e-6	1.08e-6	
20-Jul-16	AD45301	039	<1.0e-7	1.27e-6	<1.0e-6	1.14e-6	
20-Jul-16	AD45300	037	<1.0e-7	1.20e-6	<1.0e-6	1.12e-6	
18-Oct-16	AD53914	004	<5.8e-8	1.09e-6	<5.9e-8	1.11e-6	
18-Oct-16	AD53915	008	<7.8e-8	1.08e-6	<6.2e-8	1.09e-6	
18-Oct-16	AD53916	016	<6.5e-8	1.33e-6	<6.7e-8	1.22e-6	
18-Oct-16	AD53917	019	<6.7e-8	1.20e-6	<7.5e-8	9.4e-7	
18-Oct-16	AD53918	021	<7.9e-8	8.2e-7	<5.6e-8	7.2e-7	
18-Oct-16	AD53919	038	<5.2e-8	9.9e-7	<6.5e-8	8.2e-7	
Vegetation uCi/g							
19-Jan-16	AD19081	014	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19088	018	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19089	020	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19090	037	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
19-Jan-16	AD19091	039	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	
20-Apr-16	AD33799	004	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Apr-16	AD33800	008	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Apr-16	AD33802	016	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Apr-16	AD33801	019	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Apr-16	AD33803	021	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Apr-16	AD33804	038	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Jul-16	AD45302	014	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Jul-16	AD45303	018	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Jul-16	AD45304	020	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Jul-16	AD45305	037	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
20-Jul-16	AD45306	039	<1.0e-7	<1.0e-6	<1.0e-6	<1.0e-6	<1.0e-6
18-Oct-16	AD53920	004	<8.1e-9	2.6e-8	<9.8e-9	1.1e-8	<1.0e-6
18-Oct-16	AD53921	008	<6.2e-9	1.6e-8	<9.9e-9	1.6e-8	<1.0e-6
18-Oct-16	AD53922	016	<7.6e-9	3.6e-8	<1.1e-8	2.4e-8	<1.0e-6
18-Oct-16	AD53923	019	<5.8e-9	1.8e-8	<1.1e-8	1.4e-8	<1.0e-6
18-Oct-16	AD53924	021	<1.2e-8	1.5e-8	<9.7e-9	1.9e-8	<1.0e-6
18-Oct-16	AD53925	038	<4.6e-9	1.00e-8	<4.9e-9	7.4e-9	<1.0e-6

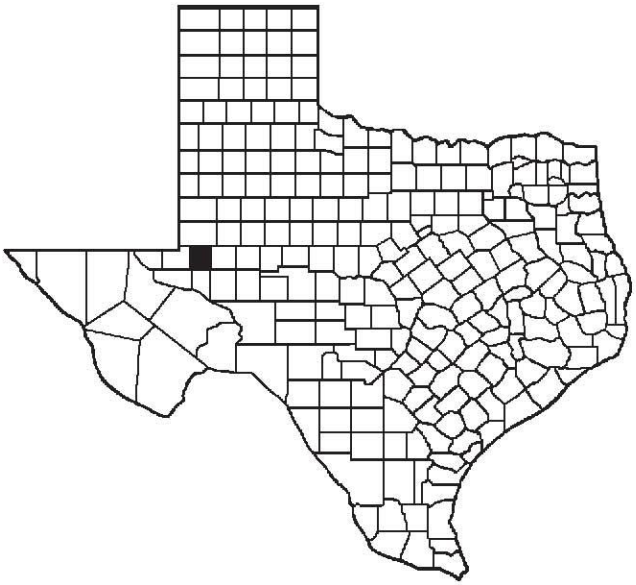
Pantex
Environmental Sample Results

Date	Lab No	Station	P-239	U-234	U-235	U-238	H-3
Water Surface uCi/mL							
20-Jan-16	AD19095	022	<1.0e-10	<1.0e-9	<1.0e-9	<1.0e-9	<1.0e-6
19-Jan-16	AD19092	024	<1.0e-10	3.55e-9	<1.0e-9	1.34e-9	<1.0e-6
20-Apr-16	AD33809	023	<1.0e-10	1.22e-9	<1.0e-9	<1.0e-9	<1.0e-6
20-Apr-16	AD33806	024	<1.0e-10	4.14e-9	<1.0e-9	1.71e-9	<1.0e-6
20-Jul-16	AD45308	024	<1.0e-10	4.18e-9	<1.0e-9	1.91e-9	<1.0e-6
20-Jul-16	AD45312	040	<1.0e-7	1.05e-6	<1.0e-6	1.18e-6	<1.0e-6
18-Oct-16	AD53928	015	<1.2e-10	9.0e-10	<1.1e-10	5.3e-10	<1.0e-6
18-Oct-16	AD53929	024	<1.4e-10	3.91e-9	<1.7e-10	2.08e-9	<1.0e-6
Water Drinking uCi/mL							
19-Jan-16	AD19094	030	<1.0e-10	4.15e-9	<1.0e-9	1.77e-9	<1.0e-6
20-Apr-16	AD33808	030	<1.0e-10	4.6e-9	<1.0e-9	2.02e-9	<1.0e-6
20-Jul-16	AD45310	030	<1.0e-10	4.5e-9	<1.0e-9	2.24e-9	<1.0e-6
18-Oct-16	AD53931	030	<1.2e-10	5.3e-9	<1.4e-10	2.23e-9	<1.0e-6
Water Ground uCi/mL							
19-Jan-16	AD19093	027	<1.0e-10	3.43e-9	<1.0e-9	1.89e-9	<1.0e-6
20-Apr-16	AD33807	027	<1.0e-10	4.3e-9	<1.0e-9	1.92e-9	<1.0e-6
20-Jul-16	AD45309	027	<1.0e-10	4.1e-9	<1.0e-9	2.54e-9	<1.0e-6
18-Oct-16	AD53930	027	<1.1e-10	5.4e-9	<1.6e-10	2.06e-9	<1.0e-6

*NOTE: * indicates the analysis was by alpha spectrometry, or Ra-226, analysis by radon emanation.*
***Indicates the tritium (H-3) analysis for food product, sediment, and vegetation is reported in UCi/ml*

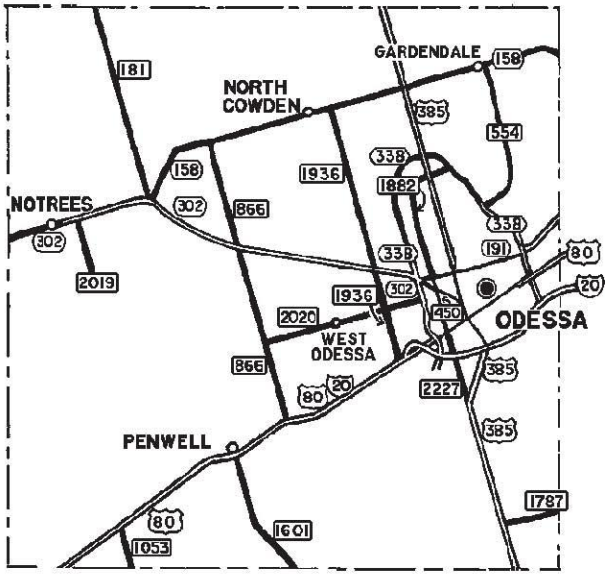
Radiation Technology, Inc.
Radiation Branch Site No. 050

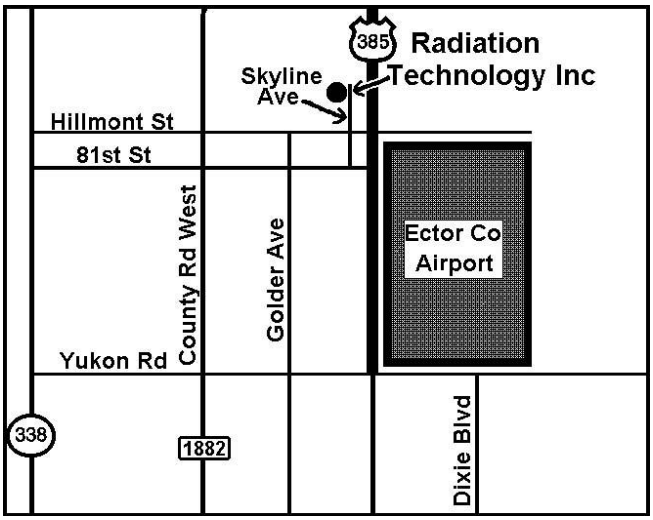
Radiation Technology, Inc. (RTI), located six miles north of downtown Odessa, provides installation, repair, and maintenance of nuclear gauging devices and services for loading and unloading radioactive sources in nuclear gauges. The Radiation Branch surveillance program consists of OSL monitoring.



Shaded area indicates location of Ector County

Ector County

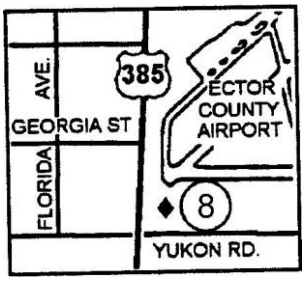




Radiation Technology, Inc.
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Radiation Technology, Inc.

Optically Stimulated Luminescence (OSL) Monitoring Results
(quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	26	35	43	34	138	
STATION 2	143	168	239	11700	12250	[2] Source Removal
STATION 3	35	42	53	54	184	
STATION 4	27	33	39	33	132	
STATION 8	26	29	31	30	116	[1]Background

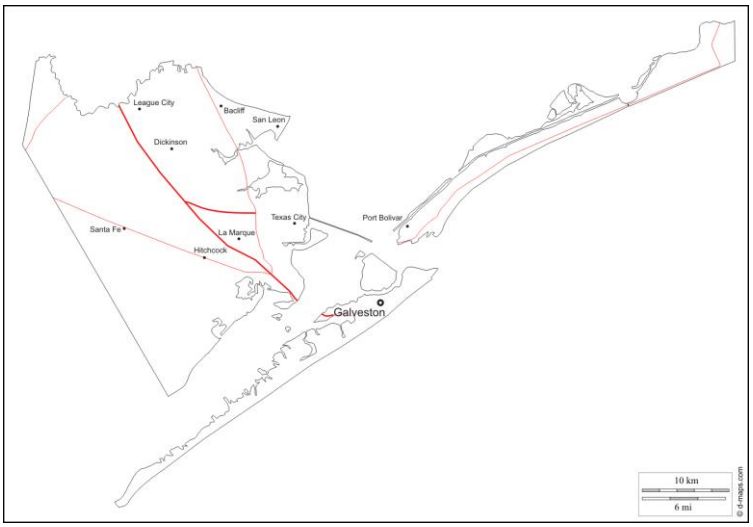
NOTE: [1]Background is not subtracted from the data
[2]The high dose came from a Cobalt - 60 source over 4 days in December 2016 due to corrosion of the source well in a storage device and lack of additional surveys during source removal.

Galveston Shipyard Sturgis
Radiation Branch Site No. 048

The former World War II Liberty Ship, SS Charles H. Cugle, was converted into a nuclear power plant in 1966. The Sturgis was the first barge mounted nuclear plant to regularly supply power to a shore station. Decommissioning (removal of ship parts and the reactor) began in 2015. Decommissioning is scheduled to be completed by the end of 2018.

Shaded area indicates location of Galveston County

Galveston County



Galveston Shipyard Sturgis
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed

Galveston Shipyard Sturgis

Optically Stimulated Luminescence (OSL) Monitoring Results and Environmental Sampling Results (quarterly and annual readings are in mrem)

	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	19	22	24	26	91	
STATION 6	21	22	24	27	94	[1]Background

Date	Lab No	Station	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Water-Surface pCi/L														
02-Jan-17	AD62877	003	<8.5e-9	<2.0e-9	<2.3e-9	<2.2e-9	<2.1e-9	<4.5e-9	<2.9e-9	<2.7e-9	<2.1e-9	<2.1e-9	<4.6e-9	<3.6e-9
02-Jan-17	AD62876	004	<8.1e-9	<1.9e-9	<2.4e-9	<2.2e-9	<2.3e-9	<4.4e-9	<2.7e-9	<2.7e-9	<2.1e-9	<2.1e-9	<4.1e-9	<3.7e-9
02-Jan-17	AD62875	005	<6.4e-9	<1.8e-9	<1.9e-9	<1.8e-9	<2.0e-9	<3.5e-9	<2.1e-9	<2.5e-9	<1.8e-9	<1.8e-9	<4.3e-9	<3.1e-9
06-Jan-15	AC76034	002	<9.1e-9	<1.7e-9	<1.8e-9	<1.8e-9	<2.0e-9	<3.7e-9	<3.9e-9	<2.7e-9	<1.6e-9	<2.0e-9	<3.9e-9	<3.2e-9
06-Jan-15	AC76033	003	<8.8e-9	<1.7e-9	<1.8e-9	<1.8e-9	<2.0e-9	<3.6e-9	<3.4e-9	<2.8e-9	<1.7e-9	<1.9e-9	<3.8e-9	<3.2e-9
06-Jan-15	AC76035	004	<9.5e-9	<1.8e-9	<1.9e-9	<1.9e-9	<1.9e-9	<3.8e-9	<4.1e-9	<3.0e-9	<1.7e-9	<2.0e-9	<3.9e-9	<3.2e-9
06-Jan-15	AC76036	005	<1.0e-8	<1.8e-9	<1.7e-9	<1.8e-9	<1.9e-9	<3.7e-9	<4.3e-9	<3.1e-9	<1.7e-9	<2.1e-9	<4.2e-9	<3.2e-9
Sediment pCi/kg														
02-Jan-17	AD62879	003	<8.1e-7	<2.2e-7	<1.8e-7	<2.4e-7	<2.4e-7	<4.7e-7	<2.6e-7	<2.5e-7	<2.4e-7	<2.2e-7	<5.6e-7	<3.7e-7
02-Jan-17	AD62878	004	<4.6e-7	<1.2e-7	<1.2e-7	<1.2e-7	<1.3e-7	<2.1e-7	<1.5e-7	<1.8e-7	<1.2e-7	<1.3e-7	<3.2e-7	<2.2e-7
06-Jan-15	AC76031	004	<5.3e-7	<1.2e-7	<9.9e-8	<1.1e-7	<1.3e-7	<2.4e-7	<1.9e-7	<1.6e-7	<1.1e-7	<1.4e-7	<3.2e-7	<1.8e-7
06-Jan-15	AC76032	005	<5.0e-7	<1.2e-7	<1.1e-7	<1.3e-7	<1.5e-7	<2.4e-7	<1.8e-7	<1.6e-7	<1.2e-7	<1.4e-7	<3.2e-7	<2.0e-7

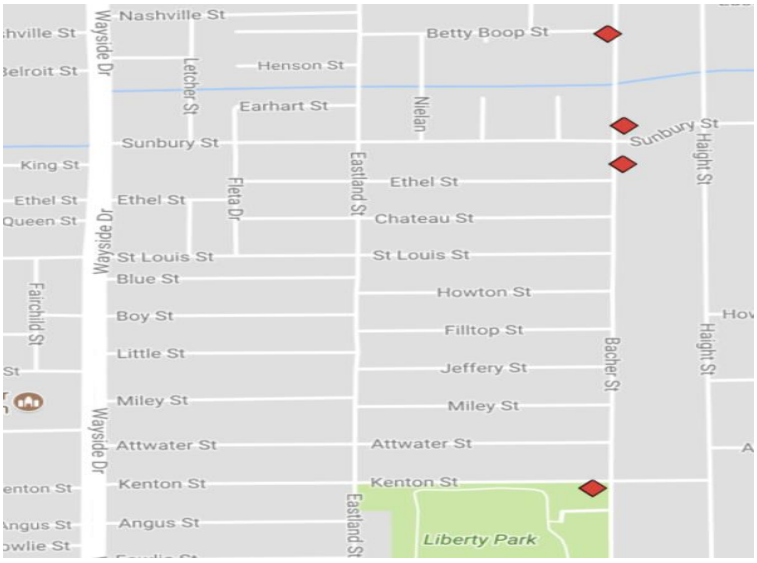
NOTE: [1]Background is not subtracted from the data

Sunbury and Bacher Streets
Radiation Branch Site No. 053

Sunbury and Batcher Streets are located 6 miles NW of Downtown Houston. The monitoring site of cleanup from Incident I-9303. A Cesium-137 source was found on approximately one quarter acre located on the east side of 6500 block of Batcher Street just north of Sunbury Street. The Radiation Branch surveillance program consists of OSL monitoring.

Harris County

Shaded are indicates

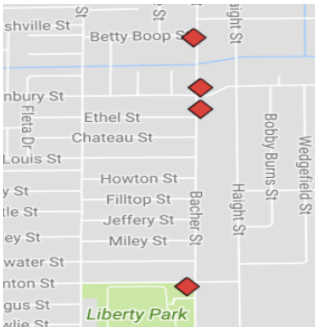


location of Harris County

Sunbury and Bacher Streets
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Sunbury and Bacher Streets

Optically Stimulated Luminescence (OSL) Monitoring Results and Environmental Sampling Results (quarterly and annual readings are in mrem)

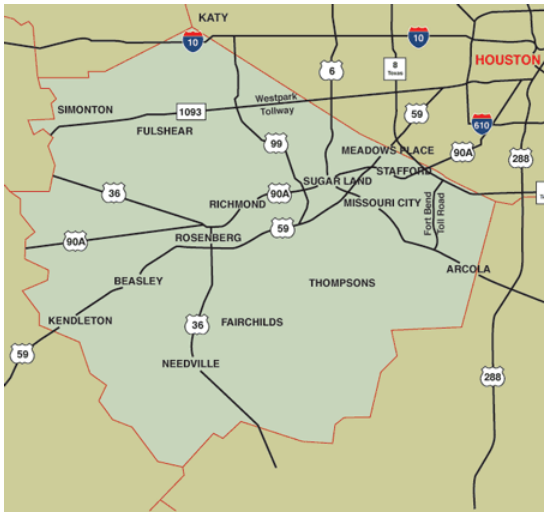
	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	21	22	26	25	94	
STATION 2	22	24	28	24	98	
STATION 3	22	23	27	27	99	
STATION 8	22	24	25	26	97	[1]Background

NOTE: [1]Background is not subtracted from the data

Thermo Fisher
Radiation Branch Site No. 054

Thermo Fisher, located in Sugarland Texas, southwest of Houston Texas, formerly provides installation, repair, and maintenance of nuclear gauging devices and services for loading and unloading radioactive sources in nuclear gauges. The facility is being decommissioned at this time. The Radiation Branch surveillance program consists of OSL monitoring.

Fort Bend County

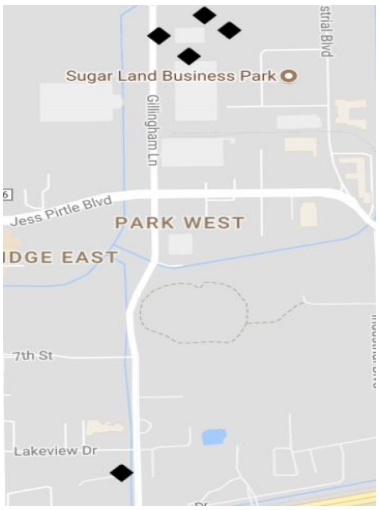


Shaded area indicates location of Fort Bend County

Thermo Fisher
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed



Thermo Fisher

Optically Stimulated Luminescence (OSL) Monitoring Results and Environmental Sampling Results (quarterly and annual readings are in mrem)

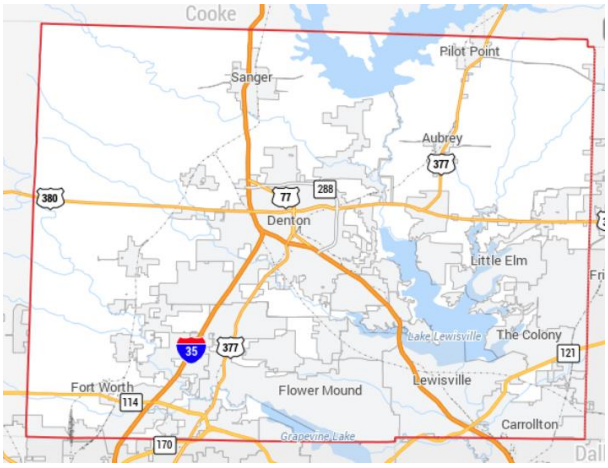
	Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
STATION 1	23	25	25	25	98	
STATION 2	33	31	32	28	124	
STATION 3	38	35	33*	27	100	[2]Q3-OSL Missing
STATION 4	24	28	27	26	105	
STATION 6	25	28	25*	23	76	[1]Background [2]Q3-OSL Missing

NOTE: [1]Background is not subtracted from the data
[2]If data are missing during a quarter, an average of known quarter readings for that year and location is used to fill in for the missing data

Trace Life Sciences
Radiation Branch Site No. 055 & 056

U.S. Radiopharmaceuticals, formerly Trace Life Sciences, has two sites located in Denton Texas, which consists of a medical radioisotope production facility which also stores contaminated accelerator parts. The Radiation Branch surveillance program consists of OSL monitoring.

Denton County



Shaded area indicates location of Denton County

Trace Life Sciences
Monitoring Station Locations

♦ TLD Station ♥ Sample Station ♣ TLD & Sample Station

Homeland Security -Diagram Removed

Trace Life Sciences

Optically Stimulated Luminescence (OSL) Monitoring Results and Environmental Sampling Results (quarterly and annual readings are in mrem)

		Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
Site 055	STATION 1		25	27	25	77	
	STATION 2		24	28	25	77	
	STATION 3		26*	26	26	78	[2]Q2-OSL Missing
	STATION 4		27	27	27*	81	[2]Q3-OSL Missing
	STATION 6		28	31	28	87	[1]Background

		Q1	Q2	Q3	Q4	ANNUAL DOSE	NOTES
Site 056	STATION 1		26	28	28	82	
	STATION 2		29	29	27	85	
	STATION 3		24	26	25	78	
	STATION 6		28	31	28	87	[1]Background

NOTE: [1]Background is not subtracted from the data
[2]If data are missing during a quarter, an average of known quarter readings for that year and location is used to fill in for the missing data

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Appendices

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MAPEP Mixed Analyte Performance Evaluation Program

Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP Series 26
(TDHL01) Texas Department of State Health Services Laboratory
1100 W 49th Street
Austin, TX 78756

MAPEP-12-MaS26: Radiological and inorganic combined soil standard

Inorganic

Units: (mg/kg)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Arsenic	NR	48.2				33.7 - 62.7		
Barium	NR	655				459 - 852		
Beryllium	NR	47.5				33.3 - 61.8		
Cadmium	NR	10.6				7.4 - 13.8		
Chromium	NR	89.3				62.5 - 116.1		
Cobalt	NR	113				79 - 147		
Copper	NR	206				144 - 268		
Lead	NR	74.4				52.1 - 96.7		
Mercury	NR	0.0733				0.0513 - 0.0953		
Nickel	NR	186				130 - 242		
Selenium	NR	14.2				9.9 - 18.5		
Silver	NR	85.5				59.9 - 111.2		
Technetium-99	NR	0.000596				0.000417 - 0.000775		
Thallium	NR	14.4				10.1 - 18.7		
Uranium-235	NR	0.0653				0.0457 - 0.0849		
Uranium-238	NR	26.5				18.6 - 34.5		
Uranium-Total	NR	26.5				18.6 - 34.5		
Vanadium	NR	104				73 - 135		
Zinc	NR	286				200 - 372		

Radiological

Units: (Bq/kg)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	145	159	A		-8.8	111 - 207	9	
Cesium-134	748	828	A		-9.7	580 - 1076	10	L
Cesium-137	2.15		A			False Positive Test	2.15	
Cobalt-57	1160	1179	A		-1.6	825 - 1533	20	L
Cobalt-60	0.93	1.56	A	(17)		Sensitivity Evaluation	0.93	
Iron-55	NR	1370				959 - 1781		
Manganese-54	578	558	A		3.6	391 - 725	14	L
Nickel-63	NR	862				603 - 1121		
Plutonium-238	128	136	A		-5.9	95 - 177	12	
Plutonium-239/240	59.0	65.8	A		-10.3	46.1 - 85.5	6.5	
Potassium-40	1520	1491	A		1.9	1044 - 1938	40	L
Strontium-90	414	392	A		5.6	274 - 510	20	
Technetium-99	NR	374				262 - 486		

Radiological

Units: (Bq/kg)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-234/233	61.8	68.1	A		-9.3	47.7 - 88.5	5.2	
Uranium-238	326	329	A		-0.9	230 - 428	23	
Zinc-65	682	642	A		6.2	449 - 835	17	L

Radiological Reference Date: February 1, 2012

MAPEP-12-MaW26: Radiological and inorganic combined water standard

Inorganic

Units: (mg/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	2.71				1.90 - 3.52		
Arsenic	NR	<0.01				False Positive Test		
Barium	NR	0.808				0.566 - 1.050		
Beryllium	NR	0.808				0.566 - 1.050		
Cadmium	NR	0.418				0.293 - 0.543		
Chromium	NR	1.73				1.21 - 2.25		
Cobalt	NR	1.45				1.02 - 1.89		
Copper	NR	0.929				0.650 - 1.208		
Lead	NR	0.779				0.545 - 1.013		
Mercury	NR	3.75E-3				0.00263 - 0.00488		
Nickel	NR	<0.01				False Positive Test		
Selenium	NR	0.223				0.156 - 0.290		
Technetium-99	NR	4.45E-5				0.00003 - 0.00006		
Thallium	NR	0.846				0.592 - 1.100		
Uranium-235	NR	4.50E-4				0.00032 - 0.00059		
Uranium-238	NR	0.222				0.155 - 0.289		
Uranium-Total	NR	0.222				0.155 - 0.289		
Vanadium	NR	1.44				1.01 - 1.87		
Zinc	NR	2.28				1.60 - 2.96		

Radiological

Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	1.62	1.63	A		-0.6	1.14 - 2.12	0.10	
Cesium-134	-0.20		A			False Positive Test	0.20	
Cesium-137	42.0	39.9	A		5.3	27.9 - 51.9	1.2	L
Cobalt-57	33.8	32.9	A		2.7	23.0 - 42.8	0.8	L
Cobalt-60	24.9	23.72	A		5.0	16.60 - 30.84	0.5	L
Hydrogen-3	441	437	A		0.9	306 - 568	11	L
Iron-55	NR	81.9				57.3 - 106.5		
Manganese-54	33.4	31.8	A		5.0	22.3 - 41.3	0.9	L
Nickel-63	NR	60.0				42.0 - 78.0		
Plutonium-238	0.581	0.629	A		-7.6	0.440 - 0.818	0.058	
Plutonium-239/240	1.14	1.34	A		-14.9	0.94 - 1.74	0.10	
Potassium-40	151	142	A		6.3	99 - 185	5	

Radiological — Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Strontium-90	-0.012		A			False Positive Test	0.036	
Technetium-99	NR	27.9				19.5 - 36.3		
Uranium-234/233	0.371	0.392	A		-5.4	0.274 - 0.510	.039	
Uranium-238	2.95	2.76	A		6.9	1.93 - 3.59	0.21	
Zinc-65	-0.170		A			False Positive Test	0.170	

Radiological Reference Date: February 1, 2012

MAPEP-12-GrW26: Gross alpha/beta water

Radiological — Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.70	2.14	A		-20.6	0.64 - 3.64	0.07	
Gross beta	6.12	6.36	A		-3.8	3.18 - 9.54	0.12	L

Radiological Reference Date: February 1, 2012

MAPEP-12-RdF26: Radiological air filter

Inorganic — Units: (ug/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0187				0.0131 - 0.0243		
Uranium-238	NR	10.0				7.0 - 13.0		
Uranium-Total	NR	10.0				7.0 - 13.0		

Radiological — Units: (Bq/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.073	0.073	A		0.0	0.051 - 0.095	0.007	
Cesium-134	2.14	2.38	A		-10.1	1.67 - 3.09	0.04	L
Cesium-137	1.94	1.79	A		8.4	1.25 - 2.33	0.08	
Cobalt-57	0.027		A			False Positive Test	0.027	
Cobalt-60	2.25	2.182	A		3.1	1.527 - 2.837	0.06	L
Manganese-54	3.51	3.24	A		8.3	2.27 - 4.21	0.10	L
Plutonium-238	0.001	0.0015	A	(17)		Sensitivity Evaluation	0.001	
Plutonium-239/240	0.104	0.097	A		7.2	0.068 - 0.126	0.012	
Strontium-90	0.013		A			False Positive Test	0.008	
Uranium-234/233	0.019	0.0188	A		1.1	0.0132 - 0.0244	0.004	H
Uranium-238	0.131	0.124	A		5.6	0.087 - 0.161	0.013	
Zinc-65	3.19	2.99	A		6.7	2.09 - 3.89	0.13	

Radiological Reference Date: February 1, 2012

MAPEP-12-GrF26: Gross alpha/beta air filter

Radiological — Units: (Bq/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.759	1.2	A		-36.8	0.4 - 2.0	0.024	
Gross beta	2.25	2.4	A		-6.3	1.2 - 3.6	0.03	L

Radiological Reference Date: February 1, 2012

MAPEP-12-RdV26: Radiological vegetation

Inorganic — Units: (ug/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0434				0.0304 - 0.0564		
Uranium-238	NR	22.4				15.7 - 29.1		
Uranium-Total	NR	22.4				15.7 - 29.1		

Radiological — Units: (Bq/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.007		N	(1)		False Positive Test	0.002	
Cesium-134	9.84	8.43	A		16.7	5.90 - 10.96	0.17	L
Cesium-137	-0.064		A			False Positive Test	0.064	
Cobalt-57	15.4	12.0	W		28.3	8.4 - 15.6	0.4	L
Cobalt-60	6.69	6.05	A		10.6	4.24 - 7.87	0.17	L
Manganese-54	0.009		A			False Positive Test	0.009	
Plutonium-238	0.179	0.219	A		-18.3	0.153 - 0.285	0.021	
Plutonium-239/240	0.148	0.152	A		-2.6	0.106 - 0.198	0.018	
Strontium-90	1.98	2.11	A		-6.2	1.48 - 2.74	0.04	L
Uranium-234/233	0.086	0.0411	N		109.2	0.0288 - 0.0534	0.011	
Uranium-238	0.307	0.278	A		10.4	0.195 - 0.361	0.026	
Zinc-65	9.60	8.90	A		7.9	6.23 - 11.57	0.42	

Radiological Reference Date: February 1, 2012

Notes:

(1) = False Positive
(17) = NOT DETECTED - reported a statistically zero result

MAPEP Mixed Analyte Performance Evaluation Program

Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP Series 27
(TDHL01) Texas Department of State Health Services Laboratory
1100 W 49th Street
Austin, TX 78756

MAPEP-12-MaS27: Radiological and inorganic combined soil standard

Inorganic

Units: (mg/kg)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	111.5				78.1 - 145.0		
Arsenic	NR	55.7				39.0 - 72.4		
Barium	NR	896				627 - 1165		
Beryllium	NR	47.0				32.9 - 61.1		
Cadmium	NR	15.4				10.8 - 20.0		
Chromium	NR	99.0				69.3 - 128.7		
Cobalt	NR	127				89 - 165		
Copper	NR	204				143 - 265		
Lead	NR	97.6				68.3 - 126.9		
Mercury	NR	0.172				0.120 - 0.224		
Nickel	NR	300				210 - 390		
Selenium	NR	17.7				12.4 - 23.0		
Silver	NR	95.5				66.9 - 124.2		
Technetium-99	NR	0.000748				0.000524 - 0.000972		
Thallium	NR	91.0				63.7 - 118.3		
Uranium-235	NR	0.0533				0.0373 - 0.0693		
Uranium-238	NR	21.1				14.8 - 27.4		
Uranium-Total	NR	21.2				14.8 - 27.6		
Vanadium	NR	271				190 - 352		
Zinc	NR	549				384 - 714		

Radiological

Units: (Bq/kg)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	106	111	A		-4.5	78 - 144	8	
Cesium-134	896	939	A		-4.6	657 - 1221	11	L
Cesium-137	1106	1150	A		-3.8	805 - 1495	31	L
Cobalt-57	1246	1316	A		-5.3	921 - 1711	26	L
Cobalt-60	520	531	A		-2.1	372 - 690	9	L
Iron-55	NR	508				356 - 660		
Manganese-54	911	920	A		-1.0	644 - 1196	22	L
Nickel-63	NR	406				284 - 528		
Plutonium-238	91.3	105.8	A		-13.7	74.1 - 137.5	8.7	
Plutonium-239/240	117	134	A		-12.7	94 - 174	11	
Potassium-40	625	632	A		-1.1	442 - 822	19	
Strontium-90	565	508	A		11.2	356 - 660	21	

Radiological								Units: (Bq/kg)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Technetium-99	NR	469				328 - 610		
Uranium-234/233	59	60.3	A		-2.2	42.2 - 78.4	5	
Uranium-238	248	263	A		-5.7	184 - 342	17	
Zinc-65	625	606	A		3.1	424 - 788	15	L

Radiological Reference Date: August 1, 2012

MAPEP-12-MaW27: Radiological and inorganic combined water standard

Inorganic								Units: (mg/L)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Antimony	NR	3.38				2.37 - 4.39		
Arsenic	NR	1.13				0.79 - 1.47		
Barium	NR	4.00				2.80 - 5.20		
Beryllium	NR					False Positive Test		
Cadmium	NR	0.506				0.354 - 0.658		
Chromium	NR	0.561				0.393 - 0.729		
Cobalt	NR	3.11				2.18 - 4.04		
Copper	NR					False Positive Test		
Lead	NR	2.06				1.44 - 2.68		
Mercury	NR	0.00349				0.00244 - 0.00454		
Nickel	NR	3.99				2.79 - 5.19		
Selenium	NR					False Positive Test		
Technetium-99	NR	7.30E-06				0.000005 - 0.000009		
Thallium	NR	2.47				1.73 - 3.21		
Uranium-235	NR	0.00052				0.00036 - 0.00068		
Uranium-238	NR	0.268				0.188 - 0.348		
Uranium-Total	NR	0.268				0.188 - 0.348		
Vanadium	NR	1.59				1.11 - 2.07		
Zinc	NR	3.27				2.29 - 4.25		

Radiological								Units: (Bq/L)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	1.02	1.06	A		-3.8	0.74 - 1.38	0.08	
Cesium-134	22.5	23.2	A		-3.0	16.2 - 30.2	0.3	L
Cesium-137	17.9	16.7	A		7.2	11.7 - 21.7	0.5	L
Cobalt-57	31.2	29.3	A		6.5	20.5 - 38.1	0.7	L
Cobalt-60	0.21		A			False Positive Test	0.10	
Hydrogen-3	333	334	A		-0.3	234 - 434	5	L
Iron-55	NR	89.3				62.5 - 116.1		
Manganese-54	19.3	17.8	A		8.4	12.5 - 23.1	0.5	L
Nickel-63	NR	66.3				46.4 - 86.2		
Plutonium-238	0.024	0.013	A	(17)		Sensitivity Evaluation	0.009	
Plutonium-239/240	1.30	1.61	A		-19.3	1.13 - 2.09	0.12	

Radiological								Units: (Bq/L)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Potassium-40	146	134	A		9.0	94 - 174	5	
Strontium-90	11.8	12.2	A		-3.3	8.5 - 15.9	0.2	L
Technetium-99	NR	4.58				3.21 - 5.95		
Uranium-234/233	0.426	0.451	A		-5.5	0.316 - 0.586	0.041	
Uranium-238	2.99	3.33	A		-10.2	2.33 - 4.33	0.21	
Zinc-65	29.2	25.9	A		12.7	18.1 - 33.7	0.8	L

Radiological Reference Date: August 1, 2012

MAPEP-12-GrW27: Gross alpha/beta water

Radiological								Units: (Bq/L)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	1.94	1.79	A		8.4	0.54 - 3.04	0.07	
Gross beta	9.40	9.1	A		3.3	4.6 - 13.7	0.14	L

Radiological Reference Date: August 1, 2012

MAPEP-12-RdF27: Radiological air filter

Inorganic								Units: (ug/sample)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0148				0.0104 - 0.0192		
Uranium-238	NR	8.0				5.6 - 10.4		
Uranium-Total	NR	8.1				5.7 - 10.5		

Radiological								Units: (Bq/sample)
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.080	0.0780	A		2.6	0.0546 - 0.1014	0.008	
Cesium-134	2.44	2.74	A		-10.9	1.92 - 3.56	0.05	L
Cesium-137	0.023		A			False Positive Test	0.012	
Cobalt-57	1.98	1.91	A		3.7	1.34 - 2.48	0.06	
Cobalt-60	1.79	1.728	A		3.6	1.210 - 2.246	0.05	L
Manganese-54	2.56	2.36	A		8.5	1.65 - 3.07	0.08	
Plutonium-238	0.053	0.0625	A		-15.2	0.0438 - 0.0813	0.007	
Plutonium-239/240	0.001	0.00081	A	(17)		Sensitivity Evaluation	0.001	
Strontium-90	1.11	1.03	A		7.8	0.72 - 1.34	0.03	L
Uranium-234/233	0.014	0.0141	A		-0.7	0.0099 - 0.0183	0.003	H
Uranium-238	0.093	0.100	A		-7.0	0.070 - 0.130	0.010	
Zinc-65	-0.006		A			False Positive Test	0.003	

Radiological Reference Date: August 1, 2012

MAPEP-12-GrF27: Gross alpha/beta air filter

Radiological — Units: (Bq/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Gross alpha	0.873	0.97	A		-10.0	0.29 - 1.65	0.026	L
Gross beta	1.88	1.92	A		-2.1	0.96 - 2.88	0.03	L

Radiological Reference Date: August 1, 2012

MAPEP-12-RdV27: Radiological vegetation

Inorganic — Units: (ug/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Uranium-235	NR	0.0240				0.0168 - 0.0312		
Uranium-238	NR	12.7				8.9 - 16.5		
Uranium-Total	NR	12.7				8.9 - 16.5		

Radiological — Units: (Bq/sample)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Americium-241	0.168	0.163	A		3.1	0.114 - 0.212	0.017	
Cesium-134	6.79	6.51	A		4.3	4.56 - 8.46	0.17	L
Cesium-137	4.85	4.38	A		10.7	3.07 - 5.69	0.20	
Cobalt-57	6.71	5.66	A		18.6	3.96 - 7.36	0.21	
Cobalt-60	5.34	5.12	A		4.3	3.58 - 6.66	0.15	L
Manganese-54	3.43	3.27	A		4.9	2.29 - 4.25	0.15	
Plutonium-238	0.201	0.187	A		7.5	0.131 - 0.243	0.025	
Plutonium-239/240	0.149	0.123	W		21.1	0.086 - 0.160	0.020	
Strontium-90	0.064		N	(1)		False Positive Test	0.014	
Uranium-234/233	0.093	0.0257	N		261.9	0.0180 - 0.0334	0.013	
Uranium-238	0.256	0.158	N		62.0	0.111 - 0.205	0.026	
Zinc-65	0.456		A			False Positive Test	0.228	

Radiological Reference Date: August 1, 2012

Notes:

(1) = False Positive
(17) = NOT DETECTED - reported a statistically zero result

Laboratory Services Section
Environmental Sciences Branch

Each laboratory procedure is performed under unique analysis conditions. Variations occur in volumes, counting efficiencies, detector backgrounds, count times, decay factors, chemical recoveries, and other analysis parameters which affect the sensitivity of the measurement. The detection limits listed in the following tables were derived using standard analysis conditions and are routinely achievable on normal samples. If greater sensitivity is required, it is usually possible to adjust detection limits by changing one or more of these parameters.

Detection Limits for Gamma Spectroscopy
Sample Type

Isotope	Soil - Sediment		Air Filter		Water - Milk		Vegetation - Fish	
	µCi/g	pCi/kg	µCi/filter	pCi/filter	µCi/ml	pCi/l	µCi/g	pCi/kg
Ac-228	2.0E-07	2.0E+02	2.0E-05	2.0E+01	2.0E-08	2.0E+01	1.0E-07	1.0E+02
Ag-110m	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Am-241	1.0E-07	1.0E+02	5.0E-06	5.0E+00	1.0E-08	1.0E+01	1.0E-07	1.0E+02
Ba-140	4.0E-07	4.0E+02	2.0E-05	2.0E+01	2.0E-08	2.0E+01	1.0E-07	1.0E+02
Be-7	1.0E-06	1.0E+03	3.0E-05	3.0E+01	3.0E-08	3.0E+01	1.0E-07	1.0E+02
Bi-212	5.0E-07	5.0E+02	3.0E-05	3.0E+01	1.0E-07	1.0E+02	1.0E-07	1.0E+02
Bi-214	2.0E-07	2.0E+02	1.0E-05	1.0E+01	1.0E-08	1.0E+01	1.0E-07	1.0E+02
Co-57	1.0E-07	1.0E+02	2.0E-06	2.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Co-58	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Co-60	1.0E-07	1.0E+02	1.0E-05	1.0E+01	1.0E-08	1.0E+01	1.0E-07	1.0E+02
Cr-51	1.0E-06	1.0E+03	3.0E-05	3.0E+01	3.0E-08	3.0E+01	1.0E-07	1.0E+02
Cs-134	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Cs-137	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Fe-59	1.0E-07	1.0E+02	1.0E-05	1.0E+01	1.0E-08	1.0E+01	1.0E-07	1.0E+02
I-125	1.0E-06	1.0E+03	1.0E-05	1.0E+01	2.0E-08	2.0E+01	1.0E-07	1.0E+02
I-131*	1.0E-07	1.0E+02	5.0E-06	5.0E+00	1.0E-08	1.0E+01	1.0E-07	1.0E+02
Ir-192	1.0E-07	1.0E+02	5.0E-06	5.0E+00	1.0E-08	1.0E+01	1.0E-07	1.0E+02
K-40	2.0E-06	2.0E+03	1.0E-04	1.0E+02	4.0E-08	4.0E+01	1.0E-07	1.0E+02
La-140	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Mn-54	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Nb-95	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Pb-210	4.0E-07	4.0E+02	2.0E-05	2.0E+01	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Pb-212	2.0E-07	2.0E+02	1.0E-05	1.0E+01	3.0E-08	3.0E+01	1.0E-07	1.0E+02
Pb-214	2.0E-07	2.0E+02	1.0E-05	1.0E+01	1.0E-08	1.0E+01	1.0E-07	1.0E+02
Ra-226	2.0E-06	2.0E+03	1.0E-04	1.0E+02	1.0E-07	1.0E+02	2.0E-07	2.0E+02
Sb-124	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Sc-46	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
Th-230	1.0E-05	1.0E+04	3.0E-04	3.0E+02	1.0E-06	1.0E+03	2.0E-06	2.0E+03
Th-234	1.0E-06	1.0E+03	4.0E-05	4.0E+01	1.0E-07	1.0E+02	2.0E-07	2.0E+02
Tl-208	1.0E-07	1.0E+02	5.0E-06	5.0E+00	5.0E-09	5.0E+00	1.0E-07	1.0E+02
U-235	4.0E-07	4.0E+02	2.0E-05	2.0E+01	3.0E-08	3.0E+01	1.0E-07	1.0E+02
U-238	1.0E-06	1.0E+03	3.0E-05	3.0E+01	6.0E-08	6.0E+01	2.0E-07	2.0E+02
Zn-65	2.0E-07	2.0E+02	1.0E-05	1.0E+01	1.0E-08	1.0E+01	1.0E-07	1.0E+02
Zr-95	1.0E-07	1.0E+02	1.0E-05	1.0E+01	1.0E-08	1.0E+01	1.0E-07	1.0E+02

*Air iodine can be determined by using cartridges. Detection limits are 2.0E-14µCi/ml or 2.0E-02 pCi/m^3.

Laboratory Services Section
Environmental Sciences Branch

Detection Limits for Chemical Analysis Procedures
Sample Type

Isotope	Soil - Sediment		Air Filter		Water - Milk		Vegetation - Fish	
	µCi/g	pCi/kg	µCi/filter	pCi/filter	µCi/ml	pCi/l	µCi/g	pCi/kg
Alpha	6.1E-06	6.1E+03	7.0E-07	7.0E-01	3.3E-09	3.3E+00	3.3E-06	3.3E+03
Beta	1.2E-05	1.2E+04	1.3E-06	1.3E+00	6.6E-09	6.6E+00	6.6E-06	6.6E+03
C-14					3.0E-07	3.0E+02		
H-3			2.0E-06	2.0E+00	1.0E-06	1.0E+03		
Ra-226	4.0E-07	4.0E+02	8.0E-07	8.0E-01	8.0E-10	8.0E-01	4.0E-07	4.0E+02
Ra-228	1.9E-06	1.9E+03	3.9E-06	3.9E+00	3.9E-09	3.9E+00	1.9E-06	1.9E+03
Sr-89	9.0E-07	9.0E+02	1.7E-06	1.7E+00	1.7E-09	1.7E+00	9.0E-07	9.0E+02
Sr-90	1.3E-06	1.3E+03	2.7E-06	2.7E+00	2.7E-09	2.7E+00	1.3E-06	1.3E+03

Detection Limits for Alpha Spectroscopy
Sample Type

Isotope	Soil - Sediment		Air Filter		Water - Milk		Vegetation - Fish	
	µCi/g	pCi/kg	µCi/filter	pCi/filter	µCi/ml	pCi/l	µCi/g	pCi/kg
Am-241	1.0E-06	1.0E+03	1.0E-06	1.0E+00	1.0E-09	1.0E+00	1.0E-06	1.0E+03
Pu-239	2.0E-07	2.0E+02	2.0E-07	2.0E-01	2.0E-10	2.0E-01	2.0E-07	2.0E+02
Th-228	1.0E-06	1.0E+03	1.0E-06	1.0E+00	1.0E-09	1.0E+00	1.0E-06	1.0E+03
Th-230	1.0E-06	1.0E+03	1.0E-06	1.0E+00	1.0E-09	1.0E+00	1.0E-06	1.0E+03
Th-232	1.0E-06	1.0E+03	1.0E-06	1.0E+00	1.0E-09	1.0E+00	1.0E-06	1.0E+03
U-234	1.0E-06	1.0E+03	1.0E-06	1.0E+00	1.0E-09	1.0E+00	1.0E-06	1.0E+03
U-238	1.0E-06	1.0E+03	1.0E-06	1.0E+00	1.0E-09	1.0E+00	1.0E-06	1.0E+03

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